



등록특허 10-2763004



(19) 대한민국특허청(KR)

(12) 등록특허공보(B1)

(45) 공고일자 2025년02월04일

(11) 등록번호 10-2763004

(24) 등록일자 2025년01월31일

(51) 국제특허분류(Int. Cl.)
C12Q 1/6886 (2018.01) A61P 17/00 (2006.01)
A61P 35/00 (2006.01)
(52) CPC특허분류
C12Q 1/6886 (2022.01)
A61P 17/00 (2018.01)
(21) 출원번호 10-2019-7038285
(22) 출원일자(국제) 2018년05월21일
심사청구일자 2021년05월21일
(85) 번역문제출일자 2019년12월24일
(65) 공개번호 10-2020-0030034
(43) 공개일자 2020년03월19일
(86) 국제출원번호 PCT/US2018/033658
(87) 국제공개번호 WO 2018/217627
국제공개일자 2018년11월29일
(30) 우선권주장
62/511,058 2017년05월25일 미국(US)
(56) 선행기술조사문헌
J Clin Aesthet Dermatol, 7(6): 13-24
(2014.06.)
J Clin Invest, 126(9): 3447-3452
(2016.09.01.)

(73) 특허권자
리퀴드 바이옴시 리서치 엘엘씨
세인트킷즈 네비스 00109-7000 찰스타운 메인 스트리트
헌킨스 워터프론트 플라자 피.오. 박스 556
(72) 발명자
모들린 어빈
미국 06525 코네티컷주 우드브리지 툴립 트리 레인 11
키드 마크
미국 06512 코네티컷주 뉴 하벤 이라 스트리트 1 에이
드로즈도브 이그나트
영국 씨브이34 4비피 워릭셔주 워릭 캐슬 스트리트 10
(74) 대리인
김진희, 김태홍

전체 청구항 수 : 총 33 항

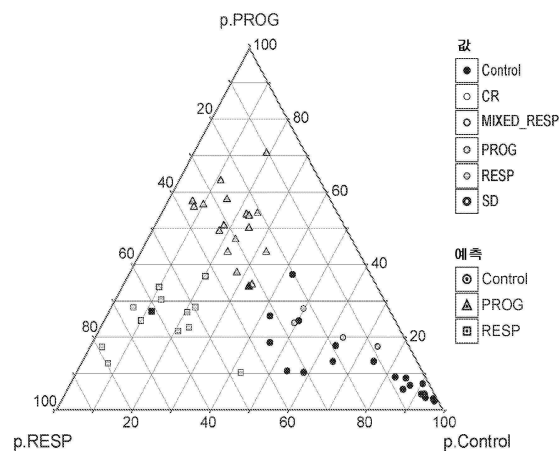
심사관 : 이준혁

(54) 발명의 명칭 흑색종의 검출 방법

(57) 요약

본 발명은 흑색종을 검출하는 방법, 흑색종이 안정적인지 진행성인지를 결정하는 방법, 흑색종을 갖는 대상체에 서 외과적 절제의 정도를 평가하는 방법, 및 치료에 대한 흑색종을 갖는 대상체에 의한 반응을 결정하는 방법에 관한 것이다.

대표도 - 도1



(52) CPC특허분류

A61P 35/00 (2018.01)

C12Q 2563/107 (2013.01)

C12Q 2600/106 (2013.01)

C12Q 2600/118 (2013.01)

C12Q 2600/158 (2013.01)

명세서

청구범위

청구항 1

흑색종의 검출이 필요한 인간 대상체에서 흑색종을 검출하는 방법으로서,

인간 대상체로부터의 시험 샘플을 적어도 29개의 RNA 바이오마커의 발현을 검출하는데 특이적인 복수의 작용제와 접촉시킴으로써, 상기 시험 샘플로부터 적어도 29개의 RNA 바이오마커의 발현 수준을 결정하는 단계로서, 적어도 29개의 RNA 바이오마커는 ATL1, ATP6VOD, C1ORF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, YY2, 및 적어도 하나의 하우스키핑 유전자를 포함하는 것인 단계;

ATL1, ATP6VOD, C1ORF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 발현 수준을 적어도 하나의 하우스키핑 유전자의 발현 수준으로 정규화하여, ATL1, ATP6VOD, C1ORF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 정규화된 발현 수준을 얻는 단계;

각각의 정규화된 발현 수준을 알고리즘에 입력하여 스코어를 생성하는 단계;

스코어를 소정의 컷오프 값과 비교하는 단계; 및

스코어가 소정의 컷오프 값 이상인 경우 인간 대상체에서 흑색종의 존재를 특정하거나 또는 스코어가 소정의 컷오프 값 미만인 경우 인간 대상체에서 흑색종의 부존재를 특정하는 단계로서, 소정의 컷오프 값은 0 내지 100의 스케일에서 20인 단계

를 포함하는, 흑색종의 검출 방법.

청구항 2

제1항에 있어서, 적어도 하나의 하우스키핑 유전자가 ALG9, SEPN, YWHAQ, VPS37A, PRRC2B, DOPEY2, NDUFB11, ND4, MRPL19, PSMC4, SF3A1, PUM1, ACTB, GAPD, GUSB, RPLP0, TFRC, MORF4L1, 18S, PPIA, PGK1, RPL13A, B2M, YWHAZ, SDHA, HPRT1, TOX4, 및 TPT1로 이루어진 군에서 선택되는 것인 방법.

청구항 3

제2항에 있어서, 적어도 하나의 하우스키핑 유전자가 TOX4 및 TPT1을 포함하는 것인 방법.

청구항 4

제3항에 있어서, 정규화된 발현 수준이

ATL1, ATP6VOD, C1ORF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 발현 수준을 TOX4의 발현 수준으로 정규화하여, ATL1, ATP6VOD, C1ORF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 제1의 정규화된 발현 수준을 얻는 단계;

ATL1, ATP6VOD, C1ORF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 발현 수준을 TPT1의 발현 수준으로 정규화하여, ATL1, ATP6VOD, C1ORF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA,

HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 제2의 정규화된 발현 수준을 얻는 단계;

제1의 정규화된 발현 수준 및 제2의 정규화된 발현 수준을 평균하여 정규화된 발현 수준을 얻는 단계
에 의해 얻어지는 것인 방법.

청구항 5

제1항 내지 제4항 중 어느 한 항에 있어서,

(a) 90% 초과와 감도; 또는

(b) 90% 초과와 특이성

을 갖는 방법.

청구항 6

제1항 내지 제4항 중 어느 한 항에 있어서, RNA 바이오마커의 발현 수준은, 바이오마커와 표지된 프로브 또는 프라이머 사이에 복합체를 형성함으로써 검출되는 것인 방법.

청구항 7

제1항 내지 제4항 중 어느 한 항에 있어서, RNA 바이오마커는 역전사되어 cDNA를 생성하고, 생성된 cDNA 발현 수준이 검출되는 것인 방법.

청구항 8

제1항 내지 제4항 중 어느 한 항에 있어서, 시험 샘플이 혈액, 혈청, 혈장, 또는 신생물 조직인 방법.

청구항 9

제1항 내지 제4항 중 어느 한 항에 있어서, 소정의 컷오프 값이 신생물 질환이 없는 인간 대상체로부터 얻어진 복수의 기준 샘플에서 유래된 것인 방법.

청구항 10

제9항에 있어서, 각각의 기준 샘플이 혈액, 혈청, 혈장, 또는 비-신생물 조직인 방법.

청구항 11

제1항 내지 제4항 중 어느 한 항에 있어서, 알고리즘이 XGBoost(XGB), 랜덤 포레스트(RF), Lasso 및 Elastic-Net 정규화 일반화 선형 모델(glmnet), cforest, 분류 및 회귀 트리(CART), treebag, k-최근접 이웃(knn), 신경망(nnet), 방사형 서포트 벡터 머신(SVM-radial), 선형 서포트 벡터 머신(SVM-linear), 나이브 베이즈(NB), 다층 퍼셉트론(mlp) 또는 이들의 임의의 조합인 방법.

청구항 12

흑색종을 갖는 인간 대상체에서 외과적 절제의 정도를 평가하는 방법으로서,

외과적 절제 후의 인간 대상체로부터의 시험 샘플을 적어도 29개의 RNA 바이오마커의 발현을 검출하는데 특이적인 복수의 작용제와 접촉시킴으로써, 상기 시험 샘플로부터 적어도 29개의 RNA 바이오마커의 발현 수준을 결정하는 단계로서, 적어도 29개의 RNA 바이오마커는 ATL1, ATP6VOD, C10RF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, YY2, 및 적어도 하나의 하우스키핑 유전자를 포함하는 것인 단계;

ATL1, ATP6VOD, C10RF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 발현 수준을 적어도 하나의 하우스키핑 유전자의 발현 수준으로 정규화하여, ATL1, ATP6VOD, C10RF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-

DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 정규화된 발현 수준을 얻는 단계;

각각의 정규화된 발현 수준을 알고리즘에 입력하여 스코어를 생성하는 단계;

스코어를 소정의 컷오프 값과 비교하는 단계; 및

정규화된 발현 수준이 소정의 컷오프 값 이상인 경우 외과적 절제가 흑색종 전체를 제거하지 않은 것으로 특정하거나 또는 정규화된 발현 수준이 소정의 컷오프 값 미만인 경우 외과적 절제가 흑색종 전체를 제거한 것으로 특정하는 단계로서, 소정의 컷오프 값은 0 내지 100의 스케일에서 20인 단계

를 포함하는, 흑색종을 갖는 인간 대상체에서 외과적 절제의 정도를 평가하는 방법.

청구항 13

제12항에 있어서, 정규화된 발현 수준이 소정의 컷오프 값 이상인 경우 흑색종의 재발의 위험이 높은 것으로 특정하거나 또는 정규화된 발현 수준이 소정의 컷오프 값 미만인 경우 흑색종의 재발의 위험이 낮은 것으로 특정하는 단계를 추가로 포함하는 방법.

청구항 14

제12항에 있어서, 적어도 하나의 하우스키핑 유전자가 ALG9, SEPN, YWHAQ, VPS37A, PRRC2B, DOPEY2, NDUFB11, ND4, MRPL19, PSMC4, SF3A1, PUM1, ACTB, GAPD, GUSB, RPLP0, TFRC, MORF4L1, 18S, PPIA, PGK1, RPL13A, B2M, YWHAZ, SDHA, HPRT1, TOX4, 및 TPT1로 이루어진 군에서 선택되는 것인 방법.

청구항 15

제14항에 있어서, 적어도 하나의 하우스키핑 유전자가 TOX4 및 TPT1을 포함하는 것인 방법.

청구항 16

제15항에 있어서, 정규화된 발현 수준이

ATL1, ATP6V0D, C1ORF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 발현 수준을 TOX4의 발현 수준으로 정규화하여, ATL1, ATP6V0D, C1ORF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 제1의 정규화된 발현 수준을 얻는 단계;

ATL1, ATP6V0D, C1ORF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 발현 수준을 TPT1의 발현 수준으로 정규화하여, ATL1, ATP6V0D, C1ORF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 제2의 정규화된 발현 수준을 얻는 단계;

제1의 정규화된 발현 수준 및 제2의 정규화된 발현 수준을 평균하여 정규화된 발현 수준을 얻는 단계

에 의해 얻어지는 것인 방법.

청구항 17

제12항 내지 제16항 중 어느 한 항에 있어서,

(a) 90% 초과 감도; 또는

(b) 90% 초과 특이성

을 갖는 방법.

청구항 18

제12항 내지 제16항 중 어느 한 항에 있어서, RNA 바이오마커의 발현 수준은, 바이오마커와 표지된 프로브 또는 프라이머 사이에 복합체를 형성함으로써 검출되는 것인 방법.

청구항 19

제12항 내지 제16항 중 어느 한 항에 있어서, RNA 바이오마커는 역전사되어 cDNA를 생성하고, 생성된 cDNA 발현 수준이 검출되는 것인 방법.

청구항 20

제12항 내지 제16항 중 어느 한 항에 있어서, 시험 샘플이 혈액, 혈청, 혈장, 또는 신생물 조직인 방법.

청구항 21

제12항 내지 제16항 중 어느 한 항에 있어서, 소정의 컷오프 값이 신생물 질환이 없는 인간 대상체로부터 얻어진 복수의 기준 샘플에서 유래된 것인 방법.

청구항 22

제21항에 있어서, 각각의 기준 샘플이 혈액, 혈청, 혈장, 또는 비-신생물 조직인 방법.

청구항 23

제12항 내지 제16항 중 어느 한 항에 있어서, 알고리즘이 XGBoost(XGB), 랜덤 포레스트(RF), Lasso 및 Elastic-Net 정규화 일반화 선형 모델(glmnet), cforest, 분류 및 회귀 트리(CART), treebag, k-최근접 이웃(knn), 신경망(nnet), 방사형 서포트 벡터 머신(SVM-radial), 선형 서포트 벡터 머신(SVM-linear), 나이브 베이즈(NB), 다층 퍼셉트론(mlp) 또는 이들의 임의의 조합인 방법.

청구항 24

흑색종을 갖는 인간 대상체의 치료에 대한 반응을 결정하는 방법으로서,

제1 시점에서 인간 대상체로부터 제1 시험 샘플을 적어도 28개의 RNA 바이오마커의 발현을 검출하는데 특이적인 복수의 작용제와 접촉시킴으로써, 상기 제1 시험 샘플로부터 적어도 28개의 RNA 바이오마커의 제1 발현 수준을 결정하는 단계로서, 상기 28개의 RNA 바이오마커는 ATL1, ATP6V0D, C10RF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2를 포함하는 것인 단계;

제2 시점에서 인간 대상체로부터 제2 시험 샘플을 적어도 28개의 RNA 바이오마커의 발현을 검출하는데 특이적인 복수의 작용제와 접촉시킴으로써, 상기 제2 시험 샘플로부터 적어도 28개의 RNA 바이오마커의 제2 발현 수준을 결정하는 단계로서, 제2 시점이 제1 시점 이후이고 인간 대상체에 대한 치료의 실시 이후인 단계;

제1 발현 수준을 제2 발현 수준과 비교하는 단계; 및

제2 발현 수준이 제1 발현 수준에 비해 유의하게 감소된 경우 대상체가 치료에 반응하는 것으로 특징하는 단계를 포함하는, 흑색종을 갖는 인간 대상체의 치료에 대한 반응을 결정하는 방법.

청구항 25

제24항에 있어서, 제1 시점이 인간 대상체에 대한 치료의 실시 이전인 방법.

청구항 26

제24항에 있어서, 제1 시점이 인간 대상체에 대한 치료의 실시 이후인 방법.

청구항 27

제24항 내지 제26항 중 어느 한 항에 있어서, 치료가 면역 요법을 포함하는 것인 방법.

청구항 28

제24항 내지 제26항 중 어느 한 항에 있어서, 치료가 표적 요법을 포함하는 것인 방법.

청구항 29

제28항에 있어서, 표적 요법이 BRAF 저해제를 포함하는 것인 방법.

청구항 30

제24항 내지 제26항 중 어느 한 항에 있어서,

(a) 90% 초과와 감도; 또는

(b) 90% 초과와 특이성

을 갖는 방법.

청구항 31

제24항 내지 제26항 중 어느 한 항에 있어서, RNA 바이오마커의 발현 수준은, 바이오마커와 표지된 프로브 또는 프라이머 사이에 복합체를 형성함으로써 검출되는 것인 방법.

청구항 32

제24항 내지 제26항 중 어느 한 항에 있어서, RNA 바이오마커는 역전사되어 cDNA를 생성하고, 생성된 cDNA 발현 수준이 검출되는 것인 방법.

청구항 33

제24항 내지 제26항 중 어느 한 항에 있어서, 시험 샘플이 혈액, 혈청, 혈장, 또는 신생물 조직인 방법.

청구항 34

삭제

청구항 35

삭제

발명의 설명

기술 분야

[0001] 관련 출원들에 대한 상호 참조

[0002] 본 출원은 2017년 5월 25일에 출원된 미국 가출원 제62/511,058호의 이익 및 이에 대한 우선권을 주장하며, 그 내용은 인용에 의해 본원에 포함된다.

[0003] 서열 목록의 인용에 의한 포함

[0004] 2018년 5월 12일에 생성되었고 크기가 265 kB인 "LBIO-001_001WO SEQ LISTING.txt"로 명명된 텍스트 파일의 내용은 그 전문이 인용에 의해 본원에 포함된다.

[0005] 발명의 분야

[0006] 본 발명은 흑색종 검출에 관한 것이다.

배경 기술

[0007] 흑색종은 발병률이 계속 증가하는 흔하고 (~ 24-35/100,000 발병률 - 미국), 매우 공격적인 피부암이다. 가장 흔한 피부 흑색종은 UV 노출 및 면역 조절장애와 관련이 있다. 한 그룹으로서, 흑색종은 가장 높은 돌연변이 부담(> 10 돌연변이/Mb)을 갖는 것으로 알려져 있다. 주요 돌연변이는 BRAF(~ 50%), N-Ras(~ 20%) 및 NF-1(~ 5%)을 포함하며, 이는 함께 모든 돌연변이의 75%를 구성한다. 흑색종은 종양이 이러한 경로에서 단백질을 코딩하는 유전자에서 돌연변이를 나타내는 지 여부에 관계없이 MAPK 경로 활성화에 증폭되어 있다. 이는 이 종양에서

표적 요법, 예를 들어 BRAF v600E 작용제에 대한 이론적 근거를 제공한다. 예를 들어, RASopathy 유전자 및 사이클린 D1/cdk4의 증폭 및/또는 종양 억제자 PTEN의 돌연변이/손실에서의 다른 기능 획득 및 기능 상실 돌연변이가 또한 종양의 특징을 나타낸다. 이것은 흑색종을 가장 공격적이고 치료에 내성인 암 중 하나로 만든다.

[0008] 5년 생존율은 단계 I의 경우 95-100%, 단계 II의 경우 65-93%, 단계 III 및 IV의 경우 각각 41-71% 및 9-28%의 범위이다. 수술, 면역 요법 및 표적 요법은 화학 요법과 방사선을 보조제로 사용하여 관리의 기초를 제공한다. 그러나, 수술은 흑색종 관리(진단, 치유 및 완화)에서 결정적인 역할을 한다.センチ넬 림프절 생검은 예후 정보를 제공하기 때문에 널리 보급되어 있다. 그러나, 흑색종은 예측 또는 예후 정보를 제공함으로써 환자 관리를 가이드하는데 도움이 되기 위한 임상적으로 유용한 비침습적인, 예를 들어 질병 활성의 혈액 기반 바이오마커가 부족하다.

[0009] 혈액 기반 인자는 락테이트 탈수소효소(LDH), 순환 종양(ct) DNA에서의 돌연변이 검출, 순환 종양 세포(CTC) 및 순환 mRNA의 측정을 포함한다. LDH가 공격적인 종양 행동을 특징하고 재발을 예측하는데 일반적으로 사용되지만 그 측정기준(metrics)은 예를 들어 30-50%의 정확도로 매우 낮다. 이는 또한 흑색종에 비특이적이다. BRAF와 같은 표적 유전자의 돌연변이가 혈중 ctDNA에서 검출될 수 있지만, 치료 효능의 지표로서의 그 유용성은 예를 들어 45-70% 정확도로 제한된다. CTC는 흑색종에서 정확한 마커인 것으로 보이지 않으며 임상적 유용성에 대한 합의가 없다. 순환 microNA(miRNA)가 검출되었지만 아직 임상적으로 유용하다는 증거는 없다.

[0010] 흑색종의 경우, 질병 재발에 대한 진단 또는 예후로서 기능하는 다중-mRNA 순환 바이오마커가 없다. 흑색종에서 수술 또는 약물 요법의 효능을 모니터링하는데 사용될 수 있는 바이오마커는 현재 부족하다.

발명의 내용

[0011] 다른 것들 중에서도, 흑색종을 위한 28-유전자 발현 톨이 본원에 개시되어 있다. 이것은 흑색종의 검출에 대한 높은 감도 및 특이성(> 95%)을 가지며, 공격적인 비치료 질환을 안정되고 치료된 질환과 구별할 수 있다.

[0012] 본 개시의 일 양태는 하기 단계를 포함하는, 흑색종의 검출이 필요한 대상체에서 흑색종을 검출하는 방법에 관한 것이다: (1) 대상체로부터의 시험 샘플을 적어도 29개의 바이오마커의 발현을 검출하는데 특이적인 복수의 작용제와 접촉시킴으로써, 상기 시험 샘플로부터 적어도 29개의 바이오마커의 발현 수준을 결정하는 단계로서, 적어도 29개의 바이오마커는 ATL1, ATP6VOD, C10RF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, YY2, 및 적어도 하나의 하우스키핑 유전자를 포함하는 것인 단계; (2) ATL1, ATP6VOD, C10RF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 발현 수준을 적어도 하나의 하우스키핑 유전자의 발현 수준으로 정규화하여, ATL1, ATP6VOD, C10RF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 정규화된 발현 수준을 얻는 단계; (3) 각각의 정규화된 발현 수준을 알고리즘에 입력하여 스코어를 생성하는 단계; (4) 스코어를 제1의 소정의 컷오프 값과 비교하는 단계; 및 (5) 리포트를 생성하는 단계로서, 리포트는, 스코어가 제1의 소정의 컷오프 값 이상인 경우 대상체에서 흑색종의 존재를 특정하거나 또는 스코어가 제1의 소정의 컷오프 값 미만인 경우 대상체에서 흑색종의 부존재를 특정하며, 제1의 소정의 컷오프 값은 0 내지 100의 스케일에서 20인 단계.

[0013] 일부 실시양태에서, 상기 방법은 흑색종을 갖는 것으로 확인된 대상체를 수술 또는 약물 요법으로 치료하는 단계를 더 포함한다.

[0014] 본 개시의 또 다른 양태는 하기 단계를 포함하는, 대상체의 흑색종이 안정적인지 또는 진행성인지를 결정하는 방법에 관한 것이다: (1) 대상체로부터의 시험 샘플을 적어도 29개의 바이오마커의 발현을 검출하는데 특이적인 복수의 작용제와 접촉시킴으로써, 상기 시험 샘플로부터 적어도 29개의 바이오마커의 발현 수준을 결정하는 단계로서, 적어도 29개의 바이오마커가 ATL1, ATP6VOD, C10RF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, YY2, 및 적어도 하나의 하우스키핑 유전자를 포함하는 것인 단계; (2) ATL1, ATP6VOD, C10RF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 발현 수준을 적어도 하나의 하우스키핑 유전자의 발

현 수준으로 정규화하여, ATL1, ATP6V0D, C10RF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 정규화된 발현 수준을 얻는 단계; (3) 각각의 정규화된 발현 수준을 알고리즘에 입력하여 스코어를 생성하는 단계; (4) 스코어를 제2의 소정의 컷오프 값과 비교하는 단계; 및 (5) 리포트를 생성하는 단계로서, 리포트는, 정규화된 발현 수준이 제2의 소정의 컷오프 값 이상인 경우 흑색종이 진행성인 것으로 특정하거나 또는 정규화된 발현 수준이 제2의 소정의 컷오프 값 미만인 경우 흑색종이 안정적인 것으로 특정하며, 제2의 소정의 컷오프 값은 0 내지 100의 스케일에서 50인 단계.

[0015] 본 개시의 또 다른 양태는 하기 단계를 포함하는, 흑색종을 갖는 대상체에서 외과적 절제의 정도를 평가하는 방법에 관한 것이다: (1) 외과적 절제 후의 대상체로부터의 시험 샘플을 적어도 29개의 바이오마커의 발현을 검출하는데 특이적인 복수의 작용제와 접촉시킴으로써, 상기 시험 샘플로부터 적어도 29개의 바이오마커의 발현 수준을 결정하는 단계로서, 적어도 29개의 바이오마커가 ATL1, ATP6V0D, C10RF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, YY2, 및 적어도 하나의 하우스키핑 유전자를 포함하는 것인 단계; (2) ATL1, ATP6V0D, C10RF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 발현 수준을 적어도 하나의 하우스키핑 유전자의 발현 수준으로 정규화하여, ATL1, ATP6V0D, C10RF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 정규화된 발현 수준을 얻는 단계; (3) 각각의 정규화된 발현 수준을 알고리즘에 입력하여 스코어를 생성하는 단계; (4) 스코어를 제3의 소정의 컷오프 값과 비교하는 단계; 및 (5) 리포트를 생성하는 단계로서, 리포트는, 정규화된 발현 수준이 제3의 소정의 컷오프 값 이상인 경우 외과적 절제가 흑색종 전체를 제거하지 않은 것으로 특정하거나, 또는 정규화된 발현 수준이 제3의 소정의 컷오프 값 미만인 경우 외과적 절제가 흑색종 전체를 제거한 것으로 특정하며, 제3의 소정의 컷오프 값은 0 내지 100의 스케일에서 20인 단계.

[0016] 일부 실시양태에서, 리포트는 추가적으로, 정규화된 발현 수준이 제3의 소정의 컷오프 값 이상인 경우 흑색종의 재발의 위험이 높은 것으로 특정하거나 또는 정규화된 발현 수준이 제3의 소정의 컷오프 값 미만인 경우 흑색종의 재발의 위험이 낮은 것으로 특정한다.

[0017] 본 개시의 또 다른 양태는 하기 단계를 포함하는, 치료에 대한 흑색종을 갖는 대상체에 의한 반응을 결정하는 방법에 관한 것이다: (1) 제1 시점에서, 대상체로부터의 제1 시험 샘플을 적어도 28개의 바이오마커의 발현을 검출하는데 특이적인 복수의 작용제와 접촉시킴으로써, 상기 제1 시험 샘플로부터 적어도 28개의 바이오마커의 제1 발현 수준을 결정하는 단계로서, 상기 28개의 바이오마커는 ATL1, ATP6V0D, C10RF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2를 포함하는 것인 단계; (2) 제2 시점에서, 대상체로부터의 제2 시험 샘플을 적어도 28개의 바이오마커의 발현을 검출하는데 특이적인 복수의 작용제와 접촉시킴으로써, 상기 제2 시험 샘플로부터 적어도 28개의 바이오마커의 제2 발현 수준을 결정하는 단계로서, 제2 시점이 제1 시점 이후이고 대상체에 대한 치료의 실시 이후인 단계; (3) 제1 발현 수준을 제2 발현 수준과 비교하는 단계; 및 (4) 리포트를 생성하는 단계로서, 리포트는, 제2 발현 수준이 제1 발현 수준에 비해 유의하게 감소되는 경우 대상체가 치료에 반응하는 것으로 특정하는 것인 단계.

[0018] 일부 실시양태에서, 제1 시점은 대상체에 대한 치료의 실시 이전이다. 일부 실시양태에서, 제1 시점은 대상체에 대한 치료의 실시 이후이다. 일부 실시양태에서, 치료는 면역 요법 또는 표적 요법(예를 들어, BRAF 저해제)을 포함한다.

[0019] 일부 실시양태에서, 적어도 하나의 하우스키핑 유전자는 ALG9, SEPN, YWHAQ, VPS37A, PRRC2B, DOPEY2, NDUFB11, ND4, MRPL19, PSMC4, SF3A1, PUM1, ACTB, GAPD, GUSB, RPLP0, TFRC, MORF4L1, 18S, PPIA, PGK1, RPL13A, B2M, YWHAZ, SDHA, HPRT1, TOX4, 및 TPT1로 이루어진 군에서 선택된다.

[0020] 일부 실시양태에서, 적어도 하나의 하우스키핑 유전자는 TOX4 및 TPT1을 포함한다.

[0021] 일부 실시양태에서, 정규화된 발현 수준은 (1) ATL1, ATP6V0D, C10RF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 발현 수준을 TOX4의 발현

수준으로 정규화하여, ATL1, ATP6V0D, C10RF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 제1의 정규화된 발현 수준을 얻는 단계; (2) ATL1, ATP6V0D, C10RF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 발현 수준을 TPT1의 발현 수준으로 정규화하여, ATL1, ATP6V0D, C10RF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 제2의 정규화된 발현 수준을 얻는 단계; 및 (3) 제1의 정규화된 발현 수준 및 제2의 정규화된 발현 수준을 평균하여 정규화된 발현 수준을 얻는 단계에 의해 얻어진다.

[0022] 일부 실시양태에서, 상기 방법은 적어도 75%, 80%, 85%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 또는 99%의 특이성, 감도, 및/또는 정확도를 가질 수 있다. 일부 실시양태에서, 상기 방법은 90% 초과 감도를 갖는다. 일부 실시양태에서, 상기 방법은 90% 초과 특이성을 갖는다.

[0023] 일부 실시양태에서, 바이오마커는 RNA, cDNA, 또는 단백질이다. 바이오마커가 RNA인 경우, RNA는 역전사되어 cDNA를 생성할 수 있고, 생성된 cDNA 발현 수준이 검출된다. 일부 실시양태에서, 바이오마커의 발현 수준은 바이오마커와 표지된 프로브 또는 프라이머 사이에 복합체를 형성함으로써 검출된다. 바이오마커가 RNA 또는 cDNA인 경우, RNA 또는 cDNA는 RNA 또는 cDNA와 표지된 핵산 프로브 또는 프라이머 사이에 복합체를 형성함으로써 검출될 수 있다. 바이오마커가 단백질인 경우, 단백질은 단백질과 표지된 항체 사이에 복합체를 형성함으로써 검출될 수 있다. 일부 실시양태에서, 표지는 형광 표지이다.

[0024] 일부 실시양태에서, 시험 샘플은 혈액, 혈청, 혈장, 또는 신생물 조직이다.

[0025] 일부 실시양태에서, 제1의 소정의 컷오프 값은 신생물 질환이 없는 대상체로부터 얻어진 복수의 기준 샘플에서 유래할 수 있다. 제2의 소정의 컷오프 값은 흑색종이 면역 요법과 같은 치료에 의해 적절히 제어되는 대상체로부터 얻어진 복수의 기준 샘플로부터 유래할 수 있다. 제3의 소정의 컷오프 값은 흑색종이 수술에 의해 완전히 제거되어졌고 "질환이 없는" 것으로 간주된 대상체로부터 얻어진 복수의 기준 샘플에서 유래할 수 있다. 일부 실시양태에서, 각각의 기준 샘플은 혈액, 혈청, 혈장, 또는 비-신생물 조직일 수 있다.

[0026] 일부 실시양태에서, 대상체는 흑색종이 있는 것으로 진단된 대상체, 적어도 하나의 흑색종 증상을 가진 대상체, 또는 흑색종 발병에 대한 소인 또는 가족력을 가진 대상체이다. 일부 실시양태에서, 대상체는 인간이다.

[0027] 일부 실시양태에서, 알고리즘은 XGB, RF, glmnet, cforest, CART, treebag, knn, nnet, SVM-radial, SVM-linear, NB, NNET, 또는 mlp이다.

도면의 간단한 설명

[0028] 도 1은 임상 사진에 대한 3개의 기여자의 시스템 - 컨트롤(대조군), 반응형 및 진행형으로서 흑색종 스코어의 시각화를 보여주는 그래프이다. 각 코너를 향한 샘플은 각 임상 그룹의 순수한 표현을 나타낸다. 중간에 있는 샘플은 알고리즘 및 임상적 불확실성 영역에 있다.

도 2는 87 내지 100% 범위의 테스트 세트에서 테스트에 대한 측정기준을 나타내는 그래프이다.

도 3a-3c는 테스트 세트 2에서 순환 흑색종 유전자 테스트(Melanomx)의 평가를 보여주는 일련의 그래프이다. 값은 컨트롤에서보다 흑색종 샘플에서 유의하게 높았다 (도 3a). 치료에 반응하는 환자는 컨트롤과 유사한 값을 가졌다. 흑색종을 컨트롤과 구별하기 위한 AUC를 특징하는 테스트 세트 2의 수신자 오퍼레이터 곡선 분석은 >0.95였다 (도 3b). 테스트에 대한 측정기준은 78-92%의 범위였다 (도 3c).

도 4a-4b는 Melanomx에 대한 수술의 효과를 보여주는 일련의 그래프이다. 수준은 수술에 의해 유의하게 감소되었다 ($p < 0.0001$) (도 4a). NED(수술 후 질환의 증거가 없음) 그룹의 값은 수술 후 잔류 질환을 갖는 그룹의 값보다 유의하게 낮았다 ($p = 0.0007$) (도 4b).

도 5는 Melanomx 스코어에 대한 치료의 효과를 보여주는 그래프이다. 수준은 면역 요법(이필리무맙) 또는 BRAF 저해제(베무라페닙)에 의해 유의하게 감소되었다.

도 6a-6b는 3가지 상이한 흑색종 세포주에서 Melanomx 스코어를 보여주는 일련의 그래프이다. 도 6a는 세포주가 상승된 발현을 나타내는 것을 보여준다 - Melanomx 스코어는 40(A375) 내지 95(Hs294) 범위임. 도 6b는 흑색종

을 갖지 않은 대상체로부터의 혈액 중으로 이들 세포의 스파이킹이 검출 가능한 유전자 발현 및 스코어를 초래했음을 보여준다. 최소 1 세포/ml의 혈액이 일관되게 식별될 수 있었다.

도 7a-7b는 종양 조직에서의 발현 및 동시에 수집된 혈액 샘플과의 상관성을 나타내는 일련의 그래프이다. 도 7a에서, Melanomx 스코어는 흑색종 종양 조직에서 40-97의 범위였다. 이에 반해, 정상 상피는 <20의 값을 나타냈다. 도 7b에서는, 종양 조직에서의 유전자 발현이 매칭된 혈액 샘플과 비교된다. 이것은 고도로 일치한다(상관 ~0.80).

발명을 실시하기 위한 구체적인 내용

- [0029] 본 발명의 세부 사항은 아래의 수반되는 설명에서 제시된다. 본 명세서에 기재된 것과 유사하거나 동등한 방법 및 재료가 본 발명의 실시 또는 시험에 사용될 수 있지만, 예시적인 방법 및 재료가 여기서 설명된다. 본 발명의 다른 특징, 목적 및 이점은 상세한 설명 및 청구범위로부터 명백할 것이다. 명세서 및 첨부된 청구범위에서, 단수의 형태는 문맥상 명백하게 다르게 나타내지 않는 한 복수를 포함한다. 달리 정의되지 않는 한, 본원에 사용된 모든 기술 및 과학 용어는 본 발명이 속하는 기술 분야의 통상의 기술자에 의해 일반적으로 이해되는 것과 동일한 의미를 갖는다. 본 명세서에 인용된 모든 특허 및 공보는 그 전문이 인용에 의해 본원에 포함된다.
- [0030] 흑색종의 초기 징후는 기존의 기태(moles)의 형태 또는 색의 변화, 또는 결절성 흑색종의 경우, 피부의 어느 곳에서나 새로운 덩어리의 출현을 포함한다. 후기 단계에서, 기태는 가렵거나, 껍질이 나가거나 피가 날 수 있다. 가시적인 검사가 가장 흔한 진단 기법이다. 흑색종은 하기 유형으로 나뉘질 수 있다: 악성 흑색점, 악성 흑색점 흑색종, 표재 확산 흑색종, 말단 흑자 흑색종, 점막 흑색종, 결절성 흑색종, 폴립형 흑색종, 및 섬유조직형성 흑색종.
- [0031] 순환 흑색종 전사체의 측정 - Melanomx - 은 흑색종을 식별하고 Melanomx 스코어의 감소는 면역 요법 및 표적 요법과 같은 치료적 중재의 효능과 상관관계가 있다. RNA의 표적화된 유전자 발현 프로파일은 흑색종 환자의 말초 혈액으로부터 단리될 수 있다. 이 발현 프로파일은 알고리즘에서 평가되어 출력(예측)으로 변환된다. 이것은 표준 임상 평가 및 영상화와 함께 활성 질환을 식별하거나 치료 반응의 평가를 제공하거나 재발 위험을 예측할 수 있다.
- [0032] 일 양태에서, 본 개시는 하기 단계를 포함하는, 흑색종의 검출이 필요한 대상체에서 흑색종을 검출하는 방법을 제공한다: (1) 대상체로부터의 시험 샘플을 적어도 29개의 바이오마커의 발현을 검출하는데 특이적인 복수의 작용제와 접촉시킴으로써, 상기 시험 샘플로부터 적어도 29개의 바이오마커의 발현 수준을 결정하는 단계로서, 적어도 29개의 바이오마커는 ATL1, ATP6V0D, C10RF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, YY2, 및 적어도 하나의 하우스키핑 유전자를 포함하는 것인 단계; (2) ATL1, ATP6V0D, C10RF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 발현 수준을 적어도 하나의 하우스키핑 유전자의 발현 수준으로 정규화하여, ATL1, ATP6V0D, C10RF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 정규화된 발현 수준을 얻는 단계; (3) 각각의 정규화된 발현 수준을 알고리즘에 입력하여 스코어를 생성하는 단계; (4) 스코어를 제1의 소정의 컷오프 값과 비교하는 단계; 및 (5) 리포트를 생성하는 단계로서, 리포트는, 스코어가 제1의 소정의 컷오프 값 이상인 경우 대상체에서 흑색종의 존재를 특정하거나 또는 스코어가 제1의 소정의 컷오프 값 미만인 경우 대상체에서 흑색종의 부존재를 특정하며, 제1의 소정의 컷오프 값은 0 내지 100의 스케일에서 20인 단계.
- [0033] 일부 실시양태에서, 적어도 하나의 하우스키핑 유전자는 ALG9, SEPN, YWHAQ, VPS37A, PRRC2B, DOPEY2, NDUFB11, ND4, MRPL19, PSMC4, SF3A1, PUM1, ACTB, GAPD, GUSB, RPLP0, TFRC, MORF4L1, 18S, PPIA, PGK1, RPL13A, B2M, YWHAZ, SDHA, HPRT1, TOX4, 및 TPT1로 이루어진 군에서 선택된다.
- [0034] 일부 실시양태에서, 적어도 하나의 하우스키핑 유전자는 TOX4 및 TPT1을 포함한다. 일부 실시양태에서, 정규화된 발현 수준은 (1) ATL1, ATP6V0D, C10RF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 발현 수준을 TOX4의 발현 수준으로 정규화하여,

ATL1, ATP6V0D, C10RF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 제1의 정규화된 발현 수준을 얻는 단계; (2) ATL1, ATP6V0D, C10RF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 발현 수준을 TPT1의 발현 수준으로 정규화하여, ATL1, ATP6V0D, C10RF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 제2의 정규화된 발현 수준을 얻는 단계; 및 (3) 제1의 정규화된 발현 수준 및 제2의 정규화된 발현 수준을 평균하여 정규화된 발현 수준을 얻는 단계에 의해 얻어진다.

- [0035] 제공된 방법들 중에서 흑색종을 분류하거나 검출할 수 있는 방법이 있다. 일부 실시양태에서, 제공된 방법들은 인간 혈액 샘플에서 흑색종을 식별하거나 분류할 수 있다. 일부 예에서, 상기 방법들은 그러한 정보를 적어도 75%, 80%, 85%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 또는 99%의 특이성, 감도, 및/또는 정확도로 제공할 수 있다.
- [0036] 작용제는 바이오마커의 검출을 위한 임의의 작용제일 수 있으며, 전형적으로는 단리된 폴리뉴클레오티드 또는 단리된 폴리펩티드 또는 단백질, 예컨대 항체, 예를 들어, 적어도 29개의 바이오마커에 특이적으로 혼성화하거나 결합하는 것들이다.
- [0037] 바이오마커는 RNA, cDNA, 또는 단백질일 수 있다. 바이오마커가 RNA인 경우, RNA는 역전사되어 (예컨대 RT-PCR에 의해) cDNA를 생성할 수 있고, 생성된 cDNA 발현 수준이 검출된다. 바이오마커의 발현 수준은 바이오마커와 표지된 프로브 또는 프라이머 사이에 복합체를 형성함으로써 검출될 수 있다. 바이오마커가 RNA 또는 cDNA인 경우, RNA 또는 cDNA는 RNA 또는 cDNA와 표지된 핵산 프로브 또는 프라이머 사이에 복합체를 형성함으로써 검출될 수 있다. RNA 또는 cDNA와 표지된 핵산 프로브 또는 프라이머 사이의 복합체는 혼성화 복합체일 수 있다.
- [0038] 바이오마커가 단백질인 경우, 단백질은 단백질과 표지된 항체 사이에 복합체를 형성함으로써 검출될 수 있다. 표지는 임의의 표지, 예를 들어 형광 표지, 화학발광 표지, 방사성 표지, 등일 수 있다. 단백질 수준은 유전자에 의해 코딩된 단백질을 특이적으로 검출하는 작용제, 예를 들어, 항체를 사용하는 면역침강, ELISA, 웨스턴 블롯 분석, 또는 면역조직화학(이에 한정되지 않음)을 포함한 방법에 의해 측정될 수 있다.
- [0039] 일부 실시양태에서, 상기 방법들은 시험 샘플을 제공된 작용제 중 하나와, 보다 전형적으로는 복수의 제공된 작용제와, 예를 들어, 적어도 29개의 바이오마커에 특이적으로 결합하는 폴리뉴클레오티드의 세트와 접촉시킴으로써 수행된다. 일부 실시양태에서, 상기 폴리뉴클레오티드의 세트는 DNA, RNA, cDNA, PNA, 게놈 DNA, 또는 합성 올리고뉴클레오티드를 포함한다. 일부 실시양태에서, 상기 방법들은 검출 이전에 예컨대 RT-PCR, 예를 들어, QPCR에 의해 시험 샘플로부터 RNA를 단리하는 단계를 포함한다. 이에, 일부 실시양태에서, 흑색종 바이오마커, 예컨대 이의 발현 수준의 검출은 RNA의 존재, 부존재, 또는 양을 검출하는 것을 포함한다. 한 예에서, RNA는 PCR 또는 혼성화에 의해 검출된다.
- [0040] 일부 실시양태에서, 폴리뉴클레오티드는 센스 및 안티센스 프라이머, 예컨대 적어도 29개의 바이오마커의 각각에 특이적인 프라이머의 쌍을 포함한다. 이 실시양태의 한 양태에서, 적어도 29개의 바이오마커의 검출은 PCR, 전형적으로 정량적 또는 실시간 PCR에 의해 수행된다. 예를 들어, 한 양태에서, 검출은 역전사에 의해 시험 샘플로부터 cDNA를 생성한 다음; 적어도 28개의 바이오마커의 패널에 특이적으로 혼성화하는 센스 및 안티센스 프라이머의 쌍을 이용하여 cDNA를 증폭시키고, 증폭 생성물을 검출함으로써 수행된다.
- [0041] 시험 샘플은 대상체로부터 얻어진 임의의 생물학적 유체일 수 있다. 바람직하게는, 시험 샘플은 혈액, 혈청, 혈장 또는 신생물 조직이다.
- [0042] 제1의 소정의 컷오프 값은 신생물 질환이 없는 대상체로부터 얻어진 복수의 기준 샘플에서 유래할 수 있다. 각 기준 샘플은 신생물 질환을 갖거나, 이의 증상을 보이거나, 또는 상기 질환을 갖는 것으로 진단되지 않은 대상체로부터 얻어진 임의의 생물학적 유체일 수 있다. 일부 실시양태에서, 기준 샘플은 혈액, 혈청, 혈장, 또는 비-신생물 조직이다.
- [0043] 상기 대상체는 흑색종이 있는 것으로 진단된 대상체, 적어도 하나의 흑색종 증상을 가진 대상체 또는 흑색종 발병에 대한 소인 또는 가족력을 가진 대상체일 수 있다. 대상체는 임의의 포유동물일 수 있다. 바람직하게는, 대상체는 인간이다. 용어 "대상체" 및 "환자"는 본원에서 상호교환적으로 사용된다.

- [0044] 스코어는 Melanomx 스코어이며, 0 내지 100의 스케일을 갖는다. Melanomx 스코어는 예측 분류 알고리즘, 예를 들어, XGB, RF, glmnet, cforest, CART, treebag, knn, nnet, SVM-radial, SVM-linear, NB, NNET, 또는 mlp로부터 구축된 분류자의 프리덕트이다. 알고리즘은 데이터(즉, 발현 수준)를 분석한 다음 스코어를 할당한다.
- [0045] 상기 방법은 흑색종을 갖는 것으로 확인된 대상체를 수술, 약물 요법, 방사선 요법, 또는 이들을 조합하여 치료하는 단계를 더 포함할 수 있다. 약물 요법은 면역 요법, 표적 요법, 화학 요법, 또는 이들의 조합일 수 있다. 일부 실시양태에서, 약물 요법은 면역 요법을 포함한다. 흑색종 치료를 위한 면역 요법의 예는 임리직(Imlygic)(T-VEC), 옴디보(Opdivo)와 병용되는 여보이(Yervoy), 옴디보(니볼루맵), 키트루다(Keytruda)(펩브롤리주맵), 여보이(이필리루맵), 인터류킨-2(IL-2), 및 인터페론 알파 2-b를 포함하지만 이에 한정되지 않는다. 일부 실시양태에서, 약물 요법은 표적 요법 예컨대 BRAF 저해제를 포함한다. 흑색종 치료를 위한 표적 요법의 예는 코텔릭(Cotellic)(코비메티닙)과 병용되는 젤보라프(Zelboraf), 맥키니스트(Mekinist)와 병용되는 타핀라(Tafinlar), 타핀라(다브라페닙), 맥키니스트(트라메티닙), 및 젤보라프(베무라페닙)를 포함하지만 이에 한정되지 않는다. 일부 실시양태에서, 약물 요법은 화학 요법을 포함한다. 일부 실시양태에서, 화학 요법은 다카바진을 포함한다.
- [0046] 본 개시는 또한 하기 단계를 포함하는, 대상체의 흑색종이 안정적인지 또는 진행성인지를 결정하는 방법을 제공한다: (1) 대상체로부터의 시험 샘플을 적어도 29개의 바이오마커의 발현을 검출하는데 특이적인 복수의 작용제와 접촉시킴으로써, 상기 시험 샘플로부터 적어도 29개의 바이오마커의 발현 수준을 결정하는 단계로서, 적어도 29개의 바이오마커가 ATL1, ATP6VOD, C1ORF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, YY2, 및 적어도 하나의 하우스키핑 유전자를 포함하는 것인 단계; (2) ATL1, ATP6VOD, C1ORF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 발현 수준을 적어도 하나의 하우스키핑 유전자의 발현 수준으로 정규화하여, ATL1, ATP6VOD, C1ORF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 정규화된 발현 수준을 얻는 단계; (3) 각각의 정규화된 발현 수준을 알고리즘에 입력하여 스코어를 생성하는 단계; (4) 스코어를 제2의 소정의 컷오프 값과 비교하는 단계; 및 (5) 리포트를 생성하는 단계로서, 리포트는, 정규화된 발현 수준이 제2의 소정의 컷오프 값 이상인 경우 흑색종이 진행성인 것으로 특정하거나 또는 정규화된 발현 수준이 제2의 소정의 컷오프 값 미만인 경우 흑색종이 안정적인 것으로 특정하며, 제2의 소정의 컷오프 값은 0 내지 100의 스케일에서 50인 단계.
- [0047] 제2의 소정의 컷오프 값은 흑색종이 면역 요법과 같은 치료에 의해 적절히 제어되는 대상체로부터 얻어진 복수의 기준 샘플에서 유래할 수 있다.
- [0048] 외과적 절제는 필요한 대상체로부터 흑색종 조직을 제거하는 절차이다. 본 개시는 또한 하기 단계를 포함하는, 흑색종을 갖는 대상체에서 외과적 절제의 정도를 평가하는 방법을 제공한다: (1) 외과적 절제 후의 대상체로부터의 시험 샘플을 적어도 29개의 바이오마커의 발현을 검출하는데 특이적인 복수의 작용제와 접촉시킴으로써, 상기 시험 샘플로부터 적어도 29개의 바이오마커의 발현 수준을 결정하는 단계로서, 적어도 29개의 바이오마커가 ATL1, ATP6VOD, C1ORF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, YY2, 및 적어도 하나의 하우스키핑 유전자를 포함하는 것인 단계; (2) ATL1, ATP6VOD, C1ORF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 발현 수준을 적어도 하나의 하우스키핑 유전자의 발현 수준으로 정규화하여, ATL1, ATP6VOD, C1ORF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 정규화된 발현 수준을 얻는 단계; (3) 각각의 정규화된 발현 수준을 알고리즘에 입력하여 스코어를 생성하는 단계; (4) 스코어를 제3의 소정의 컷오프 값과 비교하는 단계; 및 (5) 리포트를 생성하는 단계로서, 리포트는, 정규화된 발현 수준이 제3의 소정의 컷오프 값 이상인 경우 외과적 절제가 흑색종 전체를 제거하지 않은 것으로 특정하거나, 또는 정규화된 발현 수준이 제3의 소정의 컷오프 값 미만인 경우 외과적 절제가 흑색종 전체를 제거한 것으로 특정하며, 제3의 소정의 컷오프 값은 0 내지 100의 스케일에서 20인 단계.

- [0049] 제3의 소정의 컷오프 값은 흑색종 질환이 수술에 의해 완전히 제거되어져 "질환이 없는" 것으로 간주되는 대상체로부터 얻어진 복수의 기준 샘플에서 유래할 수 있다.
- [0050] 외과적 절제가 흑색종 전체를 제거하지 못한 것으로 결정되는 경우, 대상체는 흑색종의 재발의 위험에 있다. 따라서, 일부 실시양태에서, 리포트는 추가적으로, 정규화된 발현 수준이 제3의 소정의 컷오프 값 이상인 경우 흑색종의 재발의 위험이 높은 것으로 특정하거나 또는 정규화된 발현 수준이 제3의 소정의 컷오프 값 미만인 경우 흑색종의 재발의 위험이 낮은 것으로 특정한다.
- [0051] 본 개시는 또한 하기 단계를 포함하는, 치료에 대한 흑색종을 갖는 대상체에 의한 반응을 결정하는 방법을 제공한다: (1) 제1 시점에서, 대상체로부터의 제1 시험 샘플을 적어도 28개의 바이오마커의 발현을 검출하는데 특이적인 복수의 작용제와 접촉시킴으로써, 상기 제1 시험 샘플로부터 적어도 28개의 바이오마커의 제1 발현 수준을 결정하는 단계로서, 상기 28개의 바이오마커는 ATL1, ATP6V0D, C10RF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2를 포함하는 것인 단계; (2) 제2 시점에서, 대상체로부터의 제2 시험 샘플을 적어도 28개의 바이오마커의 발현을 검출하는데 특이적인 복수의 작용제와 접촉시킴으로써, 상기 제2 시험 샘플로부터 적어도 28개의 바이오마커의 제2 발현 수준을 결정하는 단계로서, 제2 시점이 제1 시점 이후이고 대상체에 대한 치료의 실시 이후인 단계; (3) 제1 발현 수준을 제2 발현 수준과 비교하는 단계; 및 (4) 제2 발현 수준이 제1 발현 수준에 비해 유의하게 감소되는 경우 대상체가 치료에 반응하는 것으로 결정하는 단계.
- [0052] 일부 실시양태에서, 상기 방법들은 흑색종 치료, 예컨대 외과적 개입 또는 약물 요법(예를 들어, 면역 요법 또는 표적 요법)에 대한 치료의 반응성을 예측할 수 있거나, 상기 치료 후 환자가 임상적으로 안정해졌는지 또는 상기 치료에 반응성인지 비반응성인지를 확인할 수 있다. 일부 경우에, 상기 방법들은 적어도 75%, 80%, 85%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 또는 99%의 특이성, 감도, 및/또는 정확도로 이를 행할 수 있다. 일부 경우에는, 적어도 75%, 80%, 85%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 또는 99%의 특이성, 감도, 및/또는 정확도로 치료된 흑색종과 비치료된 흑색종 사이를 구분할 수 있다.
- [0053] 일부 실시양태에서, 제1 및 제2 시험 샘플은 동일한 유형일 수 있다. 일부 실시양태에서, 제1 및 제2 시험 샘플은 다른 유형일 수 있다.
- [0054] 일부 실시양태에서, 치료는 약물 요법일 수 있다. 약물 요법은 면역 요법, 표적 요법, 화학 요법, 또는 이들의 조합일 수 있다. 일부 실시양태에서, 치료는 방사선 요법일 수 있다.
- [0055] 일부 실시양태에서, 제1 시점은 대상체에 대한 치료의 실시 이전이다. 일부 실시양태에서, 제1 시점은 대상체에 대한 치료의 실시 이후이다. 제2 시점은 제1 시점 후 수일, 수주, 또는 수개월일 수 있다. 예를 들어, 제2 시점은 제1 시점 후 적어도 1일, 적어도 7일, 적어도 14일, 적어도 30일, 적어도 60일, 또는 적어도 90일일 수 있다.
- [0056] 일부 실시양태에서, 제2 발현 수준이 제1 발현 수준보다 적어도 10% 더 낮은 경우에 제2 발현 수준은 제1 발현 수준에 비해 유의하게 감소된다. 일부 실시양태에서는, 제2 발현 수준이 제1 발현 수준보다 적어도 20% 더 낮은 경우에 제2 발현 수준은 제1 발현 수준에 비해 유의하게 감소된다. 일부 실시양태에서는, 제2 발현 수준이 제1 발현 수준보다 적어도 30% 더 낮은 경우에 제2 발현 수준은 제1 발현 수준에 비해 유의하게 감소된다. 일부 실시양태에서는, 제2 발현 수준이 제1 발현 수준보다 적어도 40% 더 낮은 경우에 제2 발현 수준은 제1 발현 수준에 비해 유의하게 감소된다. 일부 실시양태에서는, 제2 발현 수준이 제1 발현 수준보다 적어도 50% 더 낮은 경우에 제2 발현 수준은 제1 발현 수준에 비해 유의하게 감소된다. 일부 실시양태에서는, 제2 발현 수준이 제1 발현 수준보다 적어도 60% 더 낮은 경우에 제2 발현 수준은 제1 발현 수준에 비해 유의하게 감소된다. 일부 실시양태에서는, 제2 발현 수준이 제1 발현 수준보다 적어도 70% 더 낮은 경우에 제2 발현 수준은 제1 발현 수준에 비해 유의하게 감소된다. 일부 실시양태에서, 제2 발현 수준이 제1 발현 수준보다 적어도 80% 더 낮은 경우에 제2 발현 수준은 제1 발현 수준에 비해 유의하게 감소된다. 일부 실시양태에서, 제2 발현 수준이 제1 발현 수준보다 적어도 90% 더 낮은 경우에 제2 발현 수준은 제1 발현 수준에 비해 유의하게 감소된다.
- [0057] 일부 실시양태에서, 상기 방법은 제3 시점에서 대상체로부터의 제3 시험 샘플을 적어도 28개의 바이오마커의 발현을 검출하는데 특이적인 복수의 작용제와 접촉시킴으로써 상기 제3 시험 샘플로부터 적어도 28개의 바이오마커의 제3 발현 수준을 결정하는 단계를 더 포함하며, 여기서 제3 시점은 제2 시점 이후이다. 상기 방법은 발현 수준 변화의 추세를 나타내는 플롯을 생성하는 단계를 더 포함할 수 있다.

[0058]

본 개시는 또한 하기 단계를 포함하는 어세이를 제공한다: (1) 흑색종으로 진단된 환자 또는 흑색종을 갖는 것으로 의심되는 대상체로부터의 시험 샘플로부터 이하의 30개의 바이오마커: ATL1, ATP6VOD, C10RF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, YY2, TOX4, 및 TPT1로 본질적으로 이루어진 바이오마커의 발현 수준을 결정하는 단계로서, 발현 수준은 시험 샘플을 30개의 바이오마커의 발현을 검출하는데 특이적인 복수의 작용제와 접촉시킴으로써 측정되는 것인 단계; (2) ATL1, ATP6VOD, C10RF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 발현 수준을 TOX4의 발현 수준으로 정규화하여, ATL1, ATP6VOD, C10RF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 제1의 정규화된 발현 수준을 얻는 단계; (3) ATL1, ATP6VOD, C10RF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 발현 수준을 TPT1의 발현 수준으로 정규화하여, ATL1, ATP6VOD, C10RF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 제2의 정규화된 발현 수준을 얻는 단계; (4) 제1의 정규화된 발현 수준 및 제2의 정규화된 발현 수준을 평균하여 각 바이오마커에 대한 정규화된 발현 수준을 얻는 단계; (5) 각각의 정규화된 발현 수준을 알고리즘에 입력하여 스코어를 생성하는 단계; 및 (6) 스코어를 제1의 소정의 컷오프 값과 비교하는 단계.

[0059]

본 개시는 또한 하기 단계를 포함하는 어세이를 제공한다: (1) 흑색종으로 진단된 환자 또는 흑색종을 갖는 것으로 의심되는 대상체로부터의 시험 샘플에서 이하의 30개의 바이오마커: ATL1, ATP6VOD, C10RF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, YY2, TOX4, 및 TPT1로 이루어진 바이오마커의 발현 수준을 결정하는 단계로서, 발현 수준은 시험 샘플을 30개의 바이오마커의 발현을 검출하는데 특이적인 복수의 작용제와 접촉시킴으로써 측정되는 것인 단계; (2) ATL1, ATP6VOD, C10RF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 발현 수준을 TOX4의 발현 수준으로 정규화하여, ATL1, ATP6VOD, C10RF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 제1의 정규화된 발현 수준을 얻는 단계; (3) ATL1, ATP6VOD, C10RF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 발현 수준을 TPT1의 발현 수준으로 정규화하여, ATL1, ATP6VOD, C10RF21, CFLAR, CFLAR-AS1, CHP1, DDX55, DMD, DNAJC9, ENOSF1, FANCL, HJURP, HLA-DOA, HLA-DRA, HNRNPA3P1, IL23A, IQGAP1, LOC494127, LOC646471, LOH12CR, PBXIP1, RNF5, SERTAD2, SLC35G5, SPATS2L, TDRD7, TXK, 및 YY2의 각각의 제2의 정규화된 발현 수준을 얻는 단계; (4) 제1의 정규화된 발현 수준 및 제2의 정규화된 발현 수준을 평균하여 각 바이오마커에 대한 정규화된 발현 수준을 얻는 단계; (5) 각각의 정규화된 발현 수준을 알고리즘에 입력하여 스코어를 생성하는 단계; 및 (6) 스코어를 제1의 소정의 컷오프 값과 비교하는 단계.

[0060] 흑색종 바이오마커 및 하우스키퍼의 서열 정보가 표 1에 제시된다.

표 1. 흑색종 바이오마커/하우스키퍼 서열 정보

유전자 명	RefSeq 접근	서열	서열 번호
ATL1	NM_011277 13.1	AGTTTGAGGC TGCACGAC ACCTGCACAA CCTGCCTTCT ACTTAGTTCT TCTGAGACAT TTCTGAAAGT CTGAATTCCT AGGACTGCTC AATGACCTTT GTCCCTGTTG GGCACACGCA GTGTCTCATC GCTGGTATTG CACCTTTAAT GAGACCAGGA GTTCCGCAAA AGTAAAACAA AGGGGTCACA GACTGGTTCT GGTTCTACCA CTTCCTCAGT ATGTGCTCTG GGACAAAACA GCATATTTGG CAACATCTCG GTGTCTTAT CTGCAGCTTG AAGAGGCGCC ACAGCAACAT CCTCAGAGTC TGAGCGAAGT GCGCCAGCG CGGGCACGGA GCCTCCACC GCCAGCAACC TGCGGCCCCG GAGAAGGCAG CGAGCGCAGT GACAGCGCCT CACCGCCACC AGCTCCTGGA CCACCATGGC CAAGAACCGC AGGGACAGAA ACAGTTGGGG TGGATTTTCG GAAAAGACAT	1

[0061]

		ATGAATGGAG CTCAGAAGAG GAGGAGCCAG TGAAAAAGGC AGGACCAGTC CAAGTCCTCA TTGTCAAAGA TGACCATTC TTTGAGTTAG ATGAACTGC ATTAATCGG ATCCTTCTCT CGGAGGCTGT CAGAGACAAG GAGGTTGTTG CTGTATCTGT TGCTGGAGCA TTTAGAAAAG GAAAATCATT CCTGATGGAC TTCATGTTGA GATACATGTA CAACCAGGAA TCAGTTGATT GGGTTGGAGA CTACAATGAA CCATTGACTG GTTTTTCATG GAGAGGTGGA TCTGAGCGAG AGACCACAGG AATTCAGATA TGGAGTGAAG TCTTCCTTAT CAATAAACCT GATGGTAAAA AGGTTGCAGT GTTATTGATG GATACTCAGG GAACCTTTGA TAGTCAGTCA ACTTTGAGAG ATTCAGCCAC AGTATTTGCC CTTAGCACAA TGATCAGCTC AATACAGGTA TATAACTTAT CCCAAAATGT CCAGGAGGAT GATCTTCAGC ACCTCCAGCT TTTCACTGAG TATGGCAGAC TGGCAATGGA GGAAACATTC CTGAAGCCAT TTCAGAGTCT GATATTTCTT GTTCGAGACT GGAGTTTCCC ATACGAATTT TCATATGGAG CCGATGGTGG TGCCAAATTC TTGGAAGAAC GCCTCAAGGT CTCAGGGAAC CAGCATGAAG AACTACAGAA CGTCAGAAAA CACATCCATT CCTGTTTCAC CAACATTTCC TGTTTTCTGC TACCTCATCC TGGCTTAAAA GTAGCTACCA ATCCAAACTT TGATGGAAAA TTGAAAGAAA TAGATGATGA ATTCATCAAA AACTTGAAGA TACTGATTCC TTGGCTACTT AGTCCCGAGA GCCTAGATAT TAAAGAGATC AATGGGAATA AAATCACCTG CCGGGGTCTG GTGGAGTACT TCAAGGCTTA TATAAGATC TATCAAGGTG AAGAATTACC ACATCCCAAA TCCATGTTAC AGGCCACAGC AGAAGCTAAC AATTTAGCAG CCGTGGCAAC TGCCAAGGAC ACATACAACA AAAAAATGGA AGAGATTTGT GGTGGTGACA AACCATTCTT GGCCCCAAAT GACTTGCAGA CCAACACCT GCAACTTAAG GAAGAATCTG TGAAGCTATT CCGAGGGGTG AAGAAGATGG GTGGGGAAGA ATTTAGCCGG CGTTACCTGC AGCAGTTGGA GAGTGAAATA GATGAACCTT ACATCCAATA TATCAAGCAC AATGATAGCA AAAATATCTT CCATGCAGCT CGTACCCAG CCACACTGTT TGTAGTCATC TTTATCACAT ATGTGATTGC TGGTGTGACT GGATTCATTG GTTTGGACAT CATAGCTAGC CTATGCAATA TGATAATGGG ACTGACCCTT ATCACCTGT GCACTTGGGC ATATATCCGG TACTCTGGAG AATACCGAGA GCTGGGAGCT GTAATAGACC AGGTGGCTGC AGCTCTGTGG GACCAGGCTT TGTACAAGCT TTACAGTGCA GCAGCAACCC ACAGACATCT GTATCATCAA GCTTTCCTA CACCAGAGTC GGAATCTACT GAACAATCAG AAAAGAAAAA AATGTAATGC AAATTTAAG AAATACAGGT GCATGACCAA TTGTCAATTA AATATTCAGT TTTATGTCCT CATGCAACA	
--	--	--	--

[0062]

		TTCAAAGTGC TTCCATCAGA ACGGAGTAAA ATACTAAACA CCTCTGAAGA CTGCAAACTG GATTAGTTCT TTTACTTCAG TGTTTAATAA GCAGATGTAT GTATGCATGG TTATACTATT TTGTTAACAT GTACAATTTT CTGATTTTTC TTCAAAAATG CTGTTATAAA GTATTTGTCT ATTTATGATA ACAGTACACG TGTTCGCTT GAATTTACTA AATTCTACTA CTGGGTTATA ATTAAATCAT GTGATATTCC ACGTTTGGAT ATGCTCATTT AATTTCTACA GAAAAAATTT TAAATFATTT CACATTAGCC ATTTGTAAAA ACACAGCATC ATAACCTAGC AGGCTGGATT TAATCTGTAT CATCTTATAT ATATCACAAT CTTATTTTTA AGCACATTTT AGAGTTCCTT AGTTGCTTTA TCAAAAACCA GATATTGCTT TTACATGGTT TAATAGAATA TAAACCTCTT GATAAAAAAT GCACAAAAAA TCACTTTGTA TATGTGAGTT TCACTGCATT GTATATTTTT TCATTGGTA CACAAAGAAT GTATTCITCA TAGGTTTATT CTTTAATAT GTGAACATTT ATTAAAGTTT ACTCTGGTTC CTAAGATTAA AAACAAATGC TTACTGAATT TGAAAAAAA A	
ATP6V 0D	NM_0 04691. 4	ACTTGACAGC CCGCTGAGGA CGCAGCGTCA GCTGACCTGG GGAGTCGCGA TTCGTGCCGG CCGGTCCCTGG TTCTCCGGTC CCGCCGCTCC CGCAGCAGCC ATGTCGTCTT TCCCGGAGCT TTACTTTAAC GTGGACAATG GCTACTTGGA GGGACTGGTG CGCGGCCTGA AGGCCGGGGT GCTCAGCCAG GCCGACTACC TCAACCTGGT GCAGTGCGAG ACGCTAGAGG ACTTGAAACT GCATCTGCAG AGCACTGATT ATGGTAACTT CCTGGCCAAC GAGGCATCAC CTCTGACGGT GTCAGTCATC GATGACCGGC TCAAGGAGAA GATGGTGGTG GAGTTCCGCC ACATGAGGAA CCATGCCTAT GAGCCACTCG CCAGCTTCCT AGACTTCATT ACTTACAGTT ACATGATCGA CAACGTGATC CTGCTCATCA CAGGCACGCT GCACCAGCGC TCCATCGCTG AGCTCGTGCC CAAGTGCCAC CCACTAGGCA GCTTCGAGCA GATGGAGGCC GTGAACATTG CTCAGACACC TGCTGAGCTC TACAATGCCA TTCTGGTGGA CACGCCTCTT GCGGCTTTTT TCCAGGACTG CATTTACAGAG CAGGACCTTG ACGAGATGAA CATCGAGATC ATCCGCAACA CCTCTACAA GGCCTACCTG GAGTCCTTCT ACAAGTTCTG CACCCTACTG GCGGGGACTA CGGCTGATGC CATGTGCCCC ATCCTGGAGT TTGAAGCAGA CCGCCGCGCC TTCATCATCA CCATCAATTC TTTCGGCACA GAGCTGTCCA AAGAGGACCG TGCCAAGCTC TTTCACACT GTGGGCGGCT CTACCCTGAG GGCCTGGCGC AGCTGGCTCG GGCTGACGAC TATGAACAGG TCAAGAACGT GGCCGATTAC TACCCGGAGT ACAAGCTGCT CTTGAGGGT GCAGGTAGCA ACCCTGGAGA CAAGACGCTG GAGGACCGAT TCTTTGAGCA CGAGGTAAAG CTGAACAAGT TGGCCTTCCT GAACCAAGTT CACTTTGGTG TCTTCTATGC CTTCGTGAAG CTCAAGGAGC AGGAGTGTG CAACATCGTG TGGATCGCTG AATGTATCGC CCAGCGCCAC	2

[0063]

		CGCGCCAAAA TCGACAATA CATCCCTATC TTCTAGCGTC CTGGCCCAAG GCTCTCAATT GCACTCTTTG TGTGTGTGTG TGTGTGTGTG CGCGTGTGTG TGCCTGTGTG TGTATGTGGT CTGTGACAAG CCTGTGGCTC ACCTGCCTGT CCGGGGTGTA GTACGCTGTC CTAGCGGCTG CCCAGTCTC CTGACCCTCT TAGAGACTGT TCTTAGGCCT GAAAAGGGGC TGGGCACCCC CCCCACCAA GGATGGACGA AGACCCCTC CAGAGCAAGG AGGCCCCCTC AGCCCTGTGG TTACAGCCGC TGATGTATCT AAGAAGCATG TCACTTTCAT GTTCTCCCT AACTCCCTGA CCTGAGAACC CTGGGGCCTG GGGGCAGTTT GAGCCTCCTC TCCCTTCTGT GGGTCGCTCC CAGAGCCATG GCCCATGGGA AGGACAGAGT GTGTGTGTCC TTGGGGCCTG GGGGGATGTT GCTCCTCAGC TCCCTCCCTC AGCCCTGCCC CTCTGAGACA ATAAACTGC CCTCTCTAAG GCCAACTGTC AAAAAAAAAA AAAAAAA	
CIORF 21	NM_0 30806. 3	CCCTCCCTCG CTCGCTCCTC GCAAGCTCCC GCTCGCTCCC TGCCCACTCC CGGGGGGACG TTCCGTGCCG CGGCCGCCGC GGCCGCTGCT TCTTTCACAC TTAGTTGGG AGCTGCGCGC CGCGCTCAGT TACTGGAGAG CTGGCCGCGC GCCGCCGCT CCCCACGCT TGCACGCGGG CCCGGCTTCG GGGTTTGGG TTCTTACTCC AAGCGCGCGG GAGGAGGGGG AGCCCCGAC ACACTGTGGG GAGGAGGAGG AAGAAGAGGA GGAGGGAGGA AGAAAAAGA CGAGGAGGAC AGGGGCGGGG GGCGGGAGGC TTGCCACCTT CAGCCCCCCC GCGAACGCC AAGGTGCACA CATCTTGACC AACTCAGCAG CAAGGTGGAT TTTCTTTGTG TTTAAAGAAA AAAAATGTCC CTGTGTCTGT AGAGATGATT TGCAGTTCAG CCCGGCTGAA GCTGACCGAA TGAGACTATG GGCTGTGCCT CCGCCAAGCA TGTTGCCACT GTTCAAAATG AAGAGGAAGC CCAGAAAGGG AAAAATACC AGAACGGAGA TGTGTTTGGC GATGAGTATA GGATCAAACC AGTGGAAAGG GTCAAATACA TGAAAAATGG GGCAGAAAGG GAGCAGAAAA TAGCAGCCAG GAACCAAGAA AACTTGGAAA AAAGTGCCAG CTCAAATGTA AGACTTAAAA CTAATAAAGA GGTTCCGGGA TTAGTTCATC AACCCAGAGC AAACATGCAC ATCTCTGAAA GCCAACAAGA ATTCTTCAGA ATGCTGGATG AAAAAATTGA AAAGGGTCGG GATTACTGTT CGGAAGAAGA GGATATCACA TAGCACCAAT TTTACCACTC AAACCAGGAG CTACTACTGT GTAAATAGGT TACACCCAG TTGAAATCTT TGCAAAGGTC GGTTCATTC AGCGAACAGC ACTATAGCAA AAGAAGATCG TTCCATATIG TACGCCCCAT TAAATTACAG TGTTTCTTAA TGAACCTTGA AAGGAATATT GCTAAAAACA AACAAAAAA ACTGTTATCG AACTTTCTTT GTTGCTGCTA GTTAAACTT GTTGCAACTT TTCACCTCTC TTGTGTCCAG GTATGCAGCA AAATTCTGCA ATTCACCTT AAAGATACTG TTGGTTTAC	3

[0064]

	AGATGCTCTC CAACCTATTT TCTATAAGAT GAGGTAGTGG TGAACCTCAGA TAACAAACTT CTCTTCTAAA CTGGTTCTGC TTCTAAGACA AGCATCTCCT GCCCTCTCTC CTTCCTCCCC ATCTCTCGCA CGCAGTCTAG AGATGGACTG AGCCTTGCTT CTCACTGGCA GTGTTGAGCT TTGGAGATGG GATGGTTGCT ATGCCAAGCC TTGTTTCTCT GCTCAGAAGA AGTAGAGAAG CTATTATCAA TTAAAAGCAT GCTGTGATGT GACTCCTGGA AGTGACGTAG GAGTGAGTGG CAGGTTGTTT GATTTAATAG GTATCTTAAT CAAGAATTAA GCTTGCAACA TTGGCTTTGC TCAGATGCAG ATGGAAGTGT GATCACAATC ATTTTGAATC CCTCTTCCTC ACTTTTTTTT CTAAGAAAAT AAACATTTTA CTGTTTTTAT GGATCCTTGT CTCTCCCAT TCATCCAGCT CAGTGTTTTA AGATGATCCT GGGTGCAGAA GTTGAGCCCT CCTTTGCATT GACACTGATA ATTAGCCTAT AGGGCTCCCT ACCCTTCCAT TAAGAATCTA CCAAGCATT GCAAGGCTGA AAGTGGTCTA AGAGGTGAGG GGACATCCTA TGACTTTTTA GGAAGGCCCTG AAACCACCTT GTTACCITTC ATTTTGTTAG CAAATAAACC ATCCTATTTT GTAACCTCTC CCCTTCAAAA TGCTACATGA GCCTTGCCAC TTCTTTTTTC TCTTACTTCC AGCACACTAG ACATAGCAAA AGTGTGTTGCC TACTCAAAAA CATAATACTT TTATGCTGAT GATGGTATTT GGAGATGTGA AAGCCAAAAG CCCCTGGCAG TGGTGGGGAA TGTGACTGA GTGTTTCAGCA GAGTTTATTT TTCCATACTA TATGAAGAGA ATGATCTCTT CTCAAAGACA GAAGTGATAT TTTTAACAAA TATTGTGACA AGTAAATAGC AATCAAAAGG AGAAAATAAC TTTTGTATTT TTITAATGTG TTTGATAGCT TTGACGAGGG TTCTCTTGT TACTTTCAGG GGAGGGCATC CTATTAAATG CCACGCCAGC AGTCCGGGTC TGGGTTTGTC CCACAAAATC ACAGGAGCAC TGTATGTTCC TCTCTTTTGG AGTTGTGACT TTGAAGGGCC TCAATATTAG CCACACTGCC GCCTGCAGAA GGTGGAGAGT TAAGATGTTT TATGTCAATT TGCTCTTGCC GAAAAGATGA GCCTCGATTT TAAAATCTAT CCACATCCAA CTGATGGCAC CATTGATGTG CAAATAATGA GATTCCCTAT CTCCTTTTAG ACCTGGGACG GCAAAAGGGA AGGGAAGGAA ACTTAGCAGA GTGCTATTGA CTATAGATTC ACATATTAGC AACAAAATCC CGTAATICTT TTGGCCAACA GCAGCTATTT TGGGGAGCAG CTGTGGCTGT TACATAAATA GAGATGCAGC CAAAATTTTA GGCCTTTTAT CCTGCTTCTA GCAGAAAAAT GCAGGGAGAG TCAAGTAGTC TAGGGTTTCA GGTGCTCCTC CCTCATATGG TTTTGGCCA AGTGACTAAA ACAGTTTTC ACAACTGTAA ACAAACGTCT AAGCCCCACC TCAAACCTGT TCACTGGGGA CTTTGCTTAC CGTTCTGTGG GTGACCTTTT	
--	--	--

[0065]

	CCGGGATTTC TTGTTCTTAT CAAGCAAGAA TTAAGCACAT GCTAAACGTC TTCCATTGGA CTTCTCTACT CGGTGTCTCA GACAGTGTCT TCCCAGAAAA CCACCACCCT CTACCCAAAG ATGAAACATG CTCATGTCAT TTTTCTCATG GTCACATTTA ACAGTTTTGA CATGTTATAC TTGCGCATAG ATCCAAGCGT TTCTTGGGAA CCTGACTTTT GAGTGTTTAA TAAAGCCGGA AGTGGTGTG CCCTGAACCA GCAGATTTTC ACCTGGGTTC TGGCTCCGGT GTTAAACACT GGATACATCT TTGATGTGCG AAAGTGAGTT CATCTTCAGA CACATTTGGT ACATCCAGAA ATAGATCCAA GAAATGGGGT GGTTGAGTGG GTCCGCACGA AATGCTIGAT TATGTCAGCA ACACCCAACA CTGTCTGTTT TCCATTTGTT GGTTTTAATC ATAAAAATTGT CAAGTGATTC GIGTTTGTA TTTATTTTTT TGTGCCTTCT GAAAGGATCT AAAACAAAAA TATTTTGCTT TTTTTTCCCC ACGTGTATCT GAACATTAAG CAGATTGGCT CAGACACAAT GAAAAGGATA ATCCAAATGTA CGTGCTGGTG CACTCTGCTA GTTGTATCT CTGTAGGGCT CAGGAAGCTG GAAGGAGGAA GGGAGGGTAA GTGGCCTGGT GAGTGGAGGT AGAAAAATGA TGAGAAATGA ACTGAGAGCA TTAAGCAGAG AGGGTTGATA GGCTGGCCGT GTCCGGGGTG AAATTGAAA TCCAGCTGCC TAGTGGCCAG TGGGTGGGGC AAGACTGTCA ACGAGATTTA CAGCTGGCTT ACACATGCC TATGTCCTCT GAGTTGTAGA GTTGTAAG TTCAGCAGTG TGTGCACAGC TTTCTTTTGG TTGGCAGAGA TTCAGGATCA TGGAGTACTG CTCTCATAAT TGAAGACGTG TTTGTTATTG GCAGAGAACC TAAAAAAGG CCTTTACCTC AGCGATGCTT CCTAGCCCCA GGCTTGCAGA GAACACAGAG TGGTGTGTG GTCTATTTAG GGACAAAGAA GGTATAAAGT CCAGAGATGA GAAAACTGGG TCAGCCCTCA GAAACTGCAG CAGCCACGCA CACAGAAGCC TGCTGGAAGA CAGGTCTCTC TCCGTCCACA GTGCCCATCA TCTGAGCCTG GGCTGGGATG ACTCAACTTA GCAAAGACGG ACCCAGGAGG AGTGCTGGTT CTTCACTCTT TGTACTGGCC CCATCCTCTC CTCACTGTAA TGTGAGGAAG CACCTCTGTG TCAGGGCTCA CCTGGGCATC CAAAGCGGCC ACGCCACAA TCCGACAGCC CCCAGGAGCA GGTCCAGGGA TGATGCAGCC CCCCTCTTGG TCCCATGTGA TGTATCCTG CTTTGTTATC TTCTTATAAC TTTATCCTGC TATAACTTTA TCCTCTTCCC AGCCTCATCC CTGTTTTTCT GTTAGGGCAA GACTCTTCCA TAAGCCTGCT AAAAAACAGA GATGATACCT CTTACAAACT TTACCTCATA GCCTGTGAAG CAGGTTGGCA TGTGGATTAC AAGTCCTGCT TTGACACTGG GCAAGAATTT AAGATTGTTT TATCTCTACT AGTCATAGAA AAGAAACATT GTTAAACATG TTGAGTTTAA AAGGAAGAAA	
--	--	--

[0066]

	TATTTTCAAA TTCTTAATCC AAGAAAATAC TGAGTTGGAA TCTTAGACTT CGGGACTCTG ACACGTTCTT TATGAAAGGC AAAAATAATTG GTATCTAAAG TTCTCTCCTT CCTGCCTCCC CTAAAGAAAA AGGATATTAG ATTGCACACT ATAATTTTAC ATAAGATCTG CTTCCACAC TTCCCTGCTG GAAGGCATT TCAGAGCTTT ATGTCTTCGT ACCTCTCAGA GATTGGACTT TTTCTTGTTT AAAACCCCAA CCAAAAAAAA TAATAAGGCA TGATTGGTGG GGAGGGAATG TGTATTTAGG GGCATAATA AAAGGTGGCT CGAAGCAGGA ACTTTGGCCT CATGGTGTCA TGGGTGGATG CCTGGACTCC AGTGTGCCTG TGAGGGGCTG GGTTAGGCAG TCGGCTGTCA CACTCACATG TGCCTGCAAT AAACCTTTTG GAATTTTCATG AACGAGGTCT ATGAATTGCC TTTTGCCAAT GAATGGATGT ATTTTCCAA GGGGGGAATA GTATCCTTGA CTTGGCAGT CACCTTTTGT TATGTCTCTA GAAAGGGGTC AAAAACTAT GGTAAAGATG AGGCTTATGA GTGAATACCT CTGGGACAAA CCTTAGGACT CACAAGCTAT GCCATGTTTT TCAGGAGACT CTGTACCTT ATCTGGAATC TAATCTTGGG AGAAGAGGAA AAAGGAGCTA ATATTTGTCA TTTATACTCA CTCTGTGCCA GATACTGTGC TAGGCATTTT ATAATTGTTT TGTGTATCC TCATGATAAT CCTGTGAAAT AGATCTATTA CCCCCGTGT CTAAATAATA GATCTTAAGT GTGGAATGCA TCTATCCAAC ATAAATGCCC ATGTTGAAAG AAGGAAAGAT GTCATTCAAG TATTTTCAA ATCTTTTTTA TTATGACTAT GCCCTTCGCA AACTGTGAA AACAACCCCT GGGGGCATCT GCCTTCCAGA ATCTCTCTCT GGCTTCTCAC CAGCTTGGTT TCCTCATGGG GAGTGTTTTA TTTGGCCTCC CCTATCTGAG CTGCACACAC ACCAGGGGAG GCCACTGGCT AACAGTAGGA CTTCAGTGCC CTGAGGAAAA GGCTTTGGGA ATTTAGGCAC ACGTTTCTCT CTTGGAATC CTTCTAGCAT CTGGAAGAG AACCTGGTAT TTCTGCAGT AGATACCAGA TGCAACCAGA ACAGGCTTTC GAGTGCTGTG ATTTCTTCC TGGGTTCCTA AGTCTGTG TTTCATCACA AACTGTATCT TTTTAAGGTT AAAAGTCTTG ACCTTCATGG GGGTCTGGGA CAATCCGATC TCCAAGCATG GAGGAAAGGC AATGCCTGGA CCACTGACTT GCATTGAAAT CCTTCTTGT GGGCTAGGGT TTGATGTCTC TTTTTCATCT TTGGACTGGG GATCTGCATC TTCCAGGTCC ATTTAAGCAC TGAAACTAGA TGCAAACTCTC TTTCGAGACC TTACATGTTT TAGATAGTCA TGTAATGACT TGGATAGACA TTAAATAAC TTGTTCCAAG GTCGGAAGAG CCCAAGAACT CCTCAGAGT CCTCTTCTTG CTTCTGAAT CACATCCTCT AAAGATGACT CATGTCTCCA TAGCAACTGT TAAAGGTGCT GCCTAGACGG GACCCGCTCC CACCTTACT	
--	--	--

[0067]

	TACTTTGCTC GAAGGAACCA AAACAATGTC CTTGTGTAAA GGGGCTGTCA TATCCAGTTT TCCTTTGAAA TCTGGCCCCC AAGATCCTGC TTCTTTCTAA CCTGGCAGCT GTCATGTCCC TTCAAGATGA TGTGGGAAAT GGCCCTTACA ACTTGGGAAC CACAGAAATT GCTGTATTTT GGGAAAGATTC ACCTCTAAAC TGAAGGCTTC ATTCTGATAG TGTCTGCCCT CTCTACCCCTG ATTTCGCCCT TCTTTGCTTC CATTTTTAGC CCAAGGCTTT GAATTTGATT GAGTAAGACT TAGAGGCAGT ATAAAGAACA CCATAAACTT AGGCAGAGGT CCCTTAGGGT CTCTAGAGTT GAAAATAAAT CTACAGCCTT AGGGGGACCT CTTGGCATIG ACTCTAAAGG GAGAGAATAG CCCCTGTGTC CTGGCATTTT AGTCTAGACC TTCAAGGACT GTTCTCTCTT GACAGGCAAG CAAGCAAAGA AAGTTTTGCA ATAGATTICA AGCCAGTTTT TCCATTCAAA CCAAGATGCA AATTCATAAA ATTACTCTTT TCCTGGAATA GATCCAGGCA GCTGCCTTAT TAGAACTTTA GATTCGGATC TATTTTCTTA ACACACATAC ACATACACGC GCATACATAC ATATACAGAG AGATACGTGG AGAAAGGAAA TTTACTCTAT CATTGCAATA CTTCAAGAAA GAGCTGTATT TTGCCTTTCT GTAATCTCCA AGATAGTGTC TAGGAAAGTA ATAGTATAAC TATAGGGATA CCGAAACAGG AAAAACCAGC CATCACTCTT GAGAAAGTTT GAGTTCGACT CACATGGGAG AATCGAGGTC TGCTACTCGT CTTGCTTTGT GCCCATCTG TGCTGGATG CCCTACTACA TCTGCTTGAC TCGTCTGGGC TGCTAGCCGG GGTGTTGTGG CTGACATCCT TTCTGGCCT TACACACATA ATAGACACAT CCCTAACGGC GTGTGCCTGG TCCAGCCACA TACAGCCACC ACATGTGTCA CACTGTGCC CCCTCATCCA TGTGGACTTG ACTGGCATT T CAGCAGCTCC ACTGGGATGC TCTAACCCCA GTGTGTGGAG TTGGGGTCCC TTCATCTAGG TTGACCCAGG TATAGCATTT TTAGCATTGC CTTTCCAGTC TTGATGATT CATTATTGAA CTCATTTATT TCTGGAGCCC CTGGTACACT CCAGGCACTG CGCTAATTGC CAGCAAAGCA CAACTGAACT AAATCCACCT TCAAGGAACC TAGCCATAAC GAGGGAGGCA GCATGGAAGT ACCCTACAGG GGAAAGTCCT GAGTGCTGTG GGAGCATCTC ACCGTGGCAG CCAGCCCAGT TTTGGCAATC AGGGGCTTCC TGAAAGAGGT GACATCAAAG CCCGATGTG TCAGAGGACT GAGGGAGAGT GTTACTAAAG GACTTTCAGG CTGAGAGGAT AGCACAGGAC TCAGCCCAA GGAGGGCCAG TGTGGACTGT CCAGGGCCAG CCTGCAGTAC AGAGGCTGGA GCTTGGACTT GTAGAGGGAG AGAGAAGAGC AAGGGACGTG GACGGGGCAG TGAGCCAGGC TAGCCACAGA GGGTTCCCGG GGCTTTGCTG GGGATTTCAGG GAGCATAAAT AAGAGCTTTA GGTGGTGCTG TGTCCTCTGC	
--	--	--

[0068]

	AGCCCACTGC TGAGGTCCTC CAGACAGGTA AGGTGTGGTC ACAATCAGGG CCGGGGTTTC CCTGCTCACT GCGGCAGTGC AGGGGTGCTT GCTGAGATGA TTCATCCCAG GGTGTCTCT GTCCCTTACC CAGCCCCAAC TCCTCTTCCT CTGCCAAAAG CTATTTGAAT TCAAGGACTT TAACCTGGGC CGGATCTGGT TTGGAGACAA AGGGGACAGC TCTGGGTCAG CATGACCTTC TTTAGAGCCA CTAAGGCGAA AAATACCGTT TGGGACCAGG CTGGCCTAGA CCCAGGGATG AGAATGCACC CTAAAAATAA TATACGGGAA GCAGCAGAGG GCTTCCCTGT CTAGTGTGTG ATCCTAACTA AAGGCAGCTC TCTTGGACAG CCTTCCCCTG GATTAGGTCA CATAACCTG GTGGCCAAAGC CTCTGCTGGG TCCCAAAATAC ACACCCGAGT CCTGCCAAAG AAAGGAGATT TTTAAAAAGC ACAGACAAAT TGTATGCAAG TGGAAAAATC CCATAGGCCT AGACAGCTGT GGAGGGGAAGA CCTCGTGGGT ACCTGGAGGC TGCCAGAGCT GGGAGCTCTG CAGGTATGAG TCAGGGAAGG CTCAGAGACA AGCAGAATCT CTCTATGGAG ACAACITGCA GTGCCTTTTA GGTTTTCCAA ATAACCTCGG AGTTCAGAGC ATTGGGTTTT TTTCTCCCCT CCCCACCCC AGAAAAATAA TTAGAAAAAT GTTTAGGAGA AAGGAAAAGA ATTAGATGCA TCAGAATACC AGCTATAAGC CAACACTGTT TCCAGAAACT CAAGAAAAAG CTCAAACAGA AGACAGTTCC CCTGAGAGGC TGGAGGCGTT GGTGCTGAAG GCAATTTTCC TAGCTAAGGG GCACTGGGCC TTGCTGCACC TTGGGGCTGA CCTTTTTTGC AAAACACCCA CCCCTGCCCT CCTGGCATA TCAACAGCAA CGCCAGCTTT CTGGACCCTT GGAAAGATGT TAGCTCAAAC ACCCACTTTT TCCAGATCTT CCTTTGCTC TTCCTGAGG AATTTGTAAT TCTGAGGCTA GCGATGCCCC CTCGGATATT CCGCAGGCC AGGTGTTTAG ATTAGAATTT GTCCAGCGGT AATCCTGATG CTGGAAACCA ACAAACATTT GGCCTCATAT TCACCCATTT AAAAATAAG GCCCCTGGCA GGTCCCTTA GGGCCATGTG TTCATGGAAT ATAAGCCAAG TTTGCTTAG GCTTGTTTAT GGAATATAAG CCAAGTTTAC CTCTCCCCAT TTTCTGCCCT GGCCCACTTC CCACTCACCT CCACCTCATT GCCAGGAAGG GATCAAAATG CCTCCATGCC AGTTGTTAAT GGCTACATAT TTGCCCTTCC CAAGGGTATT TGCATTTTAT TTAGGAACAT GGCCTTATAT TCAAGGAAAA TCTAGCATCA AGATTACGAG GCATCACCTC TCAATCAGGT CTGGGAGGTA TCTTGGGGCA TTGCTCTTCT GAACACCTGC AGAGGCTTCC TCAGGTGAGT GTGGGAGCCC GGAAGGGTGG CCTCCCTAAC CACTCTGCCT GCACATGAAT TCTCCAAAGC AGTGGGCCCC CATCTGTTTC AATTACACAT GCCTGTCAGC AAAAACTTCG TGAGATGCAC TCTCTCTGTG TGTTTATTAA	
--	---	--

[0069]

		TTTATTTAAA GCATATATCC CTTTACTTTT GTACTACTAT ATTAGGCACA TTATAAAAAAG TATACAGCAT AGAAACTTTA AATGAATAAG ACACAAAATA TTATAAACAG AGGTTCTGGC ATTTCTCTC TGAACCTCTG AGGGGGACCT TGGGCACCTC CTGGTATGTG CACACCCAC TTTGAACACC CTTGCTTTAG TGCAAAATCAG CACGCCTAAA TAGCATCCCA AACCCTGTG CGACATTTGG CCTGCAGAAT AAGAAAAGTCC TAAGGCAGAA TCCCCAGGAA CTTCAAATCT GGGAGATGAG GAAAGAAAAC TCACTCACA ACAACATAAA TGTAATAAT TCAAAACCTT AAAGGAGAGC TGTCCCTAGA CAGTAGTGGC TACAGGTGCT AAGCAAAAGT CAGGTACACT GGACAGAGCC ATGCGATTGA TTGTTTCATCT TCCCTCTCTG GGTCTCCAGA AAAGGACACT GGCAATATCC CCAGCTCTCT CCTGATTGGA ATTCTTTGAA CCCTCGAAGT GCTCCAGCAG TACTACCCCC CACGTAGCAG TGGGCCCCATG TCGCTTGAAT ATTATTTTGG ATTGACCAC CAAGATGTAA TGATGATTCT ATTCCATTTT GAAAAGGGTC TGAGAAAGTG TACAGGTCTA ATTATATATA CATATTTATA CATGTGTATT TTTGTTTATT GTTACATTTT GACATTGGAC TTTCTATTAA ATAATTTTAA AGAGTTGG	
CFLAR	NM_0 011271 83.2	GACCACGCAT GGAGAATTTT ACCACCCAGA GACACGCGAG TGGCCCTGTG CAAGTTTCAA CTGCGCGGGG GGCGGGGAAT TCCGCAGACA GGATTCTAGA ATTTATGTCT TGTGTGGTAA CATTTTCAGCC GGTGGGTGGC GGGGATTAGG CGTGAAGCGG TTCAGCAGGC AGAGGTTCTC GGACGCCCTC CGGCGAAGCC ACCTGTTGAT GCTTTTGACT TTCTGTCCTT GTTCCTCGTC CCATCTGGAG CATTTCCAAT TCTGGTTTTG CGGAGCAGCA GGTCTGAGCT TGTCCGGCGA GGGTGGGAGT TGGTCCCGGC GGAGATCCAG TGGGAAGAGC CGGCGGCTGC CCGGGCAACT CCCCCACTGG AAAGGATTCT GAAAGAAATG AAGTCAGCCC TCAGAAATGA AGTTGACTGC CTGCTGGCTT TCTGTTGACT GGCCCGGAGC TGTACTGCAA GACCTTGTG AGCTTCCCTA GTCTAAGAGT AGGATGTCTG CTGAAGTCAT CCATCAGGTT GAAGAAGCAC TTGATACAGA TGAGAAGGAG ATGCTGCTCT TTTTGTGCCG GGATGTTGCT ATAGATGTGG TTCCACCTAA TGTCAGGGAC CTTCTGGATA TTTTACGGGA AAGAGGTAAG CTGCTGTCTG GGGACTTGGC TGAACGCTC TACAGAGTGA GGCGATTTGA CCTGCTCAAA CGTATCTTGA AGATGGACAG AAAAGCTGTG GAGACCCACC TGCTCAGGAA CCCTCACCTT GTTTCGGACT ATAGAGTGCT GATGGCAGAG ATTGGTGAGG ATTGGATAA ATCTGATGTG TCCTCATTA TTTTCCTCAT GAAGGATTAC ATGGGCCGAG GCAAGATAAG CAAGGAGAAG	4

[0070]

	AGTTTCTTGG ACCTTGTTGGT TGAGTTGGAG AAACATAAATC TGGTTGCCCC AGATCAACTG GATTATTAG AAAAATGCCT AAAGAACATC CACAGAATAG ACCTGAAGAC AAAAATCCAG AAGTACAAGC AGTCTGTTCA AGGAGCAGGG ACAAGTTACA GGAATGTTCT CCAAGCAGCA ATCCAAAAGA GTCTCAAGGA TCCTTCAAAT AACTTCAGGC TCCATAATGG GAGAAGTAAA GAACAAAGAC TTAAGGAACA GCTTGGCGCT CAACAAGAAC CAGTGAAGAA ATCCATTAG GAATCAGAAG CTTTTTGCC TCAGAGCATA CCTGAAGAGA GATACAAGAT GAAGAGCAAG CCCCTAGGAA TCTGCCTGAT AATCGATTGC ATTGGCAATG AGACAGAGCT TCTTCGAGAC ACCTTCACTT CCCTGGGCTA TGAAGTCCAG AAATTCTTGC ATCTCAGTAT GCATGGTATA TCCCAGATTG TTGGCCAATT TGCCTGTATG CCCGAGCACC GAGACTACGA CAGCTTTGTG TGTGTCTGG TGAGCCGAGG AGGCTCCCAG AGTGTGTATG GTGTGGATCA GACTCACTCA GGGCTCCCC TGCATCACAT CAGGAGGATG TTCATGGGAG ATTATGCCC TTATCTAGCA GGGAAAGCAA AGATGTTTTT TATTACAGAA TATGTGGTGT CAGAGGGCCA GCTGGAGGAC AGCAGCCTCT TGGAGGTGGA TGGGCCAGCG ATGAAGAATG TGGAATTCAA GGCTCAGAAG CGAGGGCTGT GCACAGTTCA CCGAGAAGCT GACTTCTTCT GGAGCCTGTG TACTGCGGAC ATGTCCCTGC TGGAGCAGTC TCACAGCTCA CCATCCCTGT ACCTGCAGTG CCTCTCCAG AAACAGAGAC AAGAAAGAAA ACGCCCCCTC CTGGATCTC ACATTGAACT CAATGGCTAC ATTATGTATT GGAACAGCAG AGTTTCTGCC AAGGAGAAAT ATTATGTCTG GCTGCAGCAC ACTCTGAGAA AGAAACTTAT CCTCTCCTAC ACATAAGAAA CCAAAAGGCT GGGCGTAGTG GCTCACACCT GTAATCCAG CACTTTGGGA GGCCAAGGAG GGCAGATCAC TTCAGGTCAG GAGTTCGAGA CCAGCCTGGC CAACATGGTA AACGCTGTCC CTAGTAAAAA TACAAAAATT AGCTGGGTGT GGGTGTGGGT ACCTGTATC CCAGTACTT GGGAGGCTGA GGTGGGAGGA TCTTTTGAAC CCAGGAGTTC AGGGTCATAG CATGCTGTGA TTGTGCCTAC GAATAGCCAC TGCATACCAA CCTGGGCAAT ATAGCAAGAT CCCATCTCTT TAAAAAAGAA AAAAAAGGAC AGGAACTATC TTAATCAATG TATTAGTCAT GTTCTCTAG AGGGACAGAA CTAATAGGAT ACATGTATAT AAAAAAGGGA GTTTATTAAG GAGTATTGAC TCACATGATC ACAGGGTTAG GTCCCAAT AGGTCATCTG CAAGCAAGGA AGCCAATTCA AGTCCCAAAG CTGAAGAACT TGGAGTCCAA TGTTTGAGGG CAGGAAGCAT TCAGCATGAG AGAAAGATGG AGGCCAGAAG ACTACACCAG TCTAGTCTTT CCATGTTTTG CCTGCTTTTA TTCTGGCAGT GCTGGCAGCT	
--	--	--

[0071]

	GATTAGATGG TGCCACCCA GATTGAGGAT GGTCTGCCTT TCCCAGTCCA CTGACTCAAA TGTTAAATCT CCTTTGGCAG CACCTCACA GATGTACCCG GGAACACTTT GCATCCTTCT ATTCAATCAA GTTGATACTC AGTATTAACC ATCACAGTCC ATTTGGGCAA CTATACCAAA TTACCATAGA CCAGGTGACT TAAACAGCAG TTATTTCTCA CAGTTCCGGA GGCTGGGAAA TCCAACATCT AAGTGGTAGC ATATCTGGTG TCTGGTAAGG CATGCTTCCA GATCTTACCA GATGTCAGTC TTTTGATGTT CTCACATGGC AGAAAAAGAG GATGCAAACT CTCAAGTATA TCTTTAAGGG CACAAATTCC ATTCATGAGG GCTCTACCCT CATCACCTAA TTACCTCCCA AAGGCCCCAC CTTCTGATAC TGTCACCTTG GGGATACTGT CTCCCCTTTG AATTCTGGGG GGAATACAAA CATTCACTTT GTAACAATAG CCTTATGATT TAGAGGTTAC TTGTTTATT ACCTAGACCT CAAATTGCAT TTTACAGCTA GTCAAGTATA TCTTCTCTG ATTTGATAGT GTGACCTAAA AGGGGACCAT TGTGTGAAAT ATCATTAGAG TTGCTTATTA TTATTATTAT TATTATTATT ATTATTATTA TTATTATTAT TGAGACAGAG TTTCATTCTG CTGCCAGGC TGGAGTGCAG TGGCATCATC TTGGCTCATT GCAACCTCTG CCTTCTGGGT TCAAGCGATT CTCCTGCCTC AGCCTCCCGA GTAGCTGGGA TTACAGGCTC CTGCCACCAC ACCCGGCTAA TTTTTGTAAT TTTAGTGGAG ACAGGGTTTC CACCATGTTG GCCAGCGTGG TCTTGAATC CTGACCTCAG GTGATTCACC AGCCTCGGCC TCCCAAAGTG CTGGGATTAC AGGTGTGAGC CACTGCACCT GGCCTATTAT TATTTTAAA TTTTTTTTTT TTAATTGATC ATTCTTGGGT GTTCTCACA GAGGGTGATT TGGCAGGGTC ACAGGACAAT AGTGGAGGGA AGGTCAGCAG ATAAACAAAGT GAACAAAGGT CTCTGGTTTT CCTAGGCAGA GGACCCTGCG GCCTTCCGCA GTGTTTGTGT CCCTGGGTAC TTGAGATTAG GGAGTGGTGA TGAATCTTAA GGAGCATGCT GCCTTCAAGC ATCTGTTTAA CAAAGCACAT CTGCACTGC CCTTAATCCA TTAAACCCTG AGTGGACACA GCACATGTTT CAGAGAGCAC AGGGTTGGGG GTAAGGTCAT AGATCAACAG CATCCTAAGG CAGAAGAATT TTTCTTAGTA CAGAACAAA TGAAGTCTCC CATGTCTACT TCTTCTACA CAGACACAGC AACAATCTGA TTTCTCTATC TTTTCCCCAC CTTTCCCCCT TTTCTATTCC AAAAAACGC CATCGTCATC ATGGCCTGTT CTCAATGAGC TGTGGGTAC ACCTCCAGA CGGGGTGGCG GCTGGGCAGA GGGGCTCCTC ACTTCCAGA TGGGGCGGCC AGGCGGACGC GCCCCCACC TCCCTCCCGG ACGGGATAGC TGGCCGGGCG GGGGCTGACC CCCCACCTCC CTCCCCGACG GGGCGGCTGG CCGGGCGGGG GCTGACCCCC ACGCCTCCCT	
--	--	--

[0072]

	CCCGGACGGG GCGGCTGCCA GGCGGAGGGG CTCCTCACTT CTCAGACGGG GTGGCTGCTG GGCGGAGACG CTCCTCACTT CCCAGACAGG GTGGCTGTCG GGCGGAGGGG CTCCTCACTT CTCAGACGGG GCAGCTGCGG GCGGAGGGGC TCCTCACTTC TCAGACGGGG TGGCCGGGCA GAGAAGCTCC TCACATCCCA GACGGGGGGG CGGGGAGAG GCGCTCCCA CATCTCAGAC GATGGGCGGC CGGGCAGAGA CGCTCCTCAC TTCATCCAG ACGGGGTGGC GGCCGGGCAG AAGCTGTAAT CTCGGCACCC TGGGGGGCCA AGGCAGGCGG CTGGGAGGCG GAGGCCGTAG CCAGCTGAGA TCACACCACT GCACTCCAGC CTGGGCAACA TTGAGCACTG AGTGGACGAG ACTCTGCCCC CAATCCCGG ACCTCGGGAG GCCGAGGCTG GCAGATCACT CGCAGTCAGG AGCTGGAGAC CAGCCCGGCC AACACAGTGA AACCTGTCT CCACCAAAAA AATACGAAAA CCAGTCAGGC GTGGCGGCGC CCGCAATGGC AGGCACGCGG CAGGCCGAGG CGGGAGAATC AGGCAGGGAG GCTGCAGTGA GCCGAGATGG CAGCAGTACA GTCCAGCTTC GGCTCGGCAT CAGAGGGAGA CCGTGGGGAG AGGGAGAAGA GAGGGAGGGG GAGAGGGCTA TTTTAAAAAT TTTTAAAAAT TGCTGAACAG GGGTACCTCT GGGCAGTGTG TCAGAATACC ACTTTTTAAA TATTTTATGA TTTATTTATT TTCTATTTT TTGAGGTTT AACTGATGTG TATCTGTATG TCTATTTGTG TATATTTTGT CATGATCATG TAACAGAGTC TGAAGAGTGT CGAAGAGACA GTTTTCAGGA ACAACAAGCA ATTATTCCTA CTTTCCAAGT TATTTTGATG CCATGGTGCG TCATACCTAT AATCTGAGTA CTTTGGGAGG CTGAGGTGGA CTGATCACTT GAGCCCAGGA GTTTGAGACC AGCCTGGGCA ACATAGCAAG ACTCCATCTC TACAAAAAAA GACAAAATTT AGCTGAGCGT GGTGGCGTGT TCCTGTAGTC CCAGCTACTT GGGAGGCTGA AGTGAGTGGA TCCCCTGAGC CCAGAGAGGT CAAGGTTGTG ATGAGCTGTG ATCACACCAC TGCATTTCAG CATGGGAGAC AGAGTGAGAC CCTGTTCAG AAAAAATAAA TAAATAAAAC CACCAGCAC ACCAAACAACA AAAAAAGTT ATTTTGTACT TGTTTTGAGC ACAGGACTCC TGAGGGTATC TTTGCATTTA ATATTACATA GGGGTGCCAG TGGGAAGTAA TGTGTATGCT TGGCCTCATG AGCTAAAACC CTGTGTTAAT TATGACAGAA GGAAAGTGTG TGAGAGAGAT CTAACTACC TAGCAGCTCT AGCTGCCATC TTGAACCATG AAGATACGGG CCACACGTAG GGGTAGCTGG GTAGTGAGCA GCAAGAAGCC TTGTTGGATG AGGGCACGAA GGAGCAGAAT CACTGGAATC ACTGTGTCAG CCCTAATTAC CTACCTCTGG ACTTTTATGT GAGGGGAAAA AAAATTGACA GTTTATATTT ATCTCAACCT AGTTAACCCA AGTGATGCAT TGTTATGAGA TTAATGTT	
--	---	--

[0073]

	TGGAGGCCCG GTGCGGTGGC TCACGCCTAT AATCCCAGCC CTTTGGGAGG CCAAGGCCGG CGGATCACGA GGTCAAGGAGA TCAAGACCAT CCTGGCTAAC ATGTAAAACC CCGTCTCTAC TAAAAATACA AAAAATTAGC CAGGCGTTGT GGCGGTCGCC TGTAAGTCCCT GCTATTTGGG AGGCCGAGGC AAGAGAACGG CATGAACCTG GGAGGTGGAG CTTGCAGCGA GCTGAGATCT TGCCACTGCA CTCCAGCCTG GGCGACAGTG CGAGACTCTG TCTCAAAAAT AAATAAATAA ATAAATAATA AATAAAATGT TTGGAATGTT GGCTTCATCC CTGGGATGCA AGGCTGGTTC AACATACGCA AATCAAGAAA CATAATTCAT CACATAAACA GAACTAAAGA CAAAAACCAC ATGATTATCT CAATAGATAC AGAAAAGGCC TTCAATAAAA TTCAACGTTG CTTTCATGTTA AAAACCTCTCA ATAACTAGG TATTGATGGA AAATATCTCA AAATAATAAC CATTTATGAC AAACCCACAG CCATTATCAT ACTGAATGGG CAAAAGCTGG AAGCATTTCCC CTTGAAAAC GGCACAAGAC AGGGATGCCG TCTCACCCT CCTATTTAAC ATAGTATTGG AAGTTCTGGC CAAGAAAATC AGGCAAGAGA AACAAATAAG GGGTATTCAA ATAGGAAAAG AGGAAGTAAA ACTGTGTTTG CAGATGACAT GATACTATAT CTAGAAAACC CCATTATCTC CACCCAAAAG TTCCTTAAGC TGATAAGCAA CTTCAGCAAA GTCTCAGGAT ACAAATCAA TGTGCAGAAA TCACAAGCAT TCTATACACC AACAAACAC AAGCAGAGAG CCAAATCATG AATGAACTCC CATTACAGT TGCTAGAAAAG AGAATAAAAT ACCTAGGAAT ACAGCTAATA AGATGTGAAG GATCTCTTCA AGGAGAACTA CAAACCACTG CTCAAGGAAA TAAGAGAGGA CACAAATGAA AAAACATTCC ATTCTCGTGG ATAGGAAGAA TCAATATCAT GAAAATGGCC ATACTACCCA AAGTAATTTA TAGGTTTCATT GCTATTCCCA TTAAACTACT ATTGACATTC TTCACAGAAT TAGAAAAAAA CTACTTTAAA ATTCAAATGG AACCAAAAAA GAGCCCGTAT AACCAAGACA ACAATAAGCA AAAAGAACAA AGCTGGAAGC ATCACACTAC CCAACCTCAA AGTATACTGC AAGGCTACAG TAGCCAAAAT GGCATGGTAC TGGTACAAAA ACAGACACAT AGACCAATGG AACAGAATAG AGACCAGAGA AAGAAAGACCA CACATCTACA GCCATCTGAT CATCGACAAA CCTGACAAAA ACAAGCAATG GGGAAAAGAT TCCCTATTTA ATAAATGGTG CTGGGAAAAC TGGCTAGCCA TATGCAGAAA ATTGAAACTG ACCCCTTCCT TACACCTTAT ACAAAAATTA ACTCAAGATT AAAGACTTAA TGTAACCCT AAAACTATAA AAACCCTAGA AGAAAATCTA TTTAATACCA TTCAAGACAT AGGCACAAGC AAAGGTTTCA TGACAAAAAC ATCAAAAGCA ATTGCAACAA AAGCAAAAAT TACAAATGGG ATCTAATTAA ACTAAAGAGC TCCTGCACAG	
--	--	--

[0074]

	CAAAAGAAAC TATCATTAGA GTGAACAGGC AACCTACAGA ATGGGAGAAC ATTTTGGCAA TCTATCCATC TGACAAAGGT CTAATATCCA GAACCTACAA GGAACCTAAA ACAAATTTAC AAGGAAAAAA ACAACCCCAT CAAAAAGTGG ACAAAGGACA TGAACAGACA CTTCTCAAAA GAAGACATTT ATGTGGCCAA CAAACATATA AAAAAAAGCT CAACCTTACT GATCATTAGA GAAATGCAAA GGAGAACCAC AATGAGATAC CATCTCATGC CGGTCAGAAT GGTGATTATT AAAAAAGTCAA AAAACAACAG ATGCTGGCGA GGCTGTGGAG AAGTAGGAAC ACTTTTACAT TGTTGGTGGG AATGTAAAT AGTTCAACCG TTGTGGAAGT GTGTGTGGCT ATTCTCAAA GATCTAGAAC TAGAAATACT ATTTGTCCCA GCAATCCCAT TACTGGGTAT ATACCCAAAG GAATATAAAC CATTTTATTA TAAAGATACA TGCACATTTT TGTTCATTGC AGCACTCTTC ACAAAGATA AGACACAATA GCAATGCCC ATCAAAGATA GACTGGATAA AGAAAATGTG GTACATATAC ACCATGGAAT ACTGTGCAGT GCAGCCATTA CAGCTTTTGG TGATACAGTG AATCAGATTT TTCATTAATT CTTTAAATTG GTTATTACTG AACGTGAAAA AGTAATGTTT GTATTGAAAT CTGAGTCTG GCCATGTTTC TATTTTAAAT TCATAAAGAA TTCTAACAAG AGGAATTCCA AGAATGTCAT AAATGGATGT TTCTCCATGG ATGAAGGAAC TGTTTTATTC ACTTGCTGAT AATTCAGCCT AATCCAGTTT GACATCATAT AGATAAGTAG TTGAATTATG GATTTAAAA ACATATCATT TTCTAACTCC AAAGGTAATA CTTATTTAAA TGGTTTTGAA AATATAGAAA GGCACAATTT CTTTTTAAAT CTGTTATTCT CCACCACCAC TCAATCTGTC TATCATCTAT CTCTCCATTC ATTCTTCCAT TIGTTTATAT CTGTAAATCT TTGTATGTGT TCATGTATAG CTTTTACATG ATTGGAATCA TAATGCATAT TCCATTTTGA AGTCTGCTTT TTTTACACA AAAATATGTT GIGAATATTT TCCTATATTA TGAAATATCA TTAGCTGAGC TTTTGAATTT GACTGCATGT TTTGGTACCA TTTAGATATA GTTTAAGATA CTTAGAAGTT ATGTGGCTTT GCCACTATGG ATGAATCTTA TTTACTCAAT ATTAATTACT TACAAATAAC CTCACCTAAA CACTACTCAG CCATAAAAAAG GAATGAATTA ATGACATTCA CAGCAACCTG GAGACTATTA CTCTAAAGGA AGTAACTGAG GAATGGAAAA CCAAACATTG TATGTTCTCA CTCATAAGTG GGAGATAAGC TATGAGGATG CAAAGGCATA AGAAGGATAC AATGGACTTT GGGGACTTAG GGGAAAGGGT GGGAGGGGGG TGAAGGATAA AAGAATACAA ATTGGGTTC GTGTATACTG CTCAGGTGAT GGGTGCACCA GAATCTCACA AGTAACCACT TAATTACTTA CGCATGTAAC CAGATACCAC CTGTTCCCCA AACACCTATG GAAATAATTT TGTTTTTTTT	
--	---	--

[0075]

		TTTAAAAAAG GAATGAGATC ATGTCCTTTG CAGGGACATG GATGAAGCTG GAAGCCATTA TCCTCAGCAA ACTAACAGAG GAGCAGGAAA CCAAAACACCA CATGTTCTCA CTTGTAAGCG GAAGCTGAAC AATGAGAACA CACGGACACA GGGATGAGAT CAACACACAC TGGGGCCTGA TGCAGGGGCC GTAGCGGGGA GAGCATCAGG ATAAC TAGCT AATGCATGTG GGGCTTAATA CCTAGGTGAT AGGTTGATAG GTGCAGCAAA CCACCATGGG ACACGTTTAC CTATGTAACA AACCCGCACA TCCTGCACTT GTATCCAGAA CTAAAAATAT TTTAAAAATC TTAGAGAAT ACAAAAAAAA AAAAAAAGAT TCTTCAATGC ATACACAATA AAATTGCAGT TCAGTCAAAC ATTGGAAGTC TTTCTCTGAC TGICTAGTTG GTATCTTCAT TTTCAGCTTC TTCAAGATCC CACTCCAAAC ACTGTTAGCT CAGCCAAATT GAACAGCTCA TATCTCTAC CTCTGGATCT TGGTCTGG TGATTGTATA TTTCTGGACC ATCTGGAACC CCAGCATATC ACCCTACCCC ACATCTCCAC ATCCCCAAAA TATAACCATA CTTCAAGGGC AGTTCAAATA CCATCTCCTT CTATCCTCCA TGAAGTCAGT TATCTCTCC ATTGGAATTA TCGCCCCCTC TCCTGAACAG TACTATTTCTG TGTGAATCTC CTCCAAGCCT TCTTTTCATT TTATATCTCA TGCTGTAATT CTTGGAAAGT ATGCTGTAGC TCAAGTGCAG AATTCTCATC AGTTTATCT TTATATCTCT CCTAAACACT TTACCTGATG AAGAGCCTGG CATAACATA AATATATATT GAATGAATCA GTGATGGATT GAAAAGAGAA ATGATGGATC TCCTAAATTT TAACTTTTAT AAAATATTTT GATACATTCA TGACCTTACT TTAGCAAGCA ATGAACGTGA TGTAACCTAT TGTTGATATA GTTTTTATAT TGGAAGTGTA AGTAGTTTGT GGCATGGGAT TGTGACATAT CCTAGGTTTC CTCATCTTCT TTTTATTGAA ATGTAATTCA CAAGCCATAA AATTTGCCCC TTAAAGTAA ATGATGCAGT GGATTTTAGT ATATTTACAG AGTTGTGCAA TCATCACCAC TATCTAATTC CAGAACATTT CCATCTACCT AGAAACTCCA TACCAAGTGAG CTGCCACTCT AATCCTCCTC TTCCCCCAGC CTCTAGAAAC AATAATCCAT TTTCTGTCTC TATGATTTGC CTGTCTAGA TATTTTATAA AAATAAACAT GTGGCCTTTT GTGTCTGACT TCCTTCACTT AAAAAA AAAA	
CFLAR -AS1	NR_04 0030.1	CATGCATACA GCCCAGTCTA ACGTACAGGA TCAAAAAGAG ACCTTATTTT GGCTGGCAAT TACCTTACCC GCTTGTTTAT TATCTGACTC CTGCACTCCT CCAAGTGTT CAATGTTAAC CAGATGGCAA AGTTAACCAG ACAGAGGAAA TCCACATAAT TACTCTAGAT GAAGCCCCCT AACTGCCGAT TAGAAGGAAA AGAGATGAAG GGTGCTGCAC TAATAATAAC AACCATTTTC	5

[0076]

		AACCAAGGCA GGATTCTGGG CCTAGAATCT TCAGTGACAA ATTACCAGGA GAGGAGGAGG GAAATGAAGA GCTGGAGGCC TAGGGAGATG GTGTGAGGAG AGGAGACTGT GCCTTTCCAC TTCTTAATAA TTAATGTTCT CCTGCTGCTC TGAGTCTGCA TCACCAAGTA TTCAGTTTGA GTCAGACATC CAACAACAAC TGAGCAAAAG AATCATCTCA GATCCAAGCA ATGGTGACGC GCAGATAGAA GAGACTGAGG CCAACGACCA AAGCAAAGGA CAGCAGAACT GACTGACACA GCTCAGAAAA TATCCAAAGC TCTGTATGCT CTGGAAAGGA AGACAAGAAA TGCTAAAGAC TCTGGATATT GCTCTGTTT TATAAGGTCC CACCCATATA CCATCTCTTC TTTTGGATTT CCTTTGGCAG GGTTCCTTG TATGGAAGTT CTCAGGAGAA CAACACTCTC AGAGTCCAC TGTCTCAAAG AATTCTTAAT GGACAGCTAT ACTTGGCCCC AAGGTTTCAA CCTCACACTG AAGAAAGTGA CATAAGAAAA CACAAGTCCC AGTGCTATCA GGGGCTATCT GGAAAAGCTG CTTAAACAGC AAGTGAAAGA AGGCTCTCCC CTACCCCGTT CTAGACTCAC CCTGAAGTTA TTTGAAGGAT CTTGAGACT CTTTTGGATT GCTGCTTGA GAACATTCCT GTAACCTGTC CCTGCTCCTT GAACTATAAA AGCAGAAGGG AGGTACTGAG TTAAAACTTA CAAATTATTA TCAAATAAAT CTTCAATAGT G	
CHP1	NM_0 07236. 4	ACCACCCCTG GGTTCCTCC CGGGTCCGCA GTGGAAACAC TGCCCTCTCC CTTCTTGACC CCTAGCCCTT CCTTCCCTCC CTCCTTCCCT CTTGTCGCGG TCTCTTCTGG CGCCGCTGCT CCCGGAGGAG CTCCCGGCAC GGCATGGGT TCTCGGGCCT CCACGTTACT GCGGGACGAA GAGCTCGAGG AGATCAAGAA GGAGACCGGC TTTTCCACA GTCAAATCAC TCGCCTCTAC AGCCGGTTCA CCAGCCTGGA CAAAGGAGAG AATGGGACTC TCAGCCGGGA AGATTTCAG AGGATTCCAG AACTTGCCAT CAACCCACTG GGGGACCGGA TCATCAATGC CTTCTTTCCA GAGGGAGAGG ACCAGGTAAT CTTCCGTGGA TTCATGCGAA CTTTGGCTCA TTTCCGCCCC ATTGAGGATA ATGAAAAGAG CAAAGATGTG AATGGACCCG AACCACTCAA CAGCCGAAGC AACAACTGC ACTTTGCTTT TCGACTATAT GATTTGGATA AAGATGAAAA GATCTCCCGT GATGAGCTGT TACAGGTGCT ACGCATGATG GTCGGAGTAA ATATCTCAGA TGAGCAGCTG GGCAGCATCG CAGACAGGAC CATTAGGAG GCTGATCAGG ATGGGGACAG TGCCATATCT TTCACAGAAT TTGTTAAGGT TTTGGAGAAG GTGGATGTAG AACAGAAAAT GAGCATCCGA TTTCTTCACT AAAGGAGACC AAACGTGTTCC TTGCGGTCTA GTATTTAAGA ACTGGAACCTT GAAAGTCTC CTTCTACCAA CTCCACCTCC ACCCCCTCAT TCCCCTTCTC CCAAAGTACT	6

[0077]

	ACTGCTGTTG CATGACAACC CCAAATATGT TCTGTCAACA CAAACCTGCC TTTGGTGTAT AAACAGGGCA TTACAGAATG GTACACCCTA TATAATTTCTG TTCAGTATCC ATTCAGTAGT TCTTCATTTA TAAATATCAT CTTCCCCATT CTGCTGCTGA ATGCCACACA TCCATCCAGT CTGAGAAAAGT GAGAGAGGCA ATCATGCCAA GAACAAGCCA GCAAAGCTCT TTCACCAGAT GTAGACTGTA GCCCTGCTGC CTTCCCTCCA GCGAGTCTGC CAGCATGCTT CTTCATCCTT TTTATATGTT CTTTGCTTCC TACTTCCCTG TCTTCCAACA TACTGTTTAC TTAATCTGGC AGTCTTTCTG CTITTCATTA AGCCTCAAAA TCTCCTCTGT TCTACTTGGC ACCACAAGCT ATGTCTCTATA TATGTATTTT TGACTTGGCA GGATAGTTCA GGGGTCTGGC AGTTTTTATT TACCTTCATT ATTAATGGG CCTCTGGGAT GTTGCCCTCT CAGGAGCTTT TTGGTAATCA ATACTTCTCT CAGAAGTATG AGACCATCCT CTGCACTCTG CTCTGTCATC AAAGGCTGCT GGGTGGAGAT ACCCTTTTGT AAAGGTGGCC TTGGTGAGAG GTATGGAGCC AAGTCTTCTA GGTTGCTTGC CCACATCACT CTATCTCTGG CCTCTGATTC TCAACTTTGT ACCTGTGTGG CTCCTCTTGT TAGTGCAATG TTGACTGTTG AAAAAGCAGC AGTATGCTTA CAGGTTTGT TAGTTTGGGG ACACCGTTAC CACCAGAATG GCTGCTCTGA CAATATGCCT AGGGACTTTC TCATGGCTTT TATTTAATAA GGAGGCTGGG CACCCTATAA AGCCTCATGC ATTCACACCT TTGCAGCATG GTTTATGCCT CAGTGTATG TGCCTGGAA TGTTTTCCAC TTCACATTTT CAAGTAGAAA TATTAGTGT ACGGAAGTGC CTAATATCCC AGTCCAAATT TTTTTTTTTT TTTTTTTTTT TTTTGAGAC AGAGTCTTGC TCTGTCACCC AGGCTGGAGT GCAGTGGTGC GATCGCTCAC TGCAACCTCA GCCTCCTGGA TTAAAGTGAT TCTCCTGCCT CAGCCTCCCA AGTAGCTGGG ATTACAGGTG TGCACCACCA TGCCCGGCTA ATTTTTTGTA TTTTAGTGG AGACAGGGTT TCACCATGTT GGCCAGGCTG GTCTCGAACT CCTGACCTCG TGATCCGCCT GCCTCAGCCT CCCAAAGTGC TGGGATTACA GGTGTGAGCC ACCACGCCTG GCCCCAGTCC AAAATATTTA AAGATTGTTT CTTAGTGTTC TTGAAGTTTT GCACAAAATT CTTTTTTTTT AGATGGAGTC TCACTCTGTC ACCCAGGCTG GAGTGCAGTG GCGTGATCTT GGCTCACTGC AACCTTGCC TCCTGGGTTT AAGCAATTCT CCCACCTCAG CCTCCAAAGT AGCTGGGATT ACAGACGTGT GCCACCATA CTGGGTAATT TTTCATTTT TAGTGGAGAG GGAGTTTCAC CATGTTGGCC AGGTGGTCT TGAATCCTG ACCTCAGGTG ATCTCCTGC CTCGGCCTCC CAAAGTGCTG GGATTACAGG CATGAGCCAC CGTGCTCAGC CGCAAAATTC TTTATGAATT	
--	---	--

[0078]

		TTACACTTGG CAAATGTAA TGACGGAAGC CATAGTCTGC TCCTAATACA TGTCCAAAGC ATTGACTGTT GTGTCATTAG CTGCCTGGTT ACATTAGCTC CCTGGCTTCT TGTTTAGACC ACTGCTAATC CCTTAAAAAC AAGAGGTCTG GCACTAGTAG CACAACCTAA GGTGGCATT CAGATCTTTG AGCGAGCCAC AGCAACTTTT CTGCCAAGTC AGCTTAGTTT AGACTTCAGT GAATCAGGCT ATTGCTATCC TAATGTATGT CTCTATGAGT GTATTTAGCC ACACATCTGC CCTTGGTTGA CTTTCTGACT CATTGTCTGC TTGCTTGTTC CCTTGTCTTG GAAAACTATT GAAGATTGCT AAAAAATACC ACTGCAAAGT GATGGAAAAG GGTGGAGAAC AGGGGAGTAG CCAGGCTGGA TGGCTCAAAT ATAAATGAAT GAGGAATTCT TTATGAAGTA TCAGTCAGAT TTTATGATTA AGTGATGTA TATAGGAATT ATGTAAAAGG GAAGAATGTC TGATACTGAT CTATTAGAGA GGTACTTTAG AGGCTTCTTG ATTGGCATAA AGTTCCTAAG GTTATAGATT TTCCCCCTT TTGGCTGTAT AGCAAAGTGT TTAAATCCAC GGTTGTGCCT TATTGTTCCA TTAATAATTGT ATCTTCGATC CATCAATAAA TACTTGTGGT TGAAACAAAA	
DDX55	NM_020936.2	AGCGGAAGTG CTCGTTGGGG GTGCACAAGG CGCGTTCGAG CAGCGGCGAC CGACGCGGCG AAGGAGCGCG CCATGGAGCA TGTGACAGAG GGCTCCTGGG AGTCGCTGCC TGTGCCGCTG CAGCCGAGG TGCTGGGCGC GCTGCGGGAG CTGGGCTTCC CGTACATGAC GCCGGTGCAG TCCGCAACCA TCCCTCTGTT CATGCGAAAC AAAGATGTCG CTGCAGAAGC GGTACAGGT AGTGGAACAA CACTCGCTTT TGTCAATCCC ATCCTGAAA TTCTTCTGAG AAGAGAAGAG AAGTTAAAAA AGAGTCAGGT TGGAGCCATA ATCATCACCC CCACTCGAGA GCTGGCCATT CAAATAGACG AGGTCTGTG GCATTTACG AAGCACTTCC CCGAGTTCAG CCAGATTCTT TGGATCGGAG GCAGGAATCC TGGAGAAGAT GTTGAGAGGT TTAAGCAACA AGGTGGGAAC ATCATTTGGG CCACTCCAGG CCGCTTGGAG GACATGTTCC GGAGGAAGGC CGAAGGCTTG GATCTGGCCA GCTGTGTGCG ATCCCTGGAT GTCCTGCTGT TGGATGAGGC AGACAGACTT CTGGACATGG GGTTTGAGGC AAGCATCAAC ACCATTCTGG AGTTTTTGCC AAAGCAGAGG AGAACAGGCC TTTTCTCTGC CACTCAGACG CAGGAAGTGG AGAACCTGGT GAGAGCGGGC CTCCGGAACC CTGTCCGGGT CTCAGTGAAG GAGAAGGGCG TGGCAGCCAG CAGTGCCAG AAGACCCCT CCCGCCTGGA AAACTACTAC ATGGTATGCA AGGCAGATGA GAAATTTAAT CAGCTGGTCC ATTTTCTTCG CAATCATAAG CAGGAGAAAC ACCTGGTCTT CTCAGCACC TGTGCCTGTG TGGAATACTA	7

[0079]

	TGGGAAGGCT CTGGAAGTGC TGGTGAAGGG CGTGAAGATT ATGTGCATTC ACGGAAAGAT GAAATATAAA CGCAATAAGA TCTTCATGGA GTTCCGCAAA TTGCAAAGTG GGATTTTAGT GTGCACTGAT GTGATGGCCC GGGGAATTGA TATTCCTGAA GTCAACTGGG TTTTGCACTA TGACCTCTCC AGCAATGCAA GTGCCCTCGT GCATCGCTGC GGTCGCACAG CTCGCATTGG CCACGGGGGC AGCGCTCTGG TGTTCCTCCT GCCCATGGAA GAGTCATACA TCAATTTCTT TGCAATTAAC CAAAAATGCC CCCTGCAGGA GATGAAGCCC CAGAGAAACA CAGCGGACCT TCTGCCAAAA CTCAAGTCCA TGGCCCTGGC TGACAGAGCT GTGTTTGAAA AGGGCATGAA AGCTTTTGTG TCATATGTCC AAGCTTATGC AAAGCATGAA TGCAACCTGA TTTTCAGATT AAAGGATCTT GATTTTGCCA GCCTTGCTCG AGGTTTIGCC CTGCTGAGGA TGCCCAAGAT GCCAGAATTG AGAGGAAAGC AGTTTCCAGA TTTTGTGCCC GTGGACGTTA ATACCGACAC GATTCATTTT AAAGATAAAA TCAGAGAAAA GCAGAGGCAG AAACCTCTGG AGCAACAAAG AAGAGAGAAA ACAGAAAATG AAGGGAGAAG AAAATTCATA AAAAATAAAG CTTGGTCAAA GCAGAAGGCC AAAAAAGAAA AGAAGAAAAA AATGAATGAG AAAAGGAAAA GGAAGAGGGG TTCTGATATT GAAGATGAGG ACATGGAAGA ACTTCTTAAT GACACAAGAC TCTTGAAAAA ACTTAAGAAA GGCAAAATAA CTGAAGAAGA ATTTGAGAAG GGCTTGTGA CAACTGGCAA AAGAACAATC AAGACAGTGG ATTTAGGGAT CTCAGATTG GAAGATGACT GCTGATTCCA GTGCCACAGA TGAACCCACA AGGACATAGC TGTTCCTAA CTTGGTGGAT GGCTCCAGTT TGCTTTTAAC GAAAATCACA ACTTCAGGAG ACATCTGAAA AGAATGATGT CTCTGAAAGC TGTCTTTTCA GATGAGGGAG AAATGAAGGA TTTCACACTT CAGAATATTT TACTAAAAAC ATTCCAGTCT TGGCCGGGTG CGGTGGCTCC TGCCTATAAT CCCAGCACTT TGGGAGGCTG AGGCAGGAGG ATCACTTGAG CCCAGGAGTT CAAGACCAGC CTGGGAACAC AGCGAGACCC TCTCATTAAC AACAAACAAA CAAAACAATT CCAGTCTTGG AGTAGTCTAA CAGAAGAAAA TGTAATAATTA TTTGAGTGTA AATAATAGAT GTCAGTATTT ATCATGATGG GTCACATATA GACATATGTA CATATTATAT ATATATATAT ATATATATAT ATATATATAT ATATATATAT ATAAGCTCTT TTTTCTGAGG CTATTTTATA GTTATTTTAA AACATAAAGA TACAGAAGTC TTCTTGACTT CTGATTTTCA AAACCATTC TCAATATCTT CAGGCATTTG ACCTCCTGAA TGTGCTTGGC CCTGGGCTTC AGTTATCCTT TGATGTCCTG CAGGGGTGGC TAATGTGCTG GGGTTTTTCT GTGTAAATAG TCACAGTATT GTTTTATTGG TGAATAGCTG AAAAACAGAG	
--	--	--

[0080]

		GGATTAAGTC ATATTCCGGG AAAGAGAATT ATAGTTTTTA TGCCTCCTGT TGAATAAATG GTGTCCTGAT TGCCTGGG	
DMD	NM_00109.3	CGTTAAATGC AAACGCTGCT CTGGCTCATG TGTTTGCTCC GAGGTATAGG TTTTGTTTGA CTGACGTATC AGATAGTCAG AGTGGTTACC ACACCGACGT TGTAGCAGCT GCATAATAAA TGA CTGAAAAG AATCATGTTA GGCATGCCCA CCTAACCTAA CTTGAATCAT GCGAAAAGGG AGCTGTTGGA ATTCAAATAG ACTTTCTGGT TCCCAGCAGT CGGCAGTAAT AGAATGCTTT CAGGAAGATG ACAGAATCAG GAGAAAAGATG CTGTTTTGCA CTATCTTGAT TTGTTACAGC AGCCAACTTA TTGGCATGAT GGAGTGACAG GAAAAACAGC TGGCATGGAA GATGAAAAGAG AAGATGTTCA AAAGAAAACA TTCACAAAAT GGGTAAATGC ACAATTTTCT AAGTTTGGGA AGCAGCATAT TGAGAACCTC TTCAGTGACC TACAGGATGG GAGGCGCCTC CTAGACCTCC TCGAAGGCCT GACAGGGCAA AAAGTGCCTA AAGAAAAAGG ATCCACAAGA GTTCATGCCC TGAACAATGT CAACAAGGCA CTGCGGGTTT TGCAGAACAA TAATGTTGAT TTAGTGAATA TTGGAAGTAC TGACATCGTA GATGGAAATC ATAACTGAC TCTTGTTTG ATTTGGAATA TAATCCTCCA CTGGCAGGTC AAAAATGTAA TGAAAAATAT CATGGCTGGA TTGCAACAAA CCAACAGTGA AAAGATTCTC CTGAGCTGGG TCCGACAATC AACTCGTAAT TATCCACAGG TTAATGTAAT CAACTTCACC ACCAGCTGGT CTGATGGCCT GGCTTTGAAT GCTCTCATCC ATAGTCATAG GCCAGACCTA TTGACTGGA ATAGTGTGGT TTGCCAGCAG TCAGCCACAC AACGACTGGA ACATGCATTG AACATCGCCA GATATCAATT AGGCATAGAG AAAGTACTCG ATCCTGAAGA TGTTGATACC ACCTATCCAG ATAAGAAGTC CATCTTAATG TACATCACAT CACTCTTCCA AGTTTTGCCT CAACAAGTGA GCATTGAAGC CATCCAGGAA GTGGAAATGT TGCCAAGGCC ACCTAAAGTG ACTAAAGAAG AACATTTTCA GTTACATCAT CAAATGCACT ATTCTCAACA GATCACGGTC AGTCTAGCAC AGGGATATGA GAGAACTTCT TCCCCTAAGC CTCGATTCAA GAGCTATGCC TACACACAGG CTGCTTATGT CACCACCTCT GACCCTACAC GGAGCCCATT TCCTTCACAG CATTTGGAAG CTCCTGAAGA CAAGTCATTT GGCAGTTCAT TGATGGAGAG TGAAGTAAAC CTGGACCGTT ATCAAACAGC TTTAGAAGAA GTATTATCGT GGCTTCTTTC TGCTGAGGAC ACATTGCAAG CACAAGGAGA GATTTCTAAT GATGTGGAAG TGGTGAAAGA CCAGTTTCAT ACTCATGAGG GGTACATGAT GGATTTGACA GCCCATCAGG GCCGGGTTGG TAATATTCTA CAATTGGGAA GTAAGCTGAT TGGAACAGGA AAATTATCAG	8

[0081]

	AAGATGAAGA AACTGAAGTA CAAGAGCAGA TGAATCTCCT AAATTCAAGA TGGGAATGCC TCAGGGTAGC TAGCATGGAA AAACAAAGCA ATTTACATAG AGTTTTAATG GATCTCCAGA ATCAGAAACT GAAAGAGTTG AATGACTGGC TAACAAAAAC AGAAGAAAAGA ACAAGGAAAA TGGAGGAAGA GCCTCTTGGG CCTGATCTTG AAGACCTAAA ACGCCAAGTA CAACAACATA AGGTGCTTCA AGAAGATCTA GAACAAGAAC AAGTCAGGGT CAATTCTCTC ACTCACATGG TGGTGGTAGT TGATGAATCT AGTGGAGATC ACGCAACTGC TGCTTTGGAA GAACAACCTA AGGTATTGGG AGATCGATGG GCAAACATCT GTAGATGGAC AGAAGACCGC TGGGTTCTTT TACAAGACAT CTTTCTCAA TGGCAACGTC TTAAGTGAAGA ACAGTGCCTT TTTAGTGCAT GGCTTTCAGA AAAAGAAGAT GCAGTGAACA AGATTACAC AACTGGCTTT AAAGATCAAA ATGAAATGTT ATCAAGTCTT CAAAAACCTGG CCGTTTTAAA AGCGGATCTA GAAAAGAAAA AGCAATCCAT GGGCAAACIG TATTCACCTA AACAAAGATCT TCTTTCAACA CTGAAGAATA AGTCAGTGAC CCAGAAGACG GAAGCATGGC TGGATAACTT TGCCCGGTGT TGGGATAATT TAGTCCAAAA ACTTGAAAAG AGTACAGCAC AGATTTCACA GGCTGTCACC ACCACTCAGC CATCACTAAC ACAGACAACT GTAATGGAAG CAGTAACTAC GGTGACCACA AGGGAACAGA TCCTGGTAAA GCATGCTCAA GAGGAACCTC CACCACCACC TCCCCAAAAG AAGAGGCAGA TTAAGTGTGA TTCTGAAATT AGGAAAAGGT TGGATGTTGA TATAACTGAA CTTACAGCT GGATTACTCG CTCAGAAGCT GTGTTGCAGA GTCCTGAATT TGCAATCTTT CGGAAGGAAG GCAACTTCTC AGACTTAAAA GAAAAAGTCA ATGCCATAGA GCGAGAAAAA GCTGAGAAGT TCAGAAAACCT GCAAGATGCC AGCAGATCAG CTCAGGCCCT GGTGGAACAG ATGGTGAATG AGGGTGTTAA TGCAGATAGC ATCAAACAAG CTTCAAGACA ACTGAACAGC CGGTGGATCG AATTCTGCCA GTTGCTAAGT GAGAGACTTA ACTGGCTGGA GTATCAGAAC AACATCATCG CTTTCTATAA TCAGCTACAA CAATTGGAGC AGATGACAAC TACTGCTGAA AACTGGTTGA AAATCCAACC CACCACCCA TCAGAGCCAA CAGCAATTAA AAGTCAGTTA AAAATTTGTA AGGATGAAGT CAACCGGCTA TCAGGICTTC AACCTCAAAT TGAACGATTA AAAATTCAAA GCATAGCCCT GAAAGAGAAA GGACAAGGAC CCATGTTTCT GGATGCAGAC TTTGTGGCCT TTACAAATCA TTTTAAGCAA GTCTTTTCTG ATGTGCAGGC CAGAGAGAAA GAGCTACAGA CAATTTTGA CACTTTGCCA CCAATGCGCT ATCAGGAGAC CATGAGTGCC ATCAGGACAT GGGTCCAGCA GTCAGAAACC AAACTCTCCA TACCTCAACT TAGTGTACC GACTATGAAA	
--	---	--

[0082]

	TCATGGAGCA GAGACTCGGG GAATTGCAGG CTTTACAAAG TTCTCTGCAA GAGCAACAAA GTGGCCTATA CTATCTCAGC ACCACTGTGA AAGAGATGTC GAAGAAAAGCG CCCTCTGAAA TTAGCCGGAA ATATCAATCA GAATTTGAAG AAATTGAGGG ACGCTGGAAG AAGCTCTCCT CCCAGCTGGT TGAGCATTGT CAAAAGCTAG AGGAGCAAAT GAATAAACTC CGAAAAATTC AGAATCACAT ACAAACCCTG AAGAAATGGA TGGCTGAAGT TGATGTTTTT CTGAAGGAGG AATGGCCTGC CCTTGGGGAT TCAGAAATTC TAAAAAAGCA GCTGAAACAG TGCAGACTTT TAGTCAGTGA TATTCAGACA ATTCAGCCCA GTCTAAACAG TGTCATGAA GGTGGGCAGA AGATAAAGAA TGAAGCAGAG CCAGAGTTTG CTTCGAGACT TGAGACAGAA CTCAAGAAGC TTAACTCTCA GTGGGATCAC ATGTGCCAAC AGGTCTATGC CAGAAAGGAG GCCTTGAAGG GAGGTTTGGG GAAAACTGTA AGCCTCCAGA AAGATCTATC AGAGATGCAC GAATGGATGA CACAAGCTGA AGAAGAGTAT CTTGAGAGAG ATTTTGAATA TAAAACTCCA GATGAATTAC AGAAAGCAGT TGAAGAGATG AAGAGAGCTA AAGAAGAGGC CCAACAAAAA GAAGCGAAAAG TGAAACTCCT TACTGAGTCT GTAAATAGTG TCATAGCTCA AGCTCCACCT GTAGCACAAG AGGCCTTAAA AAAGGAACTT GAAACTCTAA CCACCAACTA CCAGTGGCTC TGCCTAGGC TGAATGGGAA ATGCAAGACT TTGGAAGAAG TTTGGGCATG TTGGCATGAG TTATTGTCAT ACTTGGAGAA AGCAAAACAAG TGGCTAAATG AAGTAGAATT TAACTTAAA ACCACTGAAA ACATTCCTGG CGGAGCTGAG GAAATCTCTG AGGTGCTAGA TTCCTTGAA AATTTGATGC GACATTCAGA GGATAACCCA AATCAGATTC GCATATTGGC ACAGACCCTA ACAGATGGCG GAGTCATGGA TGAGCTAATC AATGAGGAAC TTGAGACATT TAATTCCTCGT TGGAGGGAAC TACATGAAGA GGCTGTAAGG AGGCAAAAGT TGCTTGAACA GAGCATCCAG TCTGCCCAGG AGACTGAAAA ATCCTTACAC TTAATCCAGG AGTCCCTCAC ATTCATTGAC AAGCAGTTGG CAGCTTATAT TGCAGACAAG GTGGACGCAG CTCAAATGCC TCAGGAAGCC CAGAAAAATCC AATCTGATTT GACAAATCAT GAGATCAGTT TAGAAGAAAT GAAGAAACAT AATCAGGGGA AGGAGGCTGC CCAAAGAGTC CTGTCTCAGA TTGATGTTGC ACAGAAAAAA TTACAAGATG TCTCCATGAA GTTTCGATTA TTCCAGAAAC CAGCCAATTT TGAGCAGCGT CTACAAGAAA GTAAGATGAT TTAGATGAA GTGAAGATGC ACTTGCCTGC ATTGGAAACA AAGAGTGTGG AACAGGAAGT AGTACAGTCA CAGCTAAATC ATTGTTGTGAA CTTGTATAAA AGTCTGAGTG AAGTGAAGTC TGAAGTGGAA ATGGTGATAA AGACTGGACG TCAGATTGTA CAGAAAAAGC	
--	--	--

[0083]

	AGACGGAAAA TCCCAAAGAA CTTGATGAAA GAGTAACAGC TTTGAAATTG CATTATAATG AGCTGGGAGC AAAGGTAACA GAAAGAAAAGC AACAGTTGGA GAAATGCTTG AAATTGTCCC GTAAGATGCG AAAGGAAATG AATGTCTTGA CAGAATGGCT GGCAGCTACA GATATGGAAT TGACAAAGAG ATCAGCAGTT GAAGGAATGC CTAGTAATTT GGATTCTGAA GTTGCCTGGG GAAAGGCTAC TCAAAAAGAG ATTGAGAAAAC AGAAGGTGCA CCTGAAGAGT ATCACAGAGG TAGGAGAGGC CTTGAAAACA GTTTTGGGCA AGAAGGAGAC GTTGGTGGAA GATAAACTCA GTCTTCTGAA TAGTAAGTGG ATAGCTGTCA CCTCCCGAGC AGAAGAGTGG TTAATCTTT TGTTGGAATA CCAGAAACAC ATGGAACTT TTGACCAGAA TGTGGACCAC ATCACAAAGT GGATCATTCA GGCTGACACA CTTTGGATG AATCAGAGAA AAAGAAACCC CAGCAAAAAG AAGACGTGCT TAAGCGTTTA AAGGCAGAAC TGAATGACAT ACGCCCAAAG GTGGACTCTA CACGTGACCA AGCAGCAAAC TTGATGGCAA ACCGCGGTGA CCACTGCAGG AAATTAGTAG AGCCCCAAAT CTCAGAGCTC AACCATCGAT TTGCAGCCAT TTCACACAGA ATTAAGACTG GAAAGGCCCTC CATTCTTTG AAGGAATTGG AGCAGTTTAA CTCAGATATA CAAAAATTGC TTGAACCACT GGAGGCTGAA ATTCAGCAGG GGGTGAACTT GAAAGAGGAA GACTTCAATA AAGATATGAA TGAAGACAAT GAGGGTACTG TAAAAGAATT GTTGCAAGA GAGAGACAACT TACAACAAAG AATCACAGAT GAGAGAAAAGC GAGAGGAAAT AAAGATAAAA CAGCAGCTGT TACAGACAAA ACATAATGCT CTCAAGGATT TGAGGTCTCA AAGAAGAAAA AAGGCTCTAG AAATTTCTCA TCAGTGGTAT CAGTACAAGA GGCAGGCTGA TGATCTCCTG AAATGCTTGG ATGACATTGA AAAAAAATTA GCCAGCCTAC CTGAGCCCAG AGATGAAAGG AAAATAAAGG AAATTGATCG GGAATTGCAG AAGAAGAAAG AGGAGCTGAA TGCAGTGCCT AGGCAAGCTG AGGGCTTGTC TGAGGATGGG GCCGCAATGG CAGTGGAGCC AACTCAGATC CAGCTCAGCA AGCGCTGGCG GGAAATTGAG AGCAAATTTG CTCAGTTTCG AAGACTCAAC TTTGCACAAA TTCACACTGT CCGTGAAGAA ACGATGATGG TGATGACTGA AGACATGCCT TTGGAAATTT CTTATGTGCC TTCTACTTAT TTGACTGAAA TCACTCATGT CTCACAAGCC CTATTAGAAG TGGAACAACT TCTCAATGCT CCTGACCTCT GTGCTAAGGA CTTGAAGAT CTCTTTAAGC AAGAGGAGTC TCTGAAGAAT ATAAAAGATA GTCTACAACA AAGCTCAGGT CGGATTGACA TTATTCATAG CAAGAAGACA GCAGCATTGC AAAGTGCAAC GCCTGTGGAA AGGGTGAAGC TACAGGAAGC TCTCTCCAG CTTGATTTCC AATGGGAAAA AGTTAACAAA ATGTACAAGG	
--	--	--

[0084]

	ACCGACAAGG GCGATTTGAC AGATCTGTTG AGAAATGGCG GCGTTTTTCAT TATGATATAA AGATATTTAA TCAGTGGCTA ACAGAAGCTG AACAGTTTCT CAGAAAAGACA CAAATTCCTG AGAATTGGGA ACATGCTAAA TACAAATGGT ATCTTAAGGA ACTCCAGGAT GGCATTGGGC AGCGGCAAAC TGTGTGTCAGA ACATTGAATG CAACTGGGGA AGAAATAATT CAGCAATCCT CAAAAACAGA TGCCAGTATT CTACAGGAAA AATTGGGAAG CCTGAATCTG CGGTGGCAGG AGGTCTGCAA ACAGCTGTCA GACAGAAAAA AGAGGCTAGA AGAACAAAAAG AATATCTTGT CAGAATTTCA AAGAGATTTA AATGAATTTG TTTTATGGTT GGAGGAAGCA GATAACATTG CTAGTATCCC ACTTGAACCT GGAAAAGAGC AGCAACTAAA AGAAAAGCTT GAGCAAGTCA AGTTACTGGT GGAAGAGTTG CCCCTGCGCC AGGGAATTCT CAAAACATTA AATGAAACTG GAGGACCCGT GCTTGTAAGT GCTCCCATAA GCCAGAAGA GCAAGATAAA CTTGAAAATA AGCTCAAGCA GACAAATCTC CAGTGGATAA AGGTTTCCAG AGCTTTACCT GAGAAACAAG GAGAAATTGA AGCTCAAATA AAAGACCTTG GGCAGCTTGA AAAAAAGCTT GAAGACCTTG AAGAGCAGTT AAATCATCTG CTGCTGTGGT TATCTCCTAT TAGGAATCAG TTGGAAATTT ATAACCAACC AAACCAAGAA GGACCATTTG ACGTTCAGGA AACTGAAATA GCAGTTCAAG CTAAACAACC GGATGTGGAA GAGATTTTGT CTAAAGGGCA GCATTTGTAC AAGGAAAAAC CAGCCACTCA GCCAGTGAAG AGGAAGTTAG AAGATCTGAG CTCTGAGTGG AAGGCGGTAA ACCGTTTACT TCAAGAGCTG AGGGCAAAGC AGCCTGACCT AGCTCCTGGA CTGACCACTA TTGGAGCCTC TCCTACTCAG ACTGTTACTC TGGTGACACA ACCTGTGGTT ACTAAGGAAA CTGCCATCTC CAAACTAGAA ATGCCATCTT CCTTGATGTT GGAGGTACCT GCTCTGGCAG ATTTCAACCG GGCTTGGACA GAACTTACCG ACTGGCTTTC TCTGCTTGAT CAAGTTATAA AATCACAGAG GGTGATGGTG GGTGACCTTG AGGATATCAA CGAGATGATC ATCAAGCAGA AGGCAACAAT GCAGGATTTG GAACAGAGGC GTCCCCAGTT GGAAGAACTC ATTACCGCTG CCCAAAATTT GAAAAACAAG ACCAGCAATC AAGAGGCTAG AACAATCATT ACGGATCGAA TTGAAAGAAT TCAGAATCAG TGGGATGAAG TACAAGAACA CCTTCAGAAC CGGAGGCAAC AGTTGAATGA AATGTTAAAG GATTCAACAC AATGGCTGGA AGCTAAGGAA GAAGCTGAGC AGGTCTTAGG ACAGGCCAGA GCCAAGCTTG AGTCATGGAA GGAGGGTCCC TATACAGTAG ATGCAATCCA AAAGAAAATC ACAGAAACCA AGCAGTTGGC CAAAGACCTC CGCCAGTGGC AGACAAATGT AGATGTGGCA AATGACTTGG CCTGAAACT TCTCCGGGAT TATTCTGCAG	
--	---	--

[0085]

	ATGATACCAG AAAAGTCCAC ATGATAACAG AGAATATCAA TGCCTCTTGG AGAAGCATTG ATAAAAGGGT GAGTGAGCGA GAGGCTGCTT TGAAGAAAAC TCATAGATTA CTGCAACAGT TCCCCCTGGA CCTGGAAAAAG TTTCTTGCCT GGCTTACAGA AGCTGAAACA ACTGCCAATG TCCTACAGGA TGCTACCCGT AAGGAAAGGC TCCTAGAAGA CTCCAAGGGA GTAAAAGAGC TGATGAAACA ATGGCAAGAC CTCCAAGGTG AAATTGAAGC TCACACAGAT GTTTATCACA ACCTGGATGA AAACAGCCAA AAAATCCTGA GATCCCTGGA AGGTTCCGAT GATGCAGTCC TGTACAAAAG ACGTTTGGAT AACATGAACT TCAAGTGGAG TGAATTCGG AAAAAGTCTC TCAACATTAG GTCCCATTG GAAGCCAGTT CTGACCAGTG GAAGCGTCTG CACCTTTCTC TGCAGGAACT TCTGGTGTGG CTACAGCTGA AAGATGATGA ATTAAGCCGG CAGGCACCTA TTGGAGGCGA CTTTCCAGCA GTTCAGAAGC AGAACGATGT ACATAGGGCC TTCAAGAGGG AATTGAAAAC TAAAGAACCT GTAATCATGA GTACTCTTGA GACTGTACGA ATATTTCTGA CAGAGCAGCC TTTGGAAGGA CTAGAGAAAC TCTACCAGGA GCCCAGAGAG CTGCCTCTG AGGAGAGAGC CCAGAATGTC ACTCGGCTTC TACGAAAGCA GGCTGAGGAG GTCAATACTG AGTGGGAAAA ATTGAACCTG CACTCCGCTG ACTGGCAGAG AAAAATAGAT GAGACCTTG AAAGACTCCA GGAACITCAA GAGGCCACGG ATGAGCTGGA CCTCAAGCTG CGCCAAGCTG AGGTGATCAA GGGATCCTGG CAGCCCCTGG GCGATCTCCT CATTGACTCT CTCCAAGATC ACCTCGAGAA AGTCAAGGCA CTTGAGGAG AAATTGCGCC TCTGAAAGAG AACGTGAGCC ACGTCAATGA CCTTGCTCGC CAGCTTACCA CTTTGGGCAT TCAGCTCTCA CCGTATAACC TCAGCACTCT GGAAGACCTG AACACCAGAT GGAAGCTTCT GCAGGTGGCC GTCGAGGACC GAGTCAGGCA GCTGCATGAA GCCCACAGGG ACTTTGGTCC AGCATCTCAG CACTTTCTTT CCACGTCTGT CCAGGGTCCC TGGGAGAGAG CCATCTCGCC AAACAAAGTG CCCTACTATA TCAACCACGA GACTCAAACA ACTTGCTGGG ACCATCCCAA AATGACAGAG CTCTACCAGT CTTIAGCTGA CCTGAATAAT GTCAGATTCT CAGCTTATAG GACTGCCATG AAACCTCCGA GACTGCAGAA GGCCCTTTGC TTGGATCTCT TGAGCCTGTC AGCTGCATGT GATGCCTTGG ACCAGCACAA CCTCAAGCAA AATGACCAGC CCATGGATAT CCTGCAGATT ATTAATTGTT TGACCACTAT TTATGACCGC CTGGAGCAAG AGCACAACAA TTTGGTCAAC GTCCCTCTCT GCGTGGATAT GTGTCTGAAC TGGCTGCTGA ATGTTTATGA TACGGGACGA ACAGGGAGGA TCCGTGTCCT GTCTTTTAAA ACTGGCATCA TTTCCCTGTG TAAAGCACAT TTGGAAGACA	
--	---	--

[0086]

	AGTACAGATA CCTTTTCAAG CAAGTGGCAA GTTCAACAGG ATTTTGTGAC CAGCGCAGGC TGGGCCTCCT TCTGCATGAT TCTATCCAAA TTCCAAGACA GTTGGGTGAA GTTGCATCCT TTGGGGGCAG TAACATTGAG CCAAGTGTCC GGAGCTGCTT CCAATTTGCT AATAATAAGC CAGAGATCGA AGCGGCCCTC TTCCTAGACT GGATGAGACT GGAACCCAG TCCATGGTGT GGCTGCCCCG CCTGCACAGA GTGGCTGCTG CAGAACTGC CAAGCATCAG GCCAAATGTA ACATCTGCAA AGAGTGTCCA ATCATTGGAT TCAGGTACAG GAGTCTAAAG CACTTTAATT ATGACATCTG CCAAAGCTGC TTTTTTCTG GTCGAGTTGC AAAAGGCCAT AAAATGCACT ATCCCATGGT GGAATATTGC ACTCCGACTA CATCAGGAGA AGATGTTTGA GACTTTGCCA AGGTACTAAA AAACAAATTT CGAACCAAAA GGTATTTTGC GAAGCATCCC CGAATGGGCT ACCTGCCAGT GCAGACTGTCC TTAGAGGGGG ACAACATGGA AACTCCCGTT ACTCTGATCA ACTTCTGGCC AGTAGATTCT GCGCCTGCCT CGTCCCCTCA GCTTTCACAC GATGATACTC ATTCACGCAT TGAACATTAT GCTAGCAGGC TAGCAGAAAT GGAAAAACAGC AATGGATCTT ATCTAAATGA TAGCATCTCT CTAATGAGA GCATAGATGA TGAACATTTG TTAATCCAGC ATTACTGCCA AAGTTTGAAC CAGGACTCCC CCCTGAGCCA GCCTCGTAGT CTTGCCCAGA TCTTGATTTT CTTAGAGAGT GAGGAAAGAG GGGAGCTAGA GAGAATCCTA GCAGATCTTG AGGAAGAAAA CAGGAATCTG CAAGCAGAAT ATGACCGTCT AAAGCAGCAG CACGAACATA AAGGCCTGTC CCCACTGCCG TCCCCTCCTG AAATGATGCC CACCTCTCCC CAGAGTCCCC GGGATGCTGA GCTCATTGCT GAGGCCAAGC TACTGCGTCA ACACAAAGGC CGCCTGGAAG CCAGGATGCA AATCCTGGAA GACCACAATA AACAGCTGGA GTCACAGTTA CACAGGCTAA GGCAGCTGCT GGAGCAACCC CAGGCAGAGG CCAAAGTGAA TGGCACAACG GTGTCTCTC CTTCTACCTC TCTACAGAGG TCCGACAGCA GTCAGCCTAT GCTGCTCCGA GTGGTTGGCA GTCAAACCTC GGAATCCATG GGTGAGGAAG ATCTTCTCAG TCCTCCCCAG GACACAAGCA CAGGGTTAGA GGAGGTGATG GAGCAACTCA ACAACTCCTT CCCTAGTTCA AGAGGAAGAA ATACCCCTGG AAAGCCAATG AGAGAGGACA CAATGTAGGA AGTCTTTTCC ACATGGCAGA TGATTTGGGC AGAGCGATGG AGTCCTTAGT ATCAGTCATG ACAGATGAAG AAGGAGCAGA ATAAATGTTT TACAACCTCT GATTCCCGCA TGGTTTTTAT AATATTCATA CAACAAAGAG GATTAGACAG TAAGAGTTTA CAAGAAATAA ATCTATATTT TTGTGAAGGG TAGTGGTATT ATACTGTAGA TTTCAGTAGT TTCTAAGTCT GTTATTGTTT TGTAAACAAT GGCAGGTTTT	
--	---	--

[0087]

	ACACGCTCTAT GCAATTGTAC AAAAAAGTTA TAAGAAAAC ACATGTAAAA TCTTGATAGC TAAATAACTT GCCATTTCTT TATATGGAAC GCATTTTGGG TTGTTTAAAA ATTTATAACA GTTATAAAGA AAGATTGTAA ACTAAAGTGT GCTTTATAAA AAAAAGTTGT TTATAAAAAAC CCCTAAAAAC AAAACAAACA CACACACACA CACATACACA CACACACACA AAACTTTGAG GCAGCGCATT GTTTTGCATC CTTTGGCGT GATATCCATA TGAAATTCAT GGCTTTTCT TTTTTCAT ATTAAGATA AGACTTCCTC TACCACCACA CCAAATGACT ACTACACACT GCTCATTGA GAACTGTCAG CTGAGTGGGG CAGGCTTGAG TTTTCATTTT ATATATCTAT ATGTCTATAA GTATATAAAT ACTATAGTTA TATAGATAAA GAGATACGAA TTTCTATAGA CTGACTTTTT CCATTTTTTA AATGTTTCATG TCACATCCTA ATAGAAAAGAA ATTACTTCTA GTCAGTCATC CAGGCTTACC TGCTTGGTCT AGAATGGATT TTCCCGGAG CCGGAAGCCA GGAGGAAAAC ACACCACACT AAAACATTGT CTACAGCTCC AGATGTTTTCT CATTTTAAAC AACTTTCCAC TGACAACGAA AGTAAAGTAA AGTATTGGAT TTTTAAAG GGAACATGTG AATGAATACA CAGGACTTAT TATATCAGAG TGAGTAATCG GTTGGTTGGT TGATTGATTG ATTGATTGAT ACATTCAGCT TCCTGTGCT AGCAATGCCA CGATTAGAT TTAATGATGC TTCAGTGGAA ATCAATCAGA AGGTATTCTG ACCTTGTGAA CATCAGAAGG TATTTTAA CTCCCAAGCA GTAGCAGGAC GATGATAGGG CTGGAGGGCT ATGGATTCCC AGCCCATCCC TGTGAAGGAG TAGGCCACTC TTTAAGTGAA GGATTGGATG ATTGTTTATA ATACATAAAG TTCTCTGTAA TTACAATAA ATTATTATGC CCTCTTCTCA CAGTCAAAAG GAACTGGGTG GTTTGGTTTT TGTGCTTTT TTAGATTTAT TGTCCCATGT GGGATGAGTT TTTAAATGCC ACAAGACATA ATTTAAAAA AATAAACTTT GGGAAAAGGT GTAAAACAGT AGCCCCATCA CATTTGTGAT ACTGACAGGT ATCAACCCAG AAGCCCATGA ACTGTGTTT CATCCTTTGC ATTTCTCTGC GAGTAGTCC ACACAGGTTT GTAAGTAAGT AAGAAAGAAG GCAAATTGAT TCAAAATGTTA CAAAAAACC CTTCTTGGTG GATTAGACAG GTTAAATATA TAAACAAACA AACAAAAATT GCTCAAAAAA GAGGAGAAAA GCTCAAGAGG AAAAGCTAAG GACTGGTAGG AAAAAGCTTT ACTCTTTCAT GCCATTTTAT TTCTTTTGA TTTTTAAATC ATTCATTCAA TAGATACCAC CGTGTGACCT ATAATTTTGC AAATCTGTGA CCTCTGACAT CAAGTGTAAT TAGCTTTTGG AGAGTGGGCT GACATCAAGT GTAATTAGCT TTTGGAGAGT GGGTTTTGTC CATTATTAAT AATTAATTAA TTAACATCAA ACACGGCTTC TCATGCTATT TCTACCTCAC	
--	--	--

[0088]

		TTTGGTTTTG GGGTGTTCCT GATAATTGTG CACACCTGAG TTCACAGCTT CACCACCTGT CCATTGCGTT ATTTTCTTTT TCCTTTATAA TTCTTTCTTT TTCCTTCATA ATTTTCAAAA GAAAACCCAA AGCTCTAAGG TAACAAATTA CCAAATTACA TGAAGATTTG GTTTTTGTCT TGCATTTTTT TCCTTTATGT GACGCTGGAC CTTTTCTTTA CCCAAGGATT TTTAAAACTC AGATTTAAAA CAAGGGGTTA CTTTACATCC TACTAAGAAG TTTAAGTAAG TAAGTTTCAT TCTAAAATCA GAGGTAAATA GAGTGCATAA ATAATTTTGT TTTAATCTTT TGTTTTTTCT TTTAGACACA TTAGCTCTGG AGTGAGTCTG TCATAATATT TGAACAAAAA TTGAGAGCTT TATTGCTGCA TTTTAAGCAT AATTAATTTG GACATTATTT CGTGTGTGTG TCTTTATAAC CACCAAGTAT TAAACTGTAA ATCATAATGT AACTGAAGCA TAAACATCAC ATGGCATGTT TTGTCAATGT TTTCAAGGTAC TGAGTTCTTA CTIGAGTATC ATAATATATT GTGTTTTAAC ACCAACACTG TAACATTTAC GAATTAATTT TTTAAACTTC AGTTTTACTG CATTTTCACA ACATATCAGA CTTACACAAA TATATGCCTT ACTATTGTAT TATAGTACTG CTTTACTGTG TATCTCAATA AAGCACGCAG TTATGTTAC	
DNAJC 9	NM_0 15190. 4	GGATGCGCGG CGTGGCCACG CCCCTTCAGT GCTTGTGACG CAGGCGCCCT GGGCTTTTTG GGCGCGAAAA AGAAGCAGTC CTGGGTTGTA CCCGGCGCAG CTGGGAGCGG CTGCTTCCTC CGGGGTCTGA TCTCCGCCCG GCATGGGGCT GCTGGACCTT TGCGAGGAAG TGTTCCGGCAC CGCCGACCTT TACCGGGTGC TGGGCGTGCG ACGCGAGGCC TCCGACGGCG AGGTCCGACG AGGCTACCAC AAGGTGTCCC TGCAGGTACA CCCGACCGG GTGGGTGAGG GCGACAAGGA GGACGCCACC CGCCGCTTCC AGATCCTGGG AAAAGTCTAT TCCGTCTCA GTGACAGAGA ACAGAGAGCA GTGTACGATG AGCAGGGAAC AGTGGACGAG GACTCTCCTG TGCTCACCCA AGACCGAGAC TGGGAGGCGT ATTGGCGGCT ACTCTTTAAA AAGATATCTT TAGAGGACAT TCAAGCTTTT GAAAAGACAT ACAAAGGTTT GGAAGAAGAG CTGGTGATA TTAAGCAGGC CTATCTGGAC TTCAAGGGTG ACATGGATCA GATCATGGAG TCTGTGCTTT GCGTGCAGTA CACAGAGGAA CCCAGGATAA GGAATATCAT TCAGCAAGCT ATTGACGCCG GAGAGGTCCC ATCCTATAAT GCCTTTGTCA AAGAATCGAA ACAAAGATG AATGCAAGGA AAAGGAGGGC TCAGGAAGAG GCCAAAGAAG CAGAAATGAG CAGAAAGGAG TTGGGGCTTG ATGAAGGCGT GGATAGCCTG AAGGCAGCCA TTCAGAGCAG ACAAAGGAT CGGCAAAAGG AAATGGACAA TTTCTGGCT CAGATGGAAG CAAAGTACTG CAAATCTTCC	9

[0089]

		AAAGGAGGAG GGAAAAATC TGCTCTCAAG AAAGAAAAGA AATAATGGAA TTTTCTCTT CAAAGGTCCT TAGGTGTA TTGATGCCAT CGTAGGCAAG GTGCAGGCAG GATTGAAGG CAAAAGTCAA TTCAGCTCTT GAGAAAAGGT GTCTTCCAG CCTGAATTTT TCAGATTGAC TAGACCAAGC AGAATCTCTC AACCTGATCT TAGTATTTCC TAGAAAGCAC TTGACATTGT GTGAGGTCTC ACCTGAAGGA ACTTGCTGGT GACATTTGGG AGGGTGGAGG GAGGCAGTGT CCTTCCTGAC AGCACTTGCC TCCATGGATC TTCTGTACAC AGAACTCTTA TCTAGGATGT GGTTCGTTC ATGCTGCTT CTGCGATGTG CGTGTCTGTT AGAATAGGCT CTCTACCCAG CTAGAACACC TTCCAGACAC TTGCTGGACA GCTATCTTCC ACATACTTCC CAGTTTACAT TTGGTCTTAA TGATCTTGAA TAGATCCTCT CTTCATTTTA CTCAGCCAGG TTTTGTACTG ATGTACAGGT GTTAAATTAC TTCAAGCATT TTTGTAAGAG GTGTATATAA TTCAATAAAA AAGGTAAAAAC ATGATGATTA AGTTCTGGGG GCTTTGTAAA TGATCCCACT AAAATGTGAC CTAGGAAAAA TATGAATGGT GTTTAGGATG AGAGAAAAGG GGAAAAACAAT AGCCCTGGTC AGCTTTATAA TAGAGAGCCT GGTTCCTTA GCATGAAGAG ATGTATGTTG TAGTCCTGCC ACTGATTACT GAAGTCCTGC CATTAAATTGC TGAATGTCTT CAGTTGGGCC ACTGAGCTTG TCTGAATCTG TTCCCTTTTA TAAAAGAGTT ACTACATCAA AACAAAGAGT GAAATCCAAA TTTGTCAAAC TGTATGTATT AAACATGTCC AGTTTTTTGG TTAATAAAAA ATTGCACTGG CTTTGAGGGA AAACACACAG GGTGAGGGAA TTGGGCTAAA TGACTTCTTA CAGGCCCTT TCTGATTCTT TAACTTTGAA AGGCAAGCCA TATTGATCCA GTTGTATAG TGAATCATG GTAATGGTTT GTGAGAACAA TAGAGATTTT CATTTCTATG TAGATGAGTT GGTATGAGAA TATATGGAAT TTTAAGGGA CTGTTTAAAT CTTTGATTG TAGACTATTA AATATACCGT ATGCATAAAG TAAGCCTTTA GCTCTAAGGT AAAGACGACA CGTTTTCGGT TTGTGACTAC AAATAGGTTA AAAATAGATT TTAATTTTAT TAAAAATATA ATTTAATGCA GGTTGTTTGA AGCATCTGTC TTCATATGAT GGCATTAGAA CACCTTGGTA TAATAAAAAG TTACCGTAAT TTATGATTAT TTGAATTTAT CCATTCTGAA AATTAATAAG ATCTAAAACT GGCATGACAA TCAAGATTTG TATTTAGTGA AATTTAAAAT AAATGTAAGC CATAGTTAAA AAAAAAAAAA AAAAA	
ENOSF 1	NM_0 011261 23.3	CGCCCTCCCG CCGCGCGCTC GGGATCCCGA CCAGTCCTGA CCGCACGGGG GCCGCGGCCA CGGGGCGCAG GGGCCATGGT GCGCGGCAGG ATCTCCCGGC TCTCGGTCCG GGACGTGCGC	10

[0090]

	TTCCCCACGT CGCTTGGGGG CCACGGCGCG GACGCCATGC ACACGGACCC TGACTIONG GCTGCCTATG TCGTCATAGA AACTGATGCA GAAGATGGAA TCAAGGGGTG TGGAATTACC TTCACCTCTGG GAAAAGGCAC TGAAGTTGAT TGGTCCAGAA AAGGGCGTGG TGCACCTGGC GACAGCGGCC GTCCTAAACG CGGTGTGGGA CTTGTGGGCC AAGCAGGAGG GAAAGCCTGT CTGGAAGTTA CTTGTGGACA TGGATCCCAG GATGCTGGTA TCCTGCATAG ATTCAGGTA CATCACTGAT GTCCTGACTG AGGAGGATGC COTAGAAATA CTGCAGAAAG GTCAAATTGG TAAAAAAGAA AGAGAGAAGC AAAATGCTGGC ACAAGGATAC CCTGCTTACA CGACATCGTG CGCCTGGCTG GGGTACTCAG ATGACACGTT GAAGCAGCTC TGTGCCCAGG CGCTGAAGGA TGGCTGGACC AGGTTTAAAG TAAAGGTGGG TGCTGATCTC CAGGATGACA TCGAAGATG CCAAATCATC CGAGACATGA TTGGACCGGA AAAGACTTTG ATGATGGATG CCAACCAGCG CTGGGATGTG COTGAGGCGG TGGAGTGGAT GTCCAAGCTG GCCAAGTTCA AGCCATTGTG GATTGAGGAG CCAACCTCCC CTGATGACAT TCTGGGGCAC GCCACCATTT CCAAGGCACT GGTCCCATTG GGAATTGGCA TTGCCACAGG AGAACAGTGC CACAATAGAG TGATATTTAA GCAACTCCTA CAGGCGAAGG CCCTGCAGTT CCTCCAGATT GACAGTTGCA GACTGGGCAG TGTCAATGAG AACCTCTCAG TATTGCTGAT GGCCAAAAAG TTTGAATTC CTGTTTGCCC CCATGCTGGT GGAGTTGGCC TCTGTGAACT GGTGCAGCAC CTGATTATAT TTGACTACAT ATCAGTTTCT GCAAGCCTTG AAAATAGGGT GTGTGAGTAT GTTGACCACC TGCATGAGCA TTCAAGTAT CCCGTGATGA TCCAGCGGGC TTCTACATG CCTCCCAAGG ATCCCGGCTA CTCAACAGAA ATGAAGGAGG AATCTGTAAA GAAACACCAG TATCCAGATG GTGAAGTTTG GAAGAACTC CTTCCTGCTC AAGAAAATTA AGTGCTCAGC CCAACAACCT TTTTCTTTC TGAAGTGAAA GGGCTTAAAA TTTCTGGAA ATAGTTTTAC AAAAATGGAT TAAAAAATC CTACCGATCA AGATGAGTTC AGCTAGAAGT CATAACCCC TCAGGAATCA GCTAAAGCAA AAAGAACTTT TACCTCGGCA TCCAGCCCAA CCCCTAAAGA CTGACAATAT CCTTCGAGCT CCTTTGAAAG CACCCTAAAC AGCCATTTCC ATTTTAATAG TTGGATGCGG ATTGTACCCT TCAATCTGAA AGTCTTCAGC TTTGAAGTCA TCAATTTTCT CAACTTTTCG AAGAAATCCTG AGCTTTGGGA AAGGTCTGGG TTCTCGCTGA AGCTAAAAAC AAAATAAGGC CATTATTTTG CCATAATTGT ACGACCTGTT GTAATTGCTC CTCATGTCCG TGAAACAAGT ACACAGGATG TGATCAACAA AGTTCTATTT TACAGGAGTA TGATCCTGTC GATACCTTGC CGTAGGTTAT	
--	---	--

[0091]

	GTAACATGAT TGGAGCGCAA CCAGCTGTTC TCTTGCACAG ATCGAGAGTG AGGGGTATTT TGTGACATTA CACAGCATCA GGAGCCTGGT GCCTCATCAG GTGTAAGTTC TTATAACCAC TCTTGGCAAA TTTATTAAAG ACAGGAACAC AGTCAATCTG TAACTCATAG TAGCTCTACG TTTACTTGAA TTCCACAATC CCTAACCCAT CTGTCCCTGG CAGAAAGAAG GAAAGATGAC ATGCATGGAC AGTGAACAGA AAGGGATGAA AGCCAGGATT CCTGGGATGA ACAGACAGTG GCAATTAGGA TGTGAAGACA GGTCACAACC TATTACTATG TCTAAAAACG ACCAGAGCAG AGAGCCAGAG AGAATAAGCC TGAAGTCACC TCCACTCAAA AGCAGCCAAA CTCCCTCAAA GGAGTAACTT TAAAAACCTG GATCTAACCT GGAAGGGGCT AAAAAAGTGC TGGTTCTGAG TTTTTTTCTT TAAGGCTCAT GAAGCAGATG AACTTACATT TTTATTGCCA TTTTCATATCA ATTGTTGGCT GCTATAACTT AGGGATTCA ACAGACTTTT GAAGTTTGA CTTAAATATT GTACTTAATG TAAAATTAAC AAAAAATATT TATGGCCAGG GTGGTGGCTT ATGCCTGTAA TTCCAGAAAT TTCGGAGGCT GAGGCAGGTG GATCACTTGA AGTCAGGAGT TTGAGACTAG CCTGGCCAAC ATGATGAAAC CCCATCTCTA CTAATAATAC AAAAATTAGC TGGGTGTGGT GGCATGTGCC TGTAATCCCA GCTACCTGGG AGGCTGAGGC AGAAGAATTG CTTGAACCCG GGAGGTGGAG GTTGCAGTGA GCTGAGATCG CACCACGGCA CACTCCAGCC TGGCCGACAG AGAAAGACTC CATCTCAAAA AAAAAAGAAA AGGAAAAACA TTTGCACCTC AATTCTCCTT CAAGTTAAAA TGAGTTAAAA TGCCCCCTTT TGGACAATCC CCTGGCTTGA ATGTGGCTCT TCCCTCTCTG GTACTGGTGC TTAGTACCTC ACAGCACCTG ACATGTTAAG TGCCCATGGT TGCTGAGGCA GATGCCTGCC TTGTCCTGCC CACCTGCCCC CCACTTCTCC CTAAACTGAA GCCCCACATT TGGAGCAGTC ATCTTTATCT TGGACACAGC ATTGAGCAGA TGCCTGTTCC ACAGTCAACC TTTTATCAAG AGAAGGTACC AAACCCAAAA GTATAACATC TAATTCCTAC CTGAATTTTC AGTGGCTCGA TGTGATTCAG GTAAATATGT GCATCTCCCA AAGTGTGTAT AAAGTCACCT GGCTATAAAC CCGGGGGAGA AAGCAGAACA GTATGTTAGT TTCAATTCCT TAAAACATCA TTTAAAAACA TTAGAATATG CAGACACCGC AAGGCTTTTT TAAAAAAAT AATTTAGTGT AGCTTTTCCA TTTTTTTGTA GCAACAGCAT CTTGTTATGT TGCCCAGGCT GGTATTGAAC TCCAGACCTC AAGCAATTGC TCCTGTCTCA GTCTCCCAA GTGCTGGGAT TACAGGCATG AGCCACCATA CCCAACCTCA GCATAGCTTT TGAGAAAATC CATAGAAGCT GTATCACAAA CAACCTGTAT AGATCTGTTA GTGCGTATAC CACAGGGCCA GAAAACCTTC	
--	--	--

[0092]

		CAGAAGAGGA AGGTTTCAAA GTAAAAGCTG GTTCATTTC TACTTACACA TATCAAATTT AAAAGCTAAT CAGAGACTAA ACTCTGCAAT TTGTTTTCCC ATATTAAAGA ACTGAAGAGC TCAGTGTGGT AGGCTGGCAA GTCACCCCTC CCGAGACAGC CCACCTTCAG GCCCGTGATG TGCGAATCA TGTACGTGAG CAGGGCGTAG CTGGCGATGT TGAAAGGCAC ACCGAGGCCC ATGTCTCCCC ATCTCTGGTA CAGCTGGCAG GACAGCTCAC TGTTACCCAC ATAGAACTGG CAGAGGGCAT GGCATGGAGG CAGCGCCATC AGAGGAAGAT CTGAGGAACC AGCAGAGGAA GATAAGGAGG GATGGTGGTT TGAAAGACCA CAGCTAAAGG CAAAGTAAAA CAGGAGAGAA ACAGAAGCCA ACTCATATGG TGGAGACCAG GAGAGAGAGC CACTGGGCTG CAGTGATGTC CATAACAGCC TCTGCAGCGA TGGCAGGAG CTGAGGGAGA CTATCCATCG GTGCAAGGTT TCTGCAGGTG TCCATTTACG GCTGAAGCAA TGCTCTTCCA TCAGAGCTGA AGGGATCTGG GCTACCTCGT GGCACCAGAT TACAAATACA GCAGGAATAA TTCTGTTTGC CACAGGAAAC TGGTGCTTCT GGTACACCTT CCTATATTAA AAGTCTCTAT TACATGGCAA AAAAAAAAAA AAAAAA	
FANCL	NM 0 011146 36.1	AGCGGACTGC GCATGTGCAG GACCCAGCAG GTCTAGAGCT TTTCTGTGTT TCTCCGACT TCGAGCCATG GCGGTGACGG AAGCGAGCCT GTTGCGCCAG TGCCCCCTGC TTCTGCCCCA GAACCGTGC AAAACCGTGT ATGAGGGATT CATCTCGGT CAGGGAAGAG ACTTCCACCT TAGGATAGTG TTGCCTGAAG ATTTACAAC GAAGAATGCA AGATTATTAT GTAGTTGGCA GCTGAGAACA ATACTTAGTG GATACCATCG AATAGTACAA CAGAGAATGC AGCACTCTCC TGATCTAATG AGCTTTATGA TGGAGTTGAA GATGCTTTTG GAAGTTGCCT TAAAGAATAG ACAAGAGCTG TATGCACTAC CTCCTCCTCC CCAGTTCTAC TCAAGCCTTA TTGAAGAGAT AGGAACTCTT GGTTGGGATA AACTTGTGTA TGC GGATAACC TGCTTCAGTA CCATCAAGTT AAAAGCAGAA GATGCTTCTG GTAGAGAGCA TTTAATCACT CTCAAGTTGA AGGCAAAGTA TCCTGCAGAA TCACCAGATT ATTTGTGGA TTTTCTGTT CCATTTGTG CCTCCTGGAC ACCTCAGGTA AATTCTCCTC AGAGCTCCTT AATAAGCATT TATAGTCAGT TTTTGGCAGC AATAGAATCA CTAAAGGCAT TCTGGGATGT TATGGATGAA ATCGATGAGA AGACCTGGGT ACTTGAGCCA GAAAAACCTC CACGGAGTGC AACAGCACGC AGAATTGCAT TAGGTAATAA TGTTTCCATA AATATAGAGG TAGACCCAG GCATCCTACT ATGCTTCCTG AGTGCTTCTT TCTTGGAGCT GACCATGTGG TAAAACCCCT GGAATTAAG	11

[0093]

		CTGAGCAGGA ACATACATTT GTGGGATCCA GAAAATAGTG TGTTACAAAA TTGAAAGAT GTTTAGAAA TTGATTTTCC AGCTCGTGCT ATCCTGGAAA AATCTGATTT TACTATGGAT TGTGGAATTT GTTATGCTTA TCAACTTGAC GGTACCATT CTGATCAAGT GTGTGATAAT TCTCAGTGTG GACAACCTTT CCATCAAATA TGCTTATATG AGTGGCTGAG AGGACTACTA ACTAGTAGAC AGAGTTTAA CATCATATTT GGTGAATGTC CATATTGTAG TAAGCCAATT ACCTTAAAAA TGTCTGGAAG GAAACACTGA AATAAGAATA CAACATTTTCG GTGAAGAGCT GGAAACTTAA AAAATTATCA AAAGGAATTT TGGTATCATC TTCAGAGAAA AAATAAAGCA AGAAATACTA ACATCAAAAG GACAGGTATG ATGATGCGAT AATAATAAAC ATCTGCGTTT GTCTCTTAC TAAGAGTAAA CTGGGAAATT GTAGGCCAAA GTCCAGTTGA ACTTTCTAAG TCTGTGATCC CCGTGCTGAC TGTGGAAGTG TATTATACC AAGATGGAGA TCTTGACTTC TTGAATATAT CTGGACTGGT AAAATCTTGA TGAGGCTCAT AAAATGAGTT TGGGAATTGT GTATAGCTGA TTTTTGTGG GAAACTGTTT ACTTCATTCA AAGGTTCTTG AGACTCTTGA TATTTCTGTC TTCTCCTTGT GCTTTCCTAT GGAAAAATA CATATATAGT TTAGTTTGT AGACGTGAGT TATCCAAGTA TTTATTTTGT GTAGTGTGTA AGAATGCTAA ATAAATGTT ATACAAGATC AAAAAAAAAA AAAAAAAAAA AAA	
HJURP	NM_0 18410. 4	CTATTTGAGT TTGTGGCGCG CGAGGCCCTG CAGTCCGGGT TGGCGCTTGG GTACTGGCTG GGTCCGATGC TGGGTACGCT GCGCGCCATG GAGGGCGAGG ACGTGGAAGA CGACCAGCTG CTGCAGAAGC TCAGGGCCAG TCGCCGCCGC TTCCAGAGGC GCATGCAGCG GCTGATAGAG AAGTACAACC AGCCCTTCGA GGACACCCCG GTGGTGCAA TGGCCACGCT GACCTACGAG ACGCCACAGG GATTGAGAAT TTGGGGTGGA AGACTAATAA AGGAAAGAAA CGAAGGAGAG ATCCAGGACT CCTCCATGAA GCCCCGCGAC AGGACAGATG GCTCCGTGCA AGCTGCAGCC TGGGGTCTTG AGCTTCCCTC GCACCGCACA GTCTGGGAG CCGATTCAAA AAGCGGTGAG GTCGATGCCA CGTCAGACCA GGAAGAGTCA GTTGCTTGGG CCTTAGCACC TGCAGTGCCT CAAAAGCCCTT TGAAAAATGA ATTAAGAAGG AAATACTTGA CCCAAGTGGA TATACTGCTA CAAGGTGCAG AGTATTTTGA GTGTGCAGGT AACAGAGCTG GAAGGGATGT ACGTGTGACT CCGCTGCCTT CACTGGCCTC ACCTGCCGTG CCTGCCCCCG GATACTGCAG TCGTATCTCC AGAAAGAGTC CTGGTGACCC AGCGAAACCA GCTTCATCTC CCAGAGAATG GGATCCTTTG CATCTTCTCT CCACAGACAT GGCCTTAGTA CCTAGAAATG	12

[0094]

	ACAGCCTCTC CCTACAAGAG ACCAGTAGCA GCAGCTTCTT AAGCAGCCAG CCCTTTGAAG ATGATGACAT TTGCAATGTG ACCATCAGTG ACCTGTACGC AGGGATGCTG CACTCCATGA GCCGGCTGTT GAGCACAAAAG CCATCAAGCA TCATCTCCAC CAAAACGTTT ATCATGCAAA ACTGGAACTC CAGGAGGAGG CACAGATATA AGAGCAGGAT GAACAAAACA TATTGCAAAG GAGCCAGACG TTCTCAGAGG AGCTCCAAGG AGAACTTCAT ACCCTGCTCT GAGCCTGTGA AAGGGACAGG GGCATTAAGA GATTGCAAGA ACGTATTAGA TGTTTCTTGC CGTAAGACAG GTTTAAAAATT GGAAAAAGCT TTTCTTGAAG TCAACAGACC CCAAATCCAT AAGTTAGATC CAAATTGGAA GGAGCGCAAA GTGACACCCCT CGAAGTATTC TTCCTTGATT TACTTCGACT CCAGTGCAAC ATATAATCTT GATGAGGAAA ATAGATTTAG GACATTAAAA TGGTTAATTT CTCCTGTAAA AATAGTTTCC AGACCAACAA TACGACAGGG CCATGGAGAG AACCGTCAGA GGGAGATTGA AATCCGATTT GATCAGCTTC ATCGGGAATA TTGCCTGAGT CCCAGGAACC AGCCTCGCCG GATGTGCCTC CCGGACTCCT GGGCCATGAA CATGTACAGA GGGGGTCTG CGAGTCTTGG TGGCCTTCAG GGCTTAGAAA CCCGCAGGCT GAGTTTACCT TCCAGCAAAG CAAAAGCAAA AAGTTTAAGT GAGGCTTTTG AAAACCTAGG CAAAAGATCT CTGGAAGCAG GTAGGTGCCT GCCCAAGAGC GATTATCTT CATCACTTCC AAAGACCAAC CCCACACACA GCGCAACTCG CCCGCAGCAG ACATCTGACC TTCACGTTCA GGGAAATAGT TCTGGAATAT TTAGAAAAGTC AGTGTCACCC AGCAAAACTC TTTCAGTCCC AGATAAAGAA GTGCCAGGCC ACGGAAGGAA TCGTTACGAT GAAATTAAAG AAGAATTTGA CAAGCTTCAT CAAAAGTATT GCCTCAAATC TCCTGGGCAG ATGACAGTGC CTTTATGTAT TGGAGTGTCT ACAGATAAAG CAAGTATGGA AGTTCGATAT CAAACAGAAG GCTTCTTAGG AAAATTAAAT CCAGACCCTC ACTTCCAGGG TTTCCAGAAG TTGCCATCAT CACCCCTGGG GTGCAGAAAA AGTCTACTGG GCTCAACTGC AATTGAGGCT CCTTCATCTA CATGTGTTGC TCGTGCCATC ACGAGGGATG GCACGAGGGA CCATCAGTTC CCTGCAAAAA GACCCAGGCT ATCAGAACCC CAGGGCTCCG GACGCCAGGG CAATTCCCTG GGTGCCTCAG ATGGGGTGGG CAACACCGTC AGACCGGGAG ACCAGGGCAG CTCCTCAGAG CCAACTCAG AAGAGAGAGG AGAGAACACG TCTTACAGGA TGGAAGAGAA AAGTGATTTC ATGCTAGAAA AATTGGAAAC TAAAAGTGTG TAGCTAGGTT ATTTCCGAGT GTTATTTATC TTCCCACTTG CTCTCTGTTT GTATTTTTGT TTTGTTTTTG ATTCTTGAGA CTGTGAGGAC TTGGTTGACT TCTCTGCCCT TAAAGTAAAT ATTAGTGAAA	
--	---	--

[0095]

		TTGGTTCCAT CAGAGATAAC CTCGAGTTCT TGGTGTAGAA ATTATGTGAA TAAAGTTGCT CAATTAGAAT TTTTAGGGTT CTCTTTGATA GGCTGTTTT TCTGATGTGT GTGTTTTTTT TGGGGGGGGG TTATTGTTT GTTTGTTTGT TTGTTGTTT GTTTTTGAGA CAGTCTCTCT CTATCGCCCA GGCTGGAGTG CGGTGGCACA ATCTTGGCTC ACTGCAACTT CCGCTCCCG GGTTCAAGCG ATTCTTCTGC CTCAGCCTCC CGAGTAGCTG GGATTACAGG CGCGCGCCAC CACGCCTGGC TAATTTTTGT AGTTTTAGTA GAGACGGGGT TTCACCATAT TGACCAGGCT GGTCTCGAGC TCCTGGCCTC GTGATCCATC TGCCTCGGCC TCCCAAAGTG CTGGGATTAT AGGCGTGAGC CACTGCTCCC AGCCGTGTGT TCTTTTTTAA ATTTAGATAT GTCCAGAGAA TCCTCTCTCC TGTTTCCCAT TTCATTGAG AATATTGTTT GCTTGTGAGA CGTAAGTTG AGCCCTGCAT GCAATGACCC TTGAAGGAAA ATAAACAGTC CTGGTGGTCC CAGACGCTCC TGCAGCCACA GCGCCTGTGA CTCTCATGA TTCTTACTGA AGCTGTTGAT GACAGGATAT CATGGTGACG TTTTTGTAAT GAAATATTTT ACATATTCAG AATACATTGG TGAAACTCAT GCTGGAGTAA ATAGTTAATA TATGGCCAT	
HLA- DOA	NM_0 02119. 3	CTTCTTCTTT ACCTCCGCCT TGTTCCTGTC CTCACCACAC GGACTGAGAC TGATTTGATT AAAGCACCAG AGTGTAATGG CCCTCAGAGC AGGGCTGGTC CTGGGGTTCC ACACCCTGAT GACCTCCTG AGCCCGCAGG AGGCAGGGGC CACCAAGGCT GACCACATGG GCTCCTACGG ACCCGCCTTC TACCAGTCTT ACGGCGCCTC GGGCCAGTTC ACCCATGAAT TTGATGAGGA ACAGCTGTTT TCTGTGGACC TGAAGAAAAG CGAGGCCGTG TGGCGTCTGC CTGAGTTTGG TGACTTTGCC CGCTTTGACC CGCAGGGCGG GCTGGCCGGC ATCGCCGCAA TCAAAGCCCA TCTGGACATC CTGGTGGAGC GCTCCAACCG CAGCAGAGCC ATCAACGTGC CTCCACGGGT GACCGTGCTC CCAAAGTCTC GGGTGGAGCT GGGCCAGCCC AACATCCTCA TCTGCATCGT GGACAACATC TTCCCCCTG TGATCAATAT CACCTGGCTG CGCAACGGCC AAAGTGTAC TGAGGGAGTG GCCCAGACCA GCTTCTATTC CCAGCCTGAC CATTGTTTCC GCAAGTTCCA CTACCTGCCC TTCGTGCCCT CAGCCGAGGA CGTCTATGAC TGCCAGGTGG AGCACTGGGG CCTGGATGCG CCACTCCTCA GGCATTTGGGA GCTCCAGGTG CCTATTCCAC CACCAGATGC CATGGAGACC CTGGTCTGTG CCCTGGGCCT GGCCATCGGC CTGGTGGGCT TCCTCGTGGG CACCGTCTC ATCATCATGG GCACATATGT GTCCAGTGTC CCCAGGTAAT GATCCTTCTG AGAGAAATGA CTGTGGGAG ACACCCTGCA GATCCTCATG	13

[0096]

	GGTTTGTGAC AGCCCCTGCG TGCTCAGTGC CCTTTAAGTG CATCCCGCTG TGCTGACTTT GAGTGGGATC AACATCTGTC CTACGGGTCC CCTCTTTTTT GGCCCCAGTA TTCATGGCAG GGTTTGTGG ACACCTACTA GCTTCCCTTC CCATTCAACA CACACACACA TTCTTGCTCT ACCCAAAGCT CTGGCTGGCA GCACTAAATG CTTTGGTGGT GTTTGCACTG TGTCTTTCC AGGCCTTGGC CAGTTCTTCC AGGGGTGAGG CATGTGGTGC TGGGGATTGG CAGCCATCCT GGGGCCACA CAGGTGTGTC TTGCTCCATT TGGCCATTG TGTGTTACTT TGTGAATGAG CCATTTCACA TGGACTTCAT GAAATTTGCC TCCTGAGTTC AGGTTTACCC TGAAAGGGAT GCAGATTATC CTGTTCCCTCA CGACCCCTC AGCTAACAA AGTTCTGAAG GGTGCTGGGA CAGGACAGGC TCATGGGGAC TCCACTCCTG CCTGGGTTTA CTCTGTATGA AGAGGCCACT GGTATCCTGC CATGATGTTA TCTCCTTTTT CTACTTTTCC CTAGAGTCCC ATGCATGATA AAGAGAGGCC CAAGGCTTGG ATAAGGTGGC CACTTCCTC AGTGGAGTCA GTCATGTTAG GTAGGAGGTG GTAGAGTCGG TCTGCGAGGT ATCTCGTAAG AGGGGAGGTC CACCTAGACA CACTCTAAAT ATGTGGCCTA GAAGATTTTG GTCTACTTTT CTGTGAACAG AATTAAAAAC ATACAAAGAG ATAAATCACC ATACCACATA GTTATGTCA GGACCAAAAT GAGCAATACA GATTACGGTT TTCAAACCAG AATGCACATA AGAACTGCTT GGGATCCTTT TAAAAGTACA GGCATTGGCC TGGTGCAGTG GCTCATTCTT GTAATCCCAG CACTTTGGGA GGCCAAGGGG ACAGGACTGC TTGAGGCCAA GAGGTGGAAA CCATCTTGGG CTACATAGAG AGACCCCATC TCTACAAAGA AAGATTTAAA AATTAAACCAG GCATGGTGGC TCGCACCTGT ATTCCAGCC ACTGGGGAGG CTGAGGCCGG AGGAGTGCTT GAGCCCAGGA GTTCAAGGCT GCAGTGAGCC AAGATTGCGC CACTGCACTC CAGCCTAGGT GACAGAGTGA GACCCTGTCT CTAAATAAAT AAATAAATAA AATATAAAAA TAACAGTCAT CACCCAGACC TACTGAATTA GAATCTCGGG AGTGCAGGGG GCAGCAACAG GGAGGCTGTC TTTTCTGAGA TGGGGTCTCA CTCTGTCACC AGGCTGGAGT GCCATGGCAT GATCTCAGCT CACTGCAACC TCCACCTCCT GAGTTCAAGC CATTCTCTG CCTCAGCCTC CTGAGTAGCT GGGACTACAG GTGTGCGCCA CTACACTCAG CTAATTTTGG TATTTTAAAGT AGAGACGGGG TTTCATCATG TTGGCCAGGA TGGCCTCCAT CTCTTGACCT CGTGATCCAC CCACCTTCCC TCCCAAAGTA CTGGAATTAC AGGCATTAGC CACTGTGCCC AGCCGAGGCT GTCATTTTTA ACCGGCTCTG GATGACTCTG ATGCAGCCAT CCTGGACCTT GGCTGTGGTC TGGTAACTGG AACCCAGTGA CGTAATCAGG TGCCATCGGG	
--	---	--

[0097]

		GGTCATGGGA AAGGGGGATC CCCAAGGTCT GAGGTGGACT AGGAAGGCTT TCTGAAGAAC CTGGGTCTGT TAGGGCATCA GCCAATCAAG GTACAAGTAA ATAGAGGCAA AATGAGGGTT TGAAGTGTGA GCAGTTGGTC CTGGAAAAGA AAGAAACCAA GAGATTATGG GGAATCAATG GGCTTCTTAA GAGAGAATAA GTTGAAATCA ATGACCAGAA GACCCTGATG GAAGTGGAGG AGAATCATCT CAGGCAAACT TTTGTGTGC CAGTAACAGA AACCCTCTTT GTGTGATCAC ATGCAAAGTA TAGGATATTT GCAATATAGC CATGGGGAGG AGTGCAGGGC CCAAGGGTAG ATTTTAGCCA GGCTCCCAAG GAACAGAACT CGGATCCGAA AAGCCCAGAG AAGCTAGAGC TGCCCCCTCA AACTCTCGG ATCCACATGG TCTGTGTTCT CTAGACCCCC CTGCATGTTA GCGGTGTTCT CTCTCTGTGG ACTGACTGTC CTCTCAGTG AACATGTCCA CCCGACAGCT CCTGAGTTTA TATCATCTCA ACCCTCACAA CCCACAGAGG CTGTGTCTCC TAGTCACAGC TTTAAATTAC TGGAAAAATA AATGACTGGC CAAACTTGGA GCAGGTGTCC ATCCCAGCCC TGTGTAGTTA GAGCAGGAAT CAAGATCTCA ACACAAATGT GGCTGCCAAG CACTCAGCCC CGGGGCGAGG GGTCAAGTTC TTCTCAGAGA AAGAGGAATA AGTTGGTTCT CAGAAGACAT CACAAGATAC GTGTGTACCC AACAATCTCT GATCTCTGCT GATCTTTTGC TTAGACGTTA ACTTGATGCA TCATTGGAAA GGTGTTCCTC TCATCTCTGT CCTAAGGCTT GATAAAGTCA TTTAAATTGT GTTCTTTTGA CTAAA	
HLA- DRA	NM_0 19111. 4	TTTAAATGGT CAGACTCTAT TACACCCAC ATTCTCTTTT CTTTTATTCT TGTCTGTTCT GCCTCACTCC CGAGCTCTAC TGACTCCCAA CAGAGCGCCC AAGAAGAAAA TGGCCATAAG TGGAGTCCCT GTGCTAGGAT TTTTCATCAT AGCTGTGCTG ATGAGCGCTC AGGAATCATG GGCTATCAAA GAAGAACATG TGATCATCCA GGCCGAGTTC TATCTGAATC CTGACCAATC AGGCGAGTTT ATGTTTGACT TTGATGGTGA TGAGATTTTC CATGTGGATA TGGCAAAGAA GGAGACGGTC TGGCGGCTTG AAGAATTTGG ACGATTTGCC AGCTTTGAGG CTCAAGGTGC ATTGGCCAAC ATAGCTGTGG ACAAAGCCAA CCTGGAAATC ATGACAAAGC GCTCCAATA TACTCCGATC ACCAATGTAC CTCCAGAGGT AACTGTGCTC ACAAACAGCC CTGTGGAATC GAGAGAGCCC AACGTCCTCA TCTGTTTCAT AGACAAGTTC ACCCACCAG TGGTCAATGT CACGTGGCTT CGAAATGGAA AACCTGTCAC CACAGGAGTG TCAGAGACAG TCTTCCTGCC CAGGGAAGAC CACCTTTTCC GCAAGTTCCA CTATCTCCCC TTCTGCCCT CAACTGAGGA CGTTTACGAC TGCAGGGTGG	14

[0098]

		AGCACTGGGG CTTGGATGAG CCTCTTCTCA AGCACTGGGA GTTTGATGCT CCAAGCCCTC TCCCAGAGAC TACAGAGAAC GTGGTGTGTG CCCTGGGCCT GACTGTGGGT CTGGTGGGCA TCATTATTGG GACCATCTTC ATCATCAAGG GATTGCGCAA AAGCAATGCA GCAGAACGCA GGGGGCCTCT GTAAGGCACA TGGAGGTGAT GGTGTTTCTT AGAGAGAAGA TCACTGAAGA AACTTCTGCT TTAATGGCTT TACAAAGCTG GCAATATTAC AATCCTTGAC CTCAGTGAAA GCAGTCATCT TCAGCATTTT CCAGCCCTAT AGCCACCCCA AGTGTGGATA TGCCTCTTCG ATTGCTCCGT ACTCTAACAT CTAGCTGGCT TCCCTGTCTA TTGCCTTTTC CTGTATCTAT TTTCCTCTAT TTCCTATCAT TTTATTATCA CCATGCAATG CCTCTGGAAT AAAACATACA GGAGTCTGTC TCTGCTATGG AATGCCCAT GGGGCATCTC TTGTGTACTT ATTGTTTAAG GTTTCCTCAA ACTGTGATTT TTCGTGAACAC AATAAACTAT TTTGATGATC TTGGGTGGAA AAAAAAAAA AAAAAAAAAA AAAAAAAAAA AA	
HNRNP A3P1	NR_00 2726.2	CGAGTTGGAA GAGGTGAGTC CTGTCTCAA ATGGAGGTAA AACC GCCGCC TGGTTGCCCC CAGCCCGACT CCGGCAGTCG CCGTCGCCAC TGGGGGGAGG AGGGCCATGA TCCAAAGGAA CCAGAGCAGC TGAGAAAAC TTTTATTGGT GGTCTGAGCT TTGAAACTAC AGATGATAGT TTAAGAGAAC ATTTTGAGAA ATGGGGCACA CTCACAGATT GTCTGGTAAT GAGAGACCCC CAACAAAAAC GTTCCAGGGG CTTTGGTTTT GTGACTTATT CTTGTGTTAC AGAGGTGGAT GCAGCAATGC GTGCTCGACC ATTCAAGGTT GATGGGCGTG TAGTGGAAACC AAAGAGAGCT GTTTCTAGAG AGGATTCTGT GAAGCCTGGT GCCCATCTAA CAGTGAAGAA AATTTTGTGTT GGCAGTATTA AAGAAGATAC AGAAGAATAT AATTTGAGAG ACTACTTTGA AAAGTACGGC AAGATTGAAA CCATAGAAGT TATGGAAGAC AGGCAGAGTG GAAAAAAGAG AGGATTTGCT TCTGTAACCT TTGATGATCA TGATACAGTT GATAAAATTG TTGTTTCAGAA ATACCACACT ATTAATGGGC ATAACGTGA AGTGAAAAAG GCCCTTGCTA AACAAGTGAT GCAGCCGGCT GGATCACAGA GGGGTCGTGG AGGTGGATCT GGCAATTGTA TGGGTCACAG AGGAAACTTT GGAGGTGGTG GAGGTAATTT TGGCCGTGAT GGAAACTTTG GTGGAAGAGG AGGCTATGGT GGTGGAGGTG GTGGCAGCAG AGGTAGTTAT GGAGGAGGTG ATGTGGATAT AATGGATTAG GAGGTGATGG TGGCAACTAT GGCAGTGGTC CTGGTTATAG TAGTAGAGGC GGGTATGGTG GTGGTGGACC AGGATATGGA AACCAAGGTG GTGGATATGG TGGCGGTGTT GGAGGATATG ATGGTTACAA TGAAGGAGGA AATTTTGACG GTAGTAACTA	15

[0099]

	TGGTGGTGGT GGGAACTATA ATGATTTTGG AAATTACAGT GGACAACAGC AATCAAATTA TGGACACATG AAAGGGGGCA GTTTTGGTGG AAGAAGCTCG GGCAGTCCCT ATGGTGGTGG TTATGGATCT GGTGGTGGAA GTGGTGGATA TGGTAGCAGA AGGTTCTAAA AACAGCAGGA AAGGGCTACA GTTCTTAGCA GGAGAGAGAG TGAGGAGTTG TCAGGAAAGC TACAGGTTAC TTTGAGACAG TCGTCCCAAG TGCATTAGAG GAACTGTAAA AATCTGTCAC AGAAGGAACG ATGATCCATA ATCAGAAAAG TTACTGCAGC TTAAACAGGA AACCCTTCTT GTTCAGGACT GTCATAGCCA CAGTTTGCAG GAAGTGCAGC TATCGATTAA TGCAATGTAG CGTCAATTAG ATGTACATTC CTCAGGTCTT TTATCTGTTG TAGCTTTGTC TTATTCTTTT TCTTTTCATT ACATCAGGTA TATTGCCCTG TAAATTGTGG TAGTGGTACC AGGAATAAAA AATTAAGGAA TTTTAACTT TTCAATATCT GTGTAGTTCA GTTTTCTAC ATTTAGTAC AGAACTTTA ACAAAATGCA GTTTTGAAGG TGTTTCCTTG TGAGTTAACA AGTAAAGAAG ATCAATTGTT AATTACTATT TTGTATAAAT TTTGCTAAAG TTAAGTGTAA AGAAACACCT GCTGACTTGC AGTTTAAAGG GAATCTATTC TCCCCATTC CAAACCATGA TATGAATGGA CGCCGACATG TGGAGAGAAC AGATAATTTG TGTGTTTGCA ATGTGTGTTT TAGGTAAATA GGATTGGGTA TTTAAATTAG CATTGTGTAA TTTAATAGCA TTAAGATTAC CTTCAATAAA AAAAGTCTCA AAATTTCTTT TTGGTTTTTG TGCATTTTCT TTTAAAATGT AATCACATGA TTTTAGTGTG TTAGACTTGC TGAGTCCTAG CTGTGTTTAG AACATCTCCA TTCTACATTT ACCTTGGTCA AATTGAACT GCTGCCATAG GTTTTGGGTG TAAAGAATGT TFACTGCCCT CCATTTAAAT TCTGAAAAGG TATAGTGGAT GTTTCCCTC TCCTACATTA GAAACCATTC TTAaaaaactt TTCAAATAT AGAACCATTa AGCCTGCTAT ATCTGAGCAA ATTAGTGGGT ACCTTTTTTC CTTTTTTAAA GCACAAGAGG CCCATAAATC TTGAGTTATT TGCATTAGTT TACATTTTTT GATACAACTT TTCAGACCAA GAGAATAAAA ATCATGCGTT ATTAAACCCC TAGCTGGCTG GCATGCTTTC CTGTTTGTAC TGTATACATT TTGCTGGATG AAACCAAGGA TAGTTTAGGT ATAATTGTCC AAAATAACCT AAGTGCAGCA GAAATGTAGG ACAGTTGCTT AGTACAGGCT TCTCACTTCC TACAGACCTG AATTCAAATT TGGATAGTCT GAGTTATTAA ATTCCCAAAG ACAAAGAACA CACTCTTATT TCTTGTGTAT ATTTCAACAT AAATCATGTT GTTACCAATT TGTTGGGAAG GCCCTGGTTG AGAAGAGTTT TAGATAATAA GGCTGTATAT ATATAGATAT ATATAGATAT ATACCAATGT CTATATATAG AGATATTTTA TATATATATA TACAGGTATA	
--	--	--

[0100]

		TATATGTGTG TGTATATATA TAGGTATATA CATATATACA TATATATATA TATATATATG GATATATACC CATGTCTACT GTTTTGCTTC AGCTAGTGCT TACAATTTCA TTCAAGTCCT GAGTATGTGT CCTGCTGTGA CTCCTTCTTT GGTAGTTGAA CGTTGAATTC AAGTCTTTCC TTCTGTTTTA AGAAGTACTA AGCAAACAAG CAATAAAAAG GGAATGGCG CATGCTAGTG TTTGAATATG CTCTCTTGTT GCTCTAATTC TGTGCCTCCG TGCATTAATA TTTGGATGCA TGCAATGCCA GCATGGAAAT TGGCCT	
IL23A	NM_0 16584. 2	AAAACAACAG GAAGCAGCTT ACAAACCTCGG TGAACAACCTG AGGGAACCAA ACCAGAGACG CGCTGAACAG AGAGAATCAG GCTCAAAGCA AGTGGAAGTG GGCAGAGATT CCACCAGGAC TGGTGCAAGG CGCAGAGCCA GCCAGATTG AGAAGAAGGC AAAAAGATGC TGGGGAGCAG AGCTGTAATG CTGCTGTTGC TGCTGCCCTG GACAGCTCAG GGCAGAGCTG TGCCTGGGGG CAGCAGCCCT GCCTGGACTC AGTGCCAGCA GCTTTCACAG AAGCTCTGCA CACTGGCCTG GAGTGCACAT CCACTAGTGG GACACATGGA TCTAAGAGAA GAGGGAGATG AAGAGACTAC AAATGATGTT CCCCATATCC AGTGTGGAGA TGGCTGTGAC CCCCAAGGAC TCAGGGACAA CAGTCAGTTC TGCTTGCAAA GGATCCACCA GGGTCTGATT TTTTATGAGA AGCTGCTAGG ATCGGATATT TTCACAGGGG AGCCTTCTCT GCTCCCTGAT AGCCCTGTGG GCCAGCTTCA TGCCTCCCTA CTGGGCCTCA GCCAACTCCT GCAGCCTGAG GGTCAACCACT GGGAGACTCA GCAGATTCCA AGCCTCAGTC CCAGCCAGCC ATGGCAGCGT CTCCTTCTCC GCTTCAAAAT CCTTCGCAGC CTCCAGGCCT TTGTGGCTGT AGCCGCCCGG GTCTTTGCCC ATGGAGCAGC AACCCTGAGT CCCTAAAGGC AGCAGCTCAA GGATGGCACT CAGATCTCCA TGGCCCAGCA AGGCCAAGAT AAATCTACCA CCCCAGGCAC CTGTGAGCCA ACAGGTTAAT TAGTCCATTA ATTTTAGTGG GACCTGCATA TGTTGAAAAAT TACCAATACT GACTGACATG TGATGCTGAC CTATGATAAG GTTGAGTATT TATTAGATGG GAAGGGAAAT TTGGGGATTA TTTATCCTCC TGGGGACAGT TTGGGGAGGA TTATTTATTG TATTTATATT GAATTATGTA CTTTTTTCAA TAAAGTCTTA TTTTGTGGC TAAAAAAA	16
IQGAP 1	NM_0 03870. 3	GGACCCCGGC AAGCCCGCGC ACTTGGCAGG AGCTGTAGCT ACCGCCGTCC GCGCCTCCAA GGTTTCACGG CTCCTCAGC AGAGACTCGG GCTCGTCCGC CATGTCCGCC GCAGACGAGG TTGACGGGCT GGGCGTGGCC CGGCCGCACT ATGGCTCTGT	17

[0101]

	CCTGGATAAT GAAAGACTTA CTGCAGAGGA GATGGATGAA AGGAGACGTC AGAACGTGGC TTATGAGTAC CTTTGTCAAT TGGAAGAAGC GAAGAGGTGG ATGGAAGCAT GCCTAGGGGA AGATCTGCCCT CCCACCACAG AACTGGAGGA GGGGCTTAGG AATGGGGTCT ACCTTGCCAA ACTGGGGAAC TTCTTCTCTC CCAAAGTAGT GTCCCTGAAA AAAATCTATG ATCGAGAACA GACCAGATAC AAGGCGACTG GCCTCCACTT TAGACACACT GATAATGTGA TTCAGTGGTT GAATGCCATG GATGAGATTG GATTGCCTAA GATTTTAC CCAGAACTA CAGATATCTA TGATCGAAAG AACATGCCAA GATGTATCTA CTGTATCCAT GCACTCAGTT TGTACCTGTT CAAGCTAGGC CTGGCCCCCTC AGATTCAAGA CCTATATGGA AAGGTTGACT TCACAGAAGA AGAAATCAAC AACATGAAGA CTGAGTTGGA GAAGTATGGC ATCCAGATGC CTGCCCTTAG CAAGATTGGG GGCATCTTGG CTAATGAACT GTCAGTGGAT GAAGCCGCAT TACATGCTGC TGTTATTGCT ATTAATGAAG CTATTGACCG TAGAATTCCA GCCGACACAT TTGCAGCTTT GAAAAATCCG AATGCCATGC TTGTAATCT TGAAGAGCCC TTGGCATCCA CTTACCAGGA TATACTTTAC CAGGCTAAGC AGGACAAAAT GACAAATGCT AAAAACAGGA CAGAAAATC AGAGAGAGAA AGAGATGTTT ATGAGGAGCT GCTCACGCAA GCTGAAATTC AAGGCAATAT AAACAAAGTC AATACATTTT CTGCATTAGC AAATATCGAC CTGGCTTTAG AACAAAGGAGA TGCACTGGCC TTGTTCAAGG CTCTGCAGTC ACCAGCCCTG GGGCTTCGAG GACTGCAGCA ACAGAATAGC GACTGGTACT TGAAGCAGCT CCTGAGTGAT AAACAGCAGA AGAGACAGAG TGGTCAGACT GACCCCTGTC AGAAGGAGGA GCTGCAGTCT GGAGTGGATG CTGCAACAG TGCTGCCCAG CAATATCAGA GAAGATTGGC AGCAGTAGCA CTGATTAATG CTGCAATCCA GAAGGGTGT TCTGAGAAGA CTGTTTTGGA ACTGATGAAT CCCGAAGCCC AGCTGCCCCA GGTGTATCCA TTGCCCCTG ATCTCTATCA GAAGGAGCTG GCTACCCCTG AGCGACAAAG TCCTGAACAT AATCTCACCC ACCCAGAGCT CTCTGTCGCA GTGGAGATGT TGTCATCGGT GGCCCTGATC AACAGGGCAT TGGAAATCAGG AGATGTGAAT ACAGTGTGGA AGCAATTGAG CAGTTCAGTT ACTGGTCTTA CCAATATTGA GGAAGAAAAC TGTCAGAGGT ATCTCGATGA GTTGATGAAA CTGAAGGCTC AGGCACATGC AGAGAATAAT GAATTCATTA CATGGAATGA TATCCAAGCT TGCGTGGACC ATGTGAACCT GGTGGTGCAA GAGGAACATG AGAGGATTTT AGCCATTGGT TTAATTAATG AAGCCCTGGA TGAAGGTGAT GCCCCAAAAG CTCTGCAGGC CCTACAGATT CCTGCAGCTA AACTTGAGGG AGTCCTTGCA GAAGTGGCCC AGCATTACCA	
--	---	--

[0102]

	AGACACGCTG ATTAGAGCGA AGAGAGAGAA AGCCCAGGAA ATCCAGGATG AGTCAGCTGT GTTATGGTTG GATGAAATTC AAGGTGGAAT CTGGCAGTCC AACAAAGACA CCCAAGAAGC ACAGAAGTTT GCCTTAGGAA TCTTTGCCAT TAATGAGGCA GTAGAAAGTG GTGATGTTGG CAAAACACTG AGTGCCCTTC GCTCCCCTGA TGTGGCTTG TATGGAGTCA TCCCTGAGTG TGGTGAAACT TACCACAGTG ATCTTGCTGA AGCCAAGAAG AAAAAACTGG CAGTAGGAGA TAATAACAGC AAGTGGGTGA AGCACTGGGT AAAAGGTGGA TATTATTATT ACCACAATCT GGAGACCCAG GAAGGAGGAT GGGATGAACC TCCAAATTTT GTGCAAAATT CTATGCAGCT TTCTCGGGAG GAGATCCAGA GTTCTATCTC TGGGGTGA CTGCCATATA ACCGAGAACA GCTGTGGCTG GCCAATGAAG GCCTGATCAC CAGGCTGCAG GCTCGTGC GTGGATACTT AGTTCGACAG GAATTCGGAT CCAGGATGAA TTTCTGAAAG AAACAAATCC CTGCCATCAC CTGCATTGAG TCACAGTGA GAGGATACAA GCAGAAGAAG GCATATCAAG ATCGGTTAGC TTACCTGCGC TCCCACAAAG ATGAAGTTGT AAAGATTGAG TCCCTGGCAA GGATGCACCA AGCTCGAAAG CGCTATCGAG ATCGCCTGCA GTAATTCCGG GACCATATAA ATGACATTAT CAAAATCCAG GCTTTTATT GGGCAAAACA AGCTCGGGAT GACTACAAGA CTCTCATCAA TGCTGAGGAT CCTCCTATGG TTGTGGTCCG AAAATTTGTC CACCTGCTGG ACCAAAGTGA CCAGGATTTT CAGGAGGAGC TTGACCTTAT GAAGATGCGG GAAGAGGTTA TCACCCTCAT TCGTTCTAAC CAGCAGCTGG AGAATGACCT CAATCTCATG GATATCAAAA TTGGACTGCT AGTGAAAAAT AAGATTACGT TGCAGGATGT GGTTTCCAC AGTAAAAAAC TTACCAAAAA AAATAAGGAA CAGTTGTCTG ATATGATGAT GATAAATAAA CAGAAGGGAG GTCTCAAGGC TTTGAGCAAG GAGAAGAGAG AGAAGTTGGA AGCTTACCAG CACCTGTTTT ATTTATTGCA AACCAATCCC ACCTATCTGG CCAAGCTCAT TTTTCAGATG CCCCAGAACA AGTCCACCAA GTTCATGGAC TCTGTAATCT TCACACTCTA CAACTACGCG TCCAACCAGC GAGAGGAGTA CCTGCTCCTG CGGCTCTTTA AGACAGCACT CCAAGAGGAA ATCAAGTCGA AGGTAGATCA GATTCAAGAG ATTGTGACAG GAAATCCTAC GGTATTATAA ATGGTTGTAA GTTTCAACCG TGGTGCCCGT GGCCAGAATG CCCTGAGACA GATCTTGGCC CCAGTCGTGA AGGAAATTAT GGATGACAAA TCTCTCAACA TCAAACTGA CCCTGTGGAT ATTTACAAAT CTTGGGTTAA TCAGATGGAG TCTCAGACAG GAGAGGCAAG CAACTGCCC TATGATGTGA CCCCTGAGCA GGCCTAGCT CATGAAGAAG TGAAGACACG GCTAGACAGC TCCATCAGGA ACATGCGGGC	
--	---	--

[0103]

	TGTGACAGAC AAGTTTCTCT CAGCCATTGT CAGCTCTGTG GACAAAATCC CTTATGGGAT GCGCTTCATT GCCAAAGTGC TGAAGGACTC GTTGCATGAG AAGTTCCTG ATGCTGGTGA GGATGAGCTG CTGAAGATTA TTGGTAACTT GCTTTATTAT CGATACATGA ATCCAGCCAT TGTGCTCCT GATGCCTTG ACATCATIGA CCTGTCAGCA GGAGGCCAGC TTACCACAGA CCAACGCCGA AATCTGGGCT CCATTGCAAA AATGCTTCAG CATGCTGCTT CCAATAAGAT GTTCTGGGA GATAATGCCC ACTTAAGCAT CATTAAATGAA TATCTTTCCC AGTCCTACCA GAAATTCAGA CGGTTTTTCC AAACGTCTTG TGATGTCCCA GAGCTTCAGG ATAAATTAA TGTGGATGAG TACTCTGATT TAGTAACCTT CACCAAACCA GTAATCTACA TTTCCATTGG TGAAATCATC AACACCCACA CTCTCCTGTT GGATCACCAG GATGCCATTG CTCCGGAGCA CAATGATCCA ATCCACGAAC TGCTGGGCA CCTCGGCGAG GTGCCACCA TCGAGTCCCT GATAGGGGAA AGCTCTGGCA ATTTAAATGA CCCAAATAAG GAGGCACTGG CTAAGACGGA AGTGTCTCTC ACCCTGACCA ACAAGTTCGA CGTGCCTGGA GATGAGAATG CAGAAATGGA TGCTCGAACC ATCTTACTGA ATACAAAACG TTAAATTGTG GATGTCATCC GGTTCAGCC AGGAGAGACC TTGACTGAAA TCCTAGAAAC ACCAGCCACC AGTGAACAGG AAGCAGAACA TCAGAGAGCC ATGCAGAGAC GTGCTATCCG TGATGCCAAA ACACCTGACA AGATGAAAAA GTCAAAATCT GTAAAGGAAG ACAGCAACCT CACTCTTCAA GAGAAGAAAAG AGAAGATCCA GACAGGTTTA AAGAAGCTAA CAGAGCTTGG AACCGTGGAC CCAAAGAACA AATACCAGGA ACTGATCAAC GACATTGCCA GGGATATTTC GAATCAGCGG AGGTACCGAC AGAGGAGAAA GGCCGAACCT GTGAAACTGC AACAGACATA CGCTGCTCTG AACTCTAAGG CCACCTTTTA TGGGGAGCAG GTGGATTACT ATAAAAGCTA TATCAAAACC TGCTTGGATA ACTTAGCCAG CAAGGGCAAA GTCTCCAAAA AGCCTAGGGA AATGAAAGGA AAGAAAAGCA AAAAGATTTC TCTGAAATAT ACAGCAGCAA GACTACATGA AAAAGGAGTT CTTCTGGAAA TTGAGGACCT GCAAGTGAAT CAGTTTAAAA ATGTTATATT TGAAATCAGT CCAACAGAAG AAGTTGGAGA CTTGAAGTG AAAGCCAAAT TCATGGGAGT TCAAAATGGAG ACTTTTATGT TACATTATCA GGACCTGCTG CAGCTACAGT ATGAAGGAGT TGCAGTCATG AAATTATTTC ATAGAGCTAA AGTAAATGTC AACCTCCTGA TCTTCCTTCT CAACAAAAAG TTCTACGGGA AGTAATTGAT CGTTTGCTGC CAGCCCAGAA GGATGAAGGA AAGAAGCACC TCACAGCTCC TTTCTAGGTC CTTCTTCTCT CATTGGAAGC AAAGACCTAG CCAACAACAG CACCTCAATC TGATACACTC	
--	---	--

[0104]

	CCGATGCCAC ATTTTAACT CCTCTCGCTC TGATGGGACA TTTGTTACCC TTTTTCATA GTGAAATTGT GTTTCAGGCT TAGGAAAAGAG TGGAACTCC ACTAAAATT CTCTGTGTTG TTACAGTCTT AGAGGTTGCA GTACTATATT GTAAGCTTTG GTGTTTGT TT AATTAGCAAT AGGGATGGTA GGATTCAAAT GTGTGTCAAT TAGAAGTGA AGCTATTAGC ACCAATGACA TAAATACATA CAAGACACAC AACTAAAATG TCATGTTATT AACAGTTATT AGGTTGTCAT TAAAAATAA AGTTCCTTTA TATTCTGTC CCATCAGGAA AACTGAAGGA TATGGGGAAT CATTGGTTAT CTTCCATTGT GTTTTTCTTT ATGGACAGGA GCTAATGGAA GTGACAGTCA TGTCAAAGG AAGCATTCT AGAAAAAGG AGATAATGTT TTTAAATTC ATTATCAAAC TTGGGCAATT CTGTTTGTGT AACTCCCCGA CTAGTGGATG GGAGAGTCCC ATTGCTAAAA TTCAGCTACT CAGATAAAT CAGAATGGGT CAAGGCACCT GCCTGTTTTT GTTGGTGCAC AGAGATTGAC TTGATTGAGA GAGACAATTC ACTCCATCCC TATGGCAGAG GAATGGGTTA GCCCTAATGT AGAATGTCAT TGTTTTTAAA ACTGTTTTAT ATCTTAAGAG TGCCTTATTA AAGTATAGAT GTATGTCTTA AAATGTGGGT GATAGGAATT TTAAAGATTT ATATAATGCA TCAAAAGCCT TAGAATAAGA AAAGCTTTTT TAAATTGCT TTATCTGTAT ATCTGAACCT TTGAACTTA TAGCTAAAAA ACTAGGATTT ATCTGCAGTG TTCAGGGAGA TAATCTGCC TTAAATTGTC TAAAACAAAA AAAAAACCAG CCAACCTATG TTACACGTGA GATTAAAAAC AATTTTTCC CCATTTTTTC TCCTTTTTTC TCTGTGCC CACATTGTGC CTTATTTTA TGAGCCCCAG TTTCTGGGC TTAGTTTAAA AAAAAAATCA AGTCTAAACA TTGCATTTAG AAAGCTTTTG TTCTGGATA AAAAGTCATA CACTTTAAAA AAAAAAAAAA CTTTTCCAG GAAAATATAT TGAAATCATG CTGCTGAGCC TCTATTTTCT TTCTTTGATG TTTTGATTCA GTATTCTTT ATCATAAATT TTAGCATTT AAAAAATCAC TGATGTACAT TAAGCCAATA AACTGCTTTA ATGAATAACA AACTATGTAG TGTGTCCCTA TTATAAATGC ATTGGAGAAG TATTTTTATG AGACTCTTA CTCAGGTGCA TGGTTACAGC CCACAGGGAG GCATGGAGTG CCATGGAAGG ATTCGCCACT ACCCAGACCT TGTTTTTTGT TGTATTTTGG AAGACAGGTT TTTTAAAGAA ACATTTTCCT CAGATTAAAA GATGATGCTA TTACAAC TAG CATTGCCTCA AAAACTGGGA CCAACCAAAG TGTGTCAACC CTGTTTCCTT AAAAGAGGCT ATGAATCCCA AAGGCCACAT CCAAGACAGG CAATAATGAG CAGAGTTTAC AGCTCCTTTA AAAAAATGTG TCAGTAATTT TAAGGTTTAT	
--	--	--

[0105]

		AGTTCCTCA ACACAATTGC TAATGCAGAA TAGTGTA TGCCTTCAA GAATGTTGAT GATGATGATA TAGAATTGTG GCTTTAGTAG CACAGAGGAT GCCCAACAA ACTCATGGCG TTGAAAACCAC ACAGTTCTCA TTAAGTTAT TTATTAGCTG TAGCATTTCT TGTCTCTCT CTCTCCTCT TTGACCTTCT CCTCGACCAG CCATCATGAC ATTTACCATG AATTTACTTC CTCCAAAGAG TTTGGACTGC CCGTCAGATT GTTGCTGCAC ATAGTTGCCT TTGTATCTCT GTATGAAATA AAAGGTCATT TGTTTCATGTT AAAAAAAAAA	
LOC49 4127	NR_03 6691.1	GCAGTGCCCG ACTCCGCAGG AGCGCCAGGG CGGCTCCTGC TCCTTCTGGA CTCCCTGAAG AGGCGTTTGT CGAAATGTCC ACAGAAGGAG GATTTGGTGG TACTAGCCGC AGTGATGCC AGCAAAGCCT AAAGTCCTTC TGGCTTCGGG TCATGGAAGA AATCTGGAAT TTAGCAGTGA AAGATTTCTG AATGCAGGAA CTCCCACTGG CTCGTATTAA GAAGATTATG AAAGTGGATG AAGATGTGAA GATGATCAGT GCAGAGGCCC CTGTGCTCTT TGCCAGGGCA GCCCAGATTT TTTATCACAG AGTTGACTCT TCGAGCCTGG ATTACACAG AGGATAACAA CTGCCGGACT TATGTCGCCA TGGCAATTAC GAAATTTGAT CAATTGGATT TTCTCATCGA TATTGTTCTA AGAGATGAAC TGAAACCTCC AAAGTGTCAG GAGGAGGTGC TGCAGTCTGT AACTCCTGCT GAGCCAGTCC AATACTATTT CACGCTGGCT CAGCAGCCCA CCGCCAGCTC CATGACCACC ATGCAGCCTG GGCAGATCAT CATCGCACAG CTTGAGCAGG GCCAGACCAC GCCCGTGACG ACGCAGGTTG GAGAAGGTCA GCAGGTGCAG ATTGTCCAGG CCCAGCCACA GGGTCAAGCC CAGTAGGCCC AGAGTGGTAC TGGATGGACC GTGCAGGTGA TGTAGCAGAT CCTCACTAAC ACAGGAGAGA TCCAGCAGAT CCCGGTGCAG CTGAAGGCTG GCCAGCTGCA GTGTATCCGC TTAGCCCAGT CTGTATCAGG CACCCACGTT CTGCAGGGAC AGATCCAGAC ACTTGCCACC AGCGCTCAAC CGATTACACA GACAGAGGTC CAGCAAAGAC AGCAGTAGTT CAGCCAGTTC ACAGATGGAC AGCAGCTCTA CCAGATCCAG CAAGTATCCA TACCTGCGGG CCAGGACCTG CCCAGCCCAT GTTTTCCAG TCAGTCAACC AGCCCTCTGA TGGGCAGGCC CCCCAGGTGA CTGGCGGCTG AGGGCCGGAG CTGGCAAGGC CGAGGACACT CAACACAATT TTTGCCGTAC AGCCCCAGGT CATGAACACA GCCTTCTTCC CCAGAGGACC CGGCCGACCT CAGCTCCTCC TGCAGGCTAG GACAATGGCG CACTAGGCCT CATGCCTGGG GGCCGAGATT CTCCAACAGA AAGATGCAAT ATTTTGTGTT TCCTTTTTC TCCAAGGAAT	18

[0106]

		CAATATTTCA ATATGTTGAG CTGTGTGTCC AATGCTATGA AATTAATAAATA TTAATCACA AAAAAAAAAA AAAA	
LOC64 6471	NR_02 4498.1	AATGAATCCA ACTACTGTCC TTGTCCTCTC CTCTCTAGGT TTGTGGAGAC TGAATTCCAC AAACCTAGGG ACAGGGCACT CTCTAGGGGC AAGTCAACTC TCAATTATAG TGAGGGCAGG TTCCCCAGTT GCCAGCCTAC ACCCTGGCCA GCCACCCAAG GGAATACCTG CTGCTGCTAA GGCAGTCAAT GTTGGGAGGG TCAGGGAAGG GGAGAGGAAG TAGCTGAGTG TAGAGATTAT CCAGGCTTTC CTTCCCGTCC TCTGTACAGA AAGGCAGACA TACTCTGACT CCTGAAGTGC CCCAGGATCA TAGTTGGTTC TTCTTAGGGG GAGGGAGTGA AACGGTGGCC TTGCTCCAAT TCCAGGCCTC TGGAGAAAGG AGTGCTCAAC TGGAGAGTCT CAGAACCTTT TACAGTACTT CAGCAGGCC AGCACCCAAC CTTCCCCACC ATACCCCTGC CCTGGGAATG CCCCTTACCA CAGTGGCTTC CATTCCTGAC ATTTGAACCA GCTCCTGCAC TTGAAGGACA AGGCAGCCAC TGGGCAGCTC CGGGAGGCGG GAGGCGTGAC TCCTTCATAT CAGGCCATCT GGAGGAGCAC CAGATTTCCC TCTTGTGAAA CAACCCCCCA CAGTGGGGAT TTAATGGTCA CCACACAAGC CCAAAAAAAC CAGGCCCTGC AGAGCCATGA CTTCACAGGG GAGAAAACCA GCCCAAGAGG CTGCCCTCAC CCAACACTTA GCTCTAAGTC CAGACTCTTA AAGGTTCTGT TAAAGATCTG CGGCCAGGCG CAGTGGCTCA CATCTGTAAT CCCAGCACTT TGGGAGGCCG AGGTGGGCGG ATCACGAGGT CAGGAGAGCG AGACCATCCT GGCTAACACA GTGAAGCCCT GTCTCTACTA AAAATACAAA AAATTAGCCA GGTGTGGTGG CGGGCACCTG TAGTACCAGC TACTTGGGAG GCTGAGGCAG GAGAATGGCG TGAACCCAGG AGGCAGAGCT TGCAGTGAGC CGAGATCACG CCACTGCACT CCAACCTGGG TGACAGAGCG AGACTCCGTC TCAAAAAAAAA AAAAAAAAAA AAAAGATTTG CCTAGTGAGC TTGGCCAACC CAAGAGCCTT CCTGGGCTCT CAGGTTTCTT GAGGCAAAAC TTCTAAAGAT GCAAATAGAA TCCTTGGTAG CTACAAAGCT CATCTAGCCA AATTATAAGT ACTATCCAAG CCCAGGATTC ATTCTTGAAG ATGAGATGTA AAAGCACTGC TGGGCCCTTG CAAAGGGAGA GATCAGAGAA AATAGGAGAA CGAACACCAG CTCATGCCAA TCTCAGTCTC ATGAGCTACA GAGAAAAAGA GCCAAAAAG TTTATCCTGG CTCAGCCACC TTCTGGCTTT GTAGCTACAG GCAAGTTATT TAACTTTTCT GAATGTTGGT TTTTCCATCT GGAAAAAGGA GACAGGAAAA GCTGCCACTG GAGGCTACCT TAAGGGTCAA TGAGTGAAAT GGGGTTGAGT GCTTAATGAA CTGTTAAAC ATGACACAGA TGGGTGAGGT GACATCTGAC	19

[0107]

	TGCTCTTCAC AGCAGTCCTT GCATGGTGAG CAGATGCAAT CAGTGTGCTC GTTCATTAC TTGTTCATCA AACACCAACA GTACCCACTT GTGCCAGGCC TTGTGCTGGG CACCGTAGGG GCTATGGAAG GAGTAAGACA CAGTCATGCT CTCAAGGAAC TCGCTGTCCA GCAGAGTGAT AGGACATGAA TACATACTTC TAGCAAAGGC TGAGTAGCAT TAGGCAGGTG GCCAGATGAG GTCAGAGCTC TGGCCCTAGT GCCCTGTAGT AAGTTGCGAG GGAGTAGGAA ATGAAGACAA AACAGCAAGA GCACAGGTCC AGCACAAGAA GGTGAAGGAC ATGGAAAGAG GAGCAGAGCA TGATAAAGCT ACAAAGTAG GGGGCAAGTC ATGAGGTCCG GGTCACTGGG GAGCCCTGGA CAGGCTCTGA ATGGGAGATA GACTAGACTG ACAAAGCAGC TCTTTCTGGA GACCTCCTGT GGAGGGTCCC CTCTTCTACC CTTGGGAGAC GAGGTGTCAT TCACTTCACG ATACACATGG GGAAAGGAAG TTGGACAGGG GAAGGCATT GTCTAAGGTC ACTCAGTGGT CATGCCAGTG CAAAGCACCC AAAGCCTGGT CCAGGTCCTG CCACCTCCTG CGTGGGCTCC ATCTTCTCGG CTCAGTTCAA GCCTTTATTA TCAGAGTCCC TCTGTGTGCC AGGCTCTGTG CTGAATGTCC GTGTGCGCCA CAAATTGCAC TAACGGTGCT TACTGCCACT TCCTCTCCGA CCTTACCTCC AAAGACCCAG CCGGGCCTAA CCCTCACACA CAGCCAGAGG AATCCTTCCC AAACACAGTT AATCACATCG CTCATCCGTT TAAAACTGGC TTACTAGAGC CAACACAGGA TAAAATCCAC AATCAGTCCC AAACCCATCT TTCTCTGCCG TCTCTAGACC ACATTCACTG AGCACCAAGG CCTGCACGCT TCGCAGCCAG CCCTCCTGCT CTCCCCCTTG CCCTCCAGCC AACTGGCCC TCAACCCCA AACTGGGCC CACCTCTGAG CCCTGCATCA AACACCAGCA CCCCCTTCGC CGAGCTCATT CTTTCATCATT CCTCAGAGCT CAGCTTAAGC ATCACCTTCC TTCCCTGCGA CAGGGTCAGG TCCTTTCCTG TGCGCTCCGC AGCACCTGC CTGTCCCTCG GAGTCCTCGC GAGAGGAACT AGATAACTGT GATCCCCGCG CACAGCACGG TGCTTGCCCTA GGACACAGTG AGCGCTTCAA CGCGCTGAAC TAAACGAATG AAGGGGAACA CCAACTCAGC TGTCACCCCC GCCCCCAAGT GTCAGTGGCT AGAAGATCTT CCCCCGGTTC GCCGGCAGCA CCGGTGGGTC TTGTACCTC TGCGCCCCGC AGCCCTCCGG AGGCTGCAGT TGCTGTCTGC TGACAGGCGT CCCCTCAGGA GAACGGGAGC TCCTCCAGCG CAGGGCCCTG CTCAGCACCC CTGGTCCCGG GGGCCCCAC GGAGGCCGCC GCGCTCAGTG AAACCTTGCC GCGCGCAGCA GTGGCCGGAG ACCCGCGCGG ACCCTCTCCC CGCGGGGACC CGCCAGGGCG AGTCGCCCCT CCCCCGCGG AGACGACCCG ACCTGGGCCA AGGTCGGCCA AGTGCTCGCC GCCTGCCAG CGGCCCTTGG	
--	--	--

[0108]

		ACCCACAGGA CCCGGACCCG AGTGCGCGGA AGCCTCCGAG CCGCGGCCAG GTCTCAGAAAT GCGCGGCGGG GCAGCCCGGC CCGTCAAGCA GCGAAGCCGA AACTAGAAGC CTGAGGTCTG GCTTGGTAC TGTGTGCTGG GGAAGTCCGA CGAGCAACTA CCCTTCGGGG ACTCAGTTTC CCCCGGGCCA AGTGAGACGG ACAGCTGCGG CTCCCGCGAG AACTCGCGCG GGAACAGGAG CTGCGGGCTC CGCACAGCGC CCGGCACGTA GACCCAGTCT ACTAACGGGC TGAAGGTCG CGTCCCGCC TCCGCGCCTC CCTAGAACCT TTCTACCTC AAGCTCGGGC TCCCGGACTC TCTACCTCA CGGCCCTCC TTCCACCTTG GGCCGCCAG CCTCAACCGC CCT	
LOH12 CR	NR_02 4061.1	GGCTACGCAA GACCTTCAGT TCCGATTAG GAGGCCCCGC CCCCCGGCCC GAGGGAGGGG CGGAGAGACC CGTCTGCG ACTTAGGGCG ATGCCACCTT AAAGGGCTTG ACCTCCTCGA AGCCAGAACT GCGGAAGAGG ATGGAGAAAG AAACGCTAGA TAGACCCAGG ATTCGAACCC ACAACAGCTT GGATGCAAAG CTCATTTTGA ATTCTGAAGA GCTGGGAGTT TAGCAGTGGA CGACCAACA AAAAAATACC AGAAGACGGT GAAAGCAGCA GCTGGAAATG AGAGAAAAAT TAAGAAATAG AAAATGCTGT TTCATGTATT AGGGAGTGCA CATCTTTAAA GAGAAGTGAA GAACCTTTT GGCTAGGCGC TTTCTGGGA CTTGGCAGT TATCAACAAG TCACTCTGAA ACTAACAGAA GGTGAGGAGG GAGTAATCCA GAAAGGAAAC TGCCATTTT GCTAGGGCAA GAAAGTAGAC CTAGCAATGC AATGCCATCA AGGAGTTAGC TGGCTCTAGC GTTCTCCGAA CTTTGCAACT CATTTTATAT TACATTGTCT GCGTCAAGAA ATTTCAAGTA AATGCCTTGA GATTTTATAT GTATAAATG TAGTCTCTGG CCAGGCGGGG TGGCTCACGC CTGTAATCCC AGCACTTTGG GAGGCTGAGG CGAGTAGATC ACGATGTCAG GAGATCAAGA CCATCCTGGC TAACATGGTG AAACCCCGTC TCTACTAAAA AATACAAAAA ATTAGCCGGG CATGATGGTG GGCGCCTGTA GTCCCAGCTA CTCGGGAGGC TGAGACAGGA GAATGGTG TG AACCAGGAG GCAGAGCTTG CAGTGAGCCG AGATCGCGCC ACTGCACTCC AGCCTGGGCG ACAGAGCGAG ACTCCGTCTC AAAAAAAAAA AAAAAAAAAA AAGTCTCAGA AGAAGTGTA AGTTGACTAA ATGATTTTGA AGTCCCTTCC ACTCTACTAT ATCACAATAA TTTCCCTAT TTTACCTTAT TTAATTTTCA CAACAACCCT GCAGCCTGTA AGTAGGTGAC TCCTCCATGG TCAGCAGGTG GTCAGTGGTC GAACTATTTA GGAATATCTG ATGCTCTTTC CTCGCTCAC CATTGCAATA CAATGAGAAA AATGCAAATG AATCTAAGTA CAGTGTCTC TGGGAATATG AAGATAGAAC	20

[0109]

		TAAAACTGC CTGAGAGATC AGGGCAGGCT TCTAGAAAGT TGTTCTTAAC TAGTCTTGAG GTTTACATAA ACCACACCAG GCTGATGGGA CTGGGAAGGG CCCACTAAGC AGTGAGACCA TTCCCTTTTG GAGAGTCCTT GCATCCCCTC CCAGATTTC TCTTTGAGGG GAAGGTGAGA GAGGAGGTAA AAGGGGTGAG GAATGGAGAA TAACTCATTG TGGTTCTTGT TTCCCTTTT CCACATAAAA GTATATTTGT CTTGTGTTCC ATACACCAGT CCATACTGAT GTGATGGTGT TTTTATGCT TCCTTTTGAA TAAACATTTC ATTCTTAA	
PBXIP1	NM_020524.3	GGTCAGTTTC TGGTCACATG ATTTTCTTCT CGGGCTGCAA ACAAAGGGAA GCCTGCAACA AGTTAAGCTG AAGACCGAAG CAAGAGCTGG TTCAGGTGGC AGCCACAGCA GCCTCAGGGA CCTCAGCAAC TATGGCCTCC TGCCCAGACT CTGATAATAG CTGGGTGCTT GCTGGCTCCG AGAGCCTGCC AGTGGAGACA CTGGGCCCCG CATCCAGGAT GGACCCAGAA TCTGAGAGAG CCCTGCAGGC CCCTCACAGC CCCTCCAAGA CAGATGGGAA AGAATTAGCT GGGACCATGG ATGGAGAAGG GACGCTCTTC CAGACTGAAA GCCCTCAGTC TGGCAGCATT CTAACAGAGG AGACTGAGGT CAAGGGCACC CTGGAAGGTG ATGTTTGTGG TGTGGAGCCT CCTGGCCCAG GAGACACAGT AGTCCAGGGA GACCTGCAGG AGACCACCGT GGTGACAGGC CTGGGACCAG ACACACAGGA CCTGGAAGGC CAGAGCCCTC CACAGAGCCT GCCTTCAACC CCCAAAGCAG CTTGGATCAG GGAGGAGGGC CGCTGCTCCA GCAGTGACGA TGACACCGAC GTGGACATGG AGGGTCTGCG GAGACGGCGG GGCCGGGAGG CCGGCCCCACC TCAGCCCATG GTGCCCCCTGG CTGTGGAGAA CCAGGCTGGG GGTGAGGGTG CAGGCGGGGA GCTGGGCATC TCCCTCAACA TGTGCCTCCT TGGGGCCCTG GTTCTGCTTG GCCTGGGGGT CCTCCTCTTC TCAGGTGGCC TCTCAGAGTC TGAGACTGGG CCCATGGAGG AAGTGGAGCG GCAGGTCTC CCAGACCCCG AGGTGCTGGA AGCTGTGGGG GACAGGCAGG ATGGGCTAAG GGAACAGCTG CAGGCCCCAG TGCTCTCTGA CAGTGTCCCC AGCCTGCAAA ACATGGGTCT TCTGCTGGAC AAGCTGGCCA AGGAGAACCA GGACATCCGG CTGCTGCAGG CCCAGCTGCA GGCCCCAAAAG GAAGAGCTTC AGAGCCTGAT GCACCAGCCC AAAGGGCTAG AGGAGGAGAA TGCCCAGCTC CGGGGGGCTC TGCAGCAGGG CGAAGCCTTC CAGCGGGCTC TGGAGTCAGA GCTGCAGCAG CTGCGGGCCC GGCTCCAGGG GCTGGAGGCC GACTGTGTCC GGGGCCCAGA TGGGGTGTGC CTCAGTGGGG GTAGAGGCCC ACAGGGTGAC AAGGCCATCA GGGAGCAAGG CCCCAGGGAG CAGGAGCCAG AACTCAGCTT CCTGAAGCAG	21

[0110]

	AAGGAACAGC TGGAGGCTGA GGCACAGGCA TTAAGGCAAG AGTTAGAGAG GCAGCGACGG CTGCTGGGGT CTGTACAGCA GGATCTGGAG AGGAGCTTGC AGGATGCCAG CCGCGGGGAC CCAGCTCATG CTGGCTTGGC TGAGCTGGGC CACAGATTGG CCCAGAAACT GCAGGGCCTG GAGAACTGGG GCCAGGACCC TGGGGTCTCT GCCAATGCCT CAAAGGCCTG GCACCAGAAG TCCCCTTCC AGAATTCTAG GGAGTGGAGT GGAAAGGAAA AGTGGTGGGA TGGGCAGAGA GACCGGAAGG CTGAGCACTG GAAACATAAG AAGGAAGAAT CTGGCCGGGA AAGGAAGAAG AACTGGGGAG GTCAGGAGGA CAGGGAGCCA GCAGGAAGGT GGAAGGAGGG CAGGCCAAGG GTGGAGGAGT CGGGGAGCAA GAAGGAGGGC AAGCGACAGG GCGCGAAGGA ACCCCCAAGG AAAAGTGGTA GCTTCCACTC CTCTGGAGAA AAGCAGAAAGC AACCCTCGGTG GAGGGAAGGG ACTAAGGACA GCCATGACCC CCTGCCATCC TGGGCAGAGC TGTGAGGGCC CAAGTACCGG GCACCCCAAG GCTGCTCAGG TGTGGACGAG TGTGCCCGGC AGGAGGGCCT GACTTTCTTT GGCACAGAGC TAGCCCCAGT GCGGCAACAG GAGCTGGCCT CTCTGCTAAG AACATACTTG GCACGGCTGC CCTGGGCTGG GCAGCTGACC AAGGAGCTAC CCCTCTCACC TGCTTTCTTT GGTGAGGATG GCATCTTCCG TCATGACCGC CTCCGCTTCC GGGATTTTGT GGATGCCCTG GAGGACAGCT TGGAGGAGGT GGCTGTGCAA CAGACAGGTG ATGATGATGA AGTAGATGAC TTTGAGGACT TCATCTTCAG CCACTTCTTT GGAGACAAAG CACTGAAGAA GAGGTCAGGG AAGAAGGACA AGCACTACA GAGCCCAAGA GCTGCGGGGC CCAGGGAGGG GCACAGCCAT AGCCACCACC ACCACCACCG GGGCTGACAC CCTGCCCCAC AGGGAATGGC CTTGGCCTGG CCCAGCCCCA GATCCCAGCG TTATCTAACT CCTGGAGGGT GGACTCTGTC CTGGCTTGTG TGGTGTCCTC AGATATCTTT CACACAGTAG AGCAAAATCA CCAGCCCIGC ACTGATGTCA CTTTATGTAG AAAAAGGCCT TAGCTGGACC TGCCTTGCCG TCTATGCAA TGCATGCAA TACTCCAGGC CCTGGGATGT GGGCTTGTGT TTTGTCACTG TGAAGGGGGA GATGGGAGAG GAGCCTGTTT TGGGGTGGGG TCTGGGGAAG GCAATCTGAT TCTGAAGCTA AAGAGCTTTC ATCCTCTTGA GTGTATGTCC CCATAGTGGG CCCCTTGACC CACATGCTGA CCGGTGCCTT GGGATTTGAC TAGAGTTGCT GGCTCGAGGC CCAGCACGAG GACTTACCCT GGGGTTTTGT TAGGTTTGA AGCAGCTGTC CCTAGGGGGT GAAGTCCCCC CCTTTTTTTT TTTTACCCT GCTTCTCCCA CGGCTTCACC TCCCTATGTG AACTGTAGAC TCAGATCCCA ATAAAGTGCT GTTGACAGCTA TGATGCTAGG TGGTTTCTAA GCACAGGGGA CACCCACAC CCCCTGCCTG	
--	--	--

[0111]

		AATGGATGGG TCCATCCCAG GCACTGGTAC TTGCCCCCTT GTTCTGTATC CCCCTTTGCC CTTCCTTGC CCTTCCAACA AACCTAGGC CCTTGAGAAG CTGATACTTC TCCTTTTGCT CACAGCTGCC TTGGCCCCAC CCTGGGAGA TGAGCAAAT TGAGTGTGGG TTTTGAGTC TGAGCCTCAG GCTCAAATCC AGGCCAAGTG ATCTTGGGCA AGTTAATCTC TGGGAACTTT GGGTTTCTTA TCCTCAAAAA AGGCGATGGA AGGGCTGGGG AAGTGATTAA ATAAAAGCAA CGCAAGAAAA AAAAAAAAAA AAAAA	
RNF5	NM_006913.3	AATAGTGATT AGGAAACCTT GAAGCCTGCC CAACGATCGT GGGCAGGAGG TGGTTTCTGG TTTGTTGGGG CGTGTGTATG TGTATTTGGG GGGACTGAAG GGTACGTGGG GCGAAACAAA ACCGGCCATG GCAGCAGCGG AGGAGGAGGA CGGGGGCCCC GAAGGGCCAA ATCGCGAGCG GGGCGGGGCG GGC GCGACCT TCGAATGTAA TATATGTTTG GAGACTGCTC GGGAAGCTGT GGTCAGTGTG TGTGGCCACC TGTACTGTTG GCCATGTCTT CATCAGTGGC TGGAGACACG GCCAGAACGG CAAGAGTGTG CAGTATGTAA AGCTGGGATC AGCAGAGAGA AGGTTGTCCC GCTTTATGGG CGAGGGAGCC AGAAGCCCCA GGATCCCAGA TTAAAAACTC CACCCCGCCC CCAGGGCCAG AGACCAGCTC CGGAGAGCAG AGGGGGATTG CAGCCATTIG GTGATACCGG GGGCTTCCAC TTCTCATTIG GTGTGGTGC TTTTCCCTTT GGCTTTTTCA CCACCGTCTT CAATGCCCCAT GAGCCTTTCC GCCGGGTAC AGGTGTGGAT CTGGGACAGG GTCACCCAGC CTCCAGCTGG CAGGATTCCC TCTTCCTGTT TCTCGCCATC TTCTTCTTTT TTTGGCTGCT CAGTATTGA GCTATGTCTG CTTCTGCCC ACCTCCAGCC AGAGAAGAAT CAGTATTGAG GGTCCCTGCT GACCCTTCCG TACTCCTGGA CCCCCTTGAC CCCTTATTT CTGTTGGCTA AGGCCAGCCC TGGACATTGT CCAGGAAGGC CTGGGGAGGA GGAGTGAAGT CTGTGCATAG ATGGGAGAGC CTTCTGCTCA GAGGCTCACT CAGTAACGTT GTTAATTCT CTGCCCTGGG GAAGGAGGAT GGATTGAGAG AATGTCTTTC TCCTCTCCTA AGTCTTTGCT TTCCCTGATT TCTTGATTG ATCTTCAAAG GTGGGCAAAG TTCCCTCTGA CTCTTCCCC ACTCCCCATC TTAGTGATT AATTAAATT TTCACTCCCC AGAGTCTAAT ATGGATTCTG ACTCTTAAGT GCTTCCGCCC CTTCACTACC TCCTTTAATA CAAATTCAAT AAAAAAGGTG AAATATAAAA AAAAAAAAAA AAAAAAAAAA AAAAA	22

[0112]

SERTA D2	NM_0 14755. 2	CTCCTGCACG GCGAGTGCTG GAGCACGACG TACCGCTCGC TCGGTCAGGG CGCCCCCTCC GCGCGCCTCC TGCTTCCTCC TCCGCTGCCT GCGCCGCGCG CCTCCACCAT TGTATAATGC TCGGGGCGCG CAGGCAGAGA ACGGCGGAGT CTTAGCTTCA GCCTCGCCTG CTGCCCCGCTC CCCGGCGCCA CCCTCGGGCC CCTGGAGCGG GGCACCTCCG ATGGAGCGGG AGTAGCTGAG GAGTGGGCGG AAACCCCTCC TGATGCGTTA GTTCCCAGGT GGAGCTGCAT GTGATATATG TTGGGTAAAG GAGGAAAACG GAAGTTTGAT GAGCATGAAG ATGGGCTGGA AGGCAAAATC GTGTCTCCCT GTGACGGTCC ATCCAAGGTG TCTTACACCT TACAGCGCCA GACTATCTTC AACATTTCCC TTATGAAACT CTATAACCAC AGGCCCCCTGA CAGAGCCCAG CTTGCAAAAG ACCGTTTTAA TTAACAACAT GTTGAGGCGG ATCCAGGAGG AACTCAACA GGAAGGCAGC CTGAGGCCCA TGTTACCCCC CTCTCCCG AGCCACCACG AGCCAGCGA CAGCTACCGA GAGGCCCCGC CGGCCTTCAG CCACCTGGCG TCCCCGTCCT CCCACCCCTG CGACCTCGGA AGCACTACGC CCCTGGAGGC CTGCCTCACC CCGGCCTCAC TGCTCGAGGA CGACGATGAC ACGTTTTGCA CCTCCAGGC CATGCAGCCC ACGGCTCCCA CCAAACTGTC ACCTCCAGCC CTCTTGCCAG AAAAGGACAG TTTCTCCTCT GCCTTGGACG AGATCGAGGA GCTCTGTCCC ACATCTACCT CCACAGAGGC GGCCACGGCT GCGACTGACA GTGTGAAAGG GACCTCCAGC GAGGCTGGCA CCCAGAAACT CGACGGTCCT CAAGAGAGCC GCGCAGATGA CTCAAAACTG ATGGA CTCTC TGCCTGGGAA TTTTGAAATA ACGACGTCCA CGGGTTTCCT GACAGACTTG ACCCTGGATG ACATCCTGTT TGCTGACATT GATACGTCCA TGTATGATTT TGACCCCTGC ACTTCTCAT CAGGGACAGC CTCAAAAATG GCCCCGTGTG CTGCCGACGA CTCCTCAAAA ACTCTGGCTC CTTACAGCAG TCAGCCTGTC ACCCCAAGTC AGCCTTTCAA AATGGACCTC ACAGAGCTGG ACCACATCAT GGAGGTGCTT GTTGGGTCTT AAGACCCAGG GACCCAGCGA CTATGCCAC CCAGACCCCA GAGCGTTCCC ATAACCCTGA CAGTTCTCCA CACTGTGCAT GCACCTTGC TTGCCTTTTT CAGAGAAAAA GAAAAATTTA CAACAGGATC AACTAGTTT TTGCTTTGAG CAGAGTTGGA GTGCCTTCAT CCAAGTATGA CCACTTTTAA TACACTTTTT TGAGTGGTTC CTCAGAGACC TACTACCTG GTATAGGAAA GAATCCATTT GAAGACAATG TTGCAATGTT GAATGACAAA AATAAACAGT TCAAGTGAAG CACAAGGATT AAGTTGAAAA AGCTGTAAAT TGCATGTGCA TATTTGTCTA TTTTTTCTAT AAGTTTTATT GCAAGAGGTA AAGAAGAAAA CTATATATAT ATATCTTATT TAGATAATCT CAGTACCTTT TCTGGCATT	23
-------------	---------------------	---	----

[0113]

	TTGCCCTGTA TAGGTTGACT TGGCAATTCG GCCTTTTATG AGGCATTAAC TACTCCTCGT AAGTGTGCA TTTACATGGC TGTTFAGAAA ACTGCTGCCC AAATTTATTT TATATTTTGG TACAGATTCT GCAGTTTATG ATATTGTITT TCTAAAAACA AATGCTGTTT ATACATATGA GATAGCTATT TTGATAGGAT TTGCTCACAT AGTTCCTGCA AACTTCAGAT GTACAAGTTG CACTTGTA CT TTTATAGAGT TGTAAATGTTT TATATGTGTA TGGTGCAAGA GAAAATTGGA TCAAATCAAT CTGCAGTTGA TGTCCCCAAA TGCAAAACACA GGCACACACA TGCACACACC CATAAACACA CACACAGTGC TTAAAGAAAAG GGCCAGGTGA TATCACACCC AAATTTTACA AGCACTGACC CCCTGGCACC AACACCCGCC AGTACTGTGA CTTCCAAAGC CAGAGCCACA TGTGCTCATC AAACCTTGCAT TAAGCAGTTG GCGGGAGATG GCTGTGGAGC TGGGGGTTTA AGTGATGGTT CTCTTTTGCT CCCTCTTTTG AGGGTAAAGC TACTGTCTTT CTAAAGAGTG TATTTATGCC AAGTTTGCGC TTTAAATTGT TTTATTTTGG TTTTTTAATG AAAACCCAGA TCTTTCCTTT TTGGCATAAT TTTTATGATG ACCTGAAATT TTACATCCGA ACAAATTTT ACATCCGAAA AGCAACCAAC TTCTTCATGG AACTCAGCCC TGTGTGAATG CTTAGGGCCC TTAAAGAAGA AAATCTCCCC AGAAGGCATC CATCATGTTG CTTAATTGTC TTCTGCAGCT TCCTTTCCCT AGAGCTTTCC CTGTGTTGCT AAGAGCTGAA AATGGCACT TCGTGATCAC CACAGTGAGC TTGGCTCGCC TCGGCCGGCC CGGGATGCAC TCTTACAACA TGTGTGACTC TTGAACCTGG AGTTCATCAC ATTACGTCAC AGCTTCCCAT CTGGTTGCTT TCCTGAGTCA GCTACTTCAC ACTTGTC AAG GCTGTTTTAC CCCAAAAC TC AGACAGGACT TTCTATGCAT GTTTTCCCTC CTCCCCCAA TTCCCCCCCC CATCACCTTA TCTCCCAGGA CACACTTGAG AAGTAGCTTT TTATTCCTAG TGGTGATACAT TTAATTTTAA AAAGGTTGCA ATGTATCATG CTGTGTGCCG AAACCTGTTA TGGCCTTCTT GTTTCAGTTT TTCTTTTCT TCCAATGGTA CTTTAGCTGT TGAGTGCAGG TTACAACCTA TATTGTTATG CAGATGGCTT CTTTAGGAAT AACTTTTATA TTTATTTAAA AATTTTAAA TTATGGGATG TTTTGTGTT GTTGTGTCT TTGTGTGG TCATTTGTCA ATATTCAGTC ACCAATTCTG CTCACTTCTT GCCATGGATA AAATTGGGTC TTTCTGGCTA ATTAAAAAAG ACAACTTTAT AAAATGGCAC TTAAAGCAAG CCATAGTTAG TTTATTTT GTAATGCACA TGGCAAAGCA AAGACGTTTG TGATGAAGGA ACTGCTCATC TAAGCAAAAG ATTTGAGTAT GATATGATAA AGGCTTTCTA CATTCTAATT TACTTTTCC CCCCCTTGA ATGTGTTTTA AAGGCTAATT ATCAGCTCAG TAGAGCAGTG	
--	---	--

[0114]

	AGAAACTGAT CAAATTGCAC TTGTTCTCCT ACAAGCAACC TCCACGCAGA CACCTCGTAC TGCTACAGGT GTGTCAATTC CTTTAATAGG ACCAGGGACC ATGTAAGTGA GGTGAGGGTT GTAGTAGATG CTTCCAGTGT CAGTATGCCT GTTAATTTTA AGAGCTTCCC TTTCTTGAG AGAACAAGTC TGCCAGATT CCATGCTTTC TATAACTGGA GGACCTGGCA AACCTGCCGC ATGCTGCACA CATCTACCTA CGTACACATA TACAATAGTA TTGATGATTC TGAACAATAA CAGGGTAAAA CAGTTGGTTT GCCATTGTTA AAAACTGATT TACAGTAACT TACAACAAC GTACTTTTGT TGGATTAGCA AATCATGTGT TTAACAAAT CCCATATGTT GGGCAACAGT TCAAAATAAGC ACGGAGAAAT GTTGCCCAAA CTGGTTCTC TGACTCTTAT GTATTTGTAA GGCTGGGCTT CAAAATCAAA AAAAAACCC CAAAAACAGC AGGCAAATGC TTTTAACTC TGACACCGTT GCCATAAATC CCTGATACTC AAAAGTCTAAC AAGAAAGACA TGGAAAAATTA GCAGCCCATTTTCAGAAAGA TCAAAATGAT CTAGGGTTCT AATTGCTTTT GCATCCTATT CTTACAAAAGT GATGTCCCAA CAGGGAACAG TAGGAGCTGG AGTGGGATCT CCAAGTCCCA GTTTGAGTGT GGGATGTGCT TCCAGCAGTG CCTTCCCTTT ATGAAAGACA TCACATGGCA TCCAGGGCCA GGCAGGCAGC TTGAGGTGCC TTTACGAGAA AACCGAGCTG GGGCTGGGAG AGGACAGTTA TTGACACTGA TGTGCAATGA AGTGACAAGA TGAGAGCAGA ATCGTAAGAG CTTTGAATTT GAAATGAGTT TTTTTCCCC CATAAGTTAT TTATTCCTTT TTTCTGTGTA AATATATTTA TTTTACTGTG GAGCGCTAAC ATCTGGATCG TAACATGTGC AGAATGTATG GTAGGAATGT ATTCTCTTGT AGGAATGTAA ATCTGTATTA AAAGGGGGTC CAAGCCAGGC CCCCAGGTCT TCTCATTGTA TGCACAGTCC GCATTCAATTT TTACTCTTCT CTAATATGGG TCTATTTGAA ATATGCAAAA GGTATGAGGA ATGTTTAAAT ACCTCCAAAT TTTTAAGAAA AGCATCAAAG GGTGATATT TTTTAAAGTT TTTTAGTAG CACTTTCTCT GGATGACAGA AGGAGCAACC ACATGGGCAC CCTTGTTTAT ACCAAAGGGT GAGCAGTGGC CAGAGCCTCC TCTGCACCTC TCGAGTGTCT TTACCAATTG AGCTTTTTAT CGCCATAGCC CCTTGAGGTG CCCCAGCTGC CCTGAGGTCA ATCAAGGAAA ATTTCTTAAT GAAATAAGCT CCAAAGAGCC AAAGTATCAA CTTACAGATC GTTTTAAAG CTTAAATTTA TGAACCACCT TTGTGGTAAA CAATGAATTA TGAATACCGC AGGGCAGCCT TCTFAAATGA CAAATGTAAA AAAAAAAAAA AAAAAGACTC TACTTCGTGC AGCAATTGCT ACTCTATACG AATTGTCTTA ATTTGAAAAC CTTGCTGTTA CAAATTGGAC CTTTATACAT TTTCTGAAAA CAATGAAAAG AGTATATTTA	
--	---	--

[0115]

		ACCTTTTCTG GCTGTAAATG GTTACCTTCC TGTAAGTCCC CCGCACCTGG AGGCATGGAG TTGTGTGCAT CCTGCTTATG TACAATTGTT TTCAGTGTTT CTAAGAATGA GTCTGAATGG TTCTTGAAAA TTAGCCAGGA TCAAAATGCTA TTGCAGACAA AGCCAATAAA AAGTTGGACT TCTTTTGGGG ATAACAAGTT TTGGAAGAGA AATGCAGGCC ATATGTGCGC ATGACCGAGA TTTTGAAAAA AGATGTACAT AGTGACATGT TTGGTGCATG GTTTTTGAGG AGGGCTTTTG TCAAAAAGGA GGTATAACCT TTCCCCACA GACCTGAGAG CTGTGCCTTT TCTATGCAAT ATTACAGACG TTACATCGGA ACCCAGATGG CTGTATTAC ATGTAGGTTT GGGCTGTAAT CTAAACAATT GGACAGATTA AATGTACATG GAAATGAGCA GTCTTACTTT TGTAGTTTTA TATTATACAA TAAACAGTTA AAAGATGAAA AAAAAAAAAA AAAAA	
SLC35 G5	NM_0 54028. 1	TACCACCTCA GGAGAGTTCC AGGGAAGAAC CCCACCCGCA CTCCAATGAG GTCACAATGG CTGGAGCTCT GAGGGGCCCCA GGCTCCCTGA GCCAGGAGGA GAGGAGAAAAG TCCAAGGAAA GATGGCTGGC AGTCACCCCT ACTTCAACCT GCCTGACTCC ACACACCCAT CGCCGCCCTC CGCTCCACCC AGCCTCCGCT GGCACCAGCG CTGCCAGCCC TCTGGTGCCA CCAATGGCCT GCTGGTGGCC CTGCTGGGTG GGGGCCTGCC TGCTGGCTTC GTGGGCCCCC TTCTCGTAT GGCTTACCAG GGTTCCAACC TGCCCTCGCT GGAGCTGCTC ATCTGTCGAT GCCTCTCCA CCTCCCTATT GCCCTGCTAC TTAAGTGC GGGCAGCCCC CTTCTGGGAC CTCCTGACAT CCGAGGCTGG GCCTGCTTCT GTGCCCTGCT CAACGTCCTC AGCATTGGAT GTGCCTACAG TGCAGTTCAG GTGGTGCCCG CTGGCAACGC TGCCACTGTT CGCAAAGGTT CTTCACCGT ATGCTCCGCT GTCCTACCC TCTGCCTTGA GAGCCAGGGT CTCGGTGGCT ACGAGTGGTG TGGACTGTTG GGCAGCATCC TAGGACTAAT CATCATTCTG GGACCTGGAC TCTGGACACT ACAGGAGGGG ACCACAGGTG TCTACACCAC CCTGGGCTAT GTGCAGGCTT TCCTGGGAGG CCTGGCGCTG TCCCTGGGGC TTCTGGTCTA TCGTTCTCTG CACTTTCCTT CCTGCCTCCC AACAGTGGCC TTCCTATCTG GCTTGGTGGG GCTGCTGGGC TGTGTGCCAG GCCTCTTTGT GCTGCAGACC CCCGTGTTGC CCAGTGACCT CCTGAGTTGG AGTTGTGTGG GGGCAGAGGG GATCCTCGCC TTGGTCTCCT TCACATGTGT GGGCTATGCG GTCACCAAGG CCCACCCTGC CCTGGTGTGC GCTGTCCTGC ATTCCGAGGT GGTTGTGGCC CTTATACTGC AGTATTATAT GCTCCATGAG ACTGTGGCAC TTTCTGACAT CATGGGGGCA GGGGTGTGTC TGGGCAGCAT	24

[0116]

		TGCCATCATT ACAGCCCGGA ACCTCAGCTG TGAGAGGACA GGGAAGGTGG AGGAGTGAGA TAGAACTTGG GAGCCCGGGG GTGGGGAGGG ACAGGGATAA ATAAAGACAA AGACTGAAGA C	
SPATS 2L	NM_0 011004 22.1	AGTGCTGAGG GAGCAAAGTT CATTTTCTCG GGTAGGAGAA GATGATTCTC TTGCAACACG TGCGGATTGT GACAAAATCT TTCATTAACA AGGGGAGTTT CGGTGAAGTG GAGGTTTGGG GAAAGGCGAG GAAGTCGGTC TGGAGCAAGC AAGCAAAGTG CGGAAGCTGT ACTGGGATTC TTCTAGAAAAG TGGGGTGGGA AAGGAGCTAG GGAGGGCGTG TGGAGGGACG AGATCTGTGT CAGAACGTGC GTGTGAGCGG ATACAAAACC CGAGAGAGGC GTGAGCAGCG CTGTGTTCG GAGCGGGAGC GAGGGGCGCC GGCTGGGGTG TGTGCTCCTG AGCTCTTCAG AAACCAAGCT GCTTTCAGGA ACATTGCTGT GGATTCCCAG GGCCTATTCC ACTAGAAGCA AGATGGCTGA ACTCAATACT CATGTGAATG TCAAGGAAAA GATCTATGCA GTTAGATCAG TTGTTCCCA CAAAAGCAAT AATGAAATAG TCCTGGTGCT CCAACAGTTT GATTTTAATG TGGATAAAGC CGTGCAAGCC TTGTGGATG GCAGTGCAAT TCAAGTTCTA AAAGAAATGGA ATATGACAGG AAAAAGAAG AACAATAAAA GAAAAAGAAG CAAGTCCAAG CAGCATCAAG GCAACAAAGA TGCTAAAGAC AAGGTGGAGA GGCCTGAGGC AGGGCCCCCTG CAGCCGCAGC CACCACAGAT TCAAAACGGC CCCATGAATG GCTGCGAGAA GGACAGCTCG TCCACAGATT CTGCTAACGA AAAACCAGCC CTTATCCCTC GTGAGAAAAA GATCTCGATA CTTGAGGAAC CTTCAAAGGC ACTTCGTGGG GTCACAGAAG GCAACAGACT ACTGCAACAG AAACTATCCT TAGATGGGAA CCCCCAACCT ATACATGGAA CAACAGAGAG GTCAGATGGC CTACAGTGGT CAGCTGAGCA GCCTTGTAAC CCAAGCAAGC CTAAGGCAAA AACATCTCCT GTAAAGTCCA ATACCCCTGC AGCTCATCTT GAAATAAAGC CAGATGAGTT GGCAAAGAAA AGAGGCCCAA ATATTGAGAA ATCAGTGAAG GATTTGCAAC GCTGCACCGT TTCTCTAACT AGATATCGCG TCATGATTAA GGAAGAAGTG GATAGTTCCG TGAAGAAGAT CAAAGCTGCC TTTGCTGAAT TACACAACTG CATCATTGAC AAAGAAGTTT CATTAAATGGC AGAAATGGAT AAAGTTAAAG AAGAAGCCAT GGAAATCCTG ACTGCTCGTC AGAAGAAAGC AGAAGAACTA AAGAGACTCA CTGACCTTGC CAGTCAGATG GCAGAGATGC AGCTGGCCGA ACTCAGGGCA GAAATTAAGC ACTTTGTCAG CGAGCGTAAA TATGACGAGG AGCTCGGGAA AGCTGCCCCG TTTTCTGTG ACATCGAACA GCTGAAGGCC CAAATCATGC TCTGCGGAGA AATTACACAT CCAAAGAACA ACTATTCCTC AAGAACTCCC TGCAGCTCCC	25

[0117]

	TGCTGCCTCT GCTGAATGCG CACGCAGCAA CCTCTGGGAA ACAGAGTAAC TTTTCCCGAA AATCATCCAC TCACAATAAG CCTCTGGAAG GCAAAGCGGC AAACCCCAAA ATGGTGAGCA GTCTCCCCAG CACCGCCGAC CCTCTCACC AGACCATGCC GGCCAACAAG CAGAATGGAT CTTCTAACCA AAGACGGAGA TTAAATCCAC AGTATCATAA CAACAGGCTA AATGGGCCTG CCAAGTCGCA GGGCAGTGGG AATGAAGCCG AGCCACTGGG AAAGGGCAAC AGCCGCCACG AACACAGAAG ACAGCCGCAC AACGGCTTCC GGCCCAAAA CAAAGGCGGT GCCAAAAATC AAGAGGCTTC CTTGGGGATG AAGACCCCCG AGGCCCCGGC CCATTCTGAA AAGCCCCGGG GAAGGCAGCA CGCTGCAGAC ACCTCGGAGG CCAGGCCCTT CCGGGGTAGT GTCGGTAGGG TTTCACAGTG CAATCTCTGC CCCACGAGAA TAGAAGTTTC CACAGATGCA GCAGTTCTCT CAGTCCCGGC TGTGACGTTG GTGGCCTGAG CTAGGAGGAA AAAGAGCAGT TTTCACTCAG TTTTGGTTCC CTGCCCAGAG TGCTGACCCA ATTGCTGCC AAAAGAGTGT CAATCAGAAT ATACAAATCC CGTATGGTTG TGTCATCCTC TCTTAATCAT TTTTACTAAT TCTAATAATC AGCTTAGCT TGCTTCATAA TTTTCATGGC TTGCTTGAT CTGTTGATGC TTTCTCTCAT CAAGACTTTG CAGCATTTTA GCCAGGCAGT ATTTACTCAT TATTAGGAAA ATCAAGATGT GGCTGAAGAT CAGAGGCTCA GTTAGCAACC TGTGTTGTAG CAGTGATGTC AGTCCATTGA TTGTCTTAG AGAGTTAATG TTACAAAAAA GAATTCTTAA TAATCAGACA AACATGATCT GCTGAGGACA CATGCGCTTT GTAGAATTT AACATCTGGT GTTTTTCTGA AAAAAATATAT ATACATATAT TGCTTTATTT GAAACAAATT AAAATATGCT GCATTTGACA CCTGGCTAGT TTCTTTTATT GATACCCACC TAGTTATTGA ATGTACTGTT TAGTGCTTTC AAAAAAACT TTAGAGACTA GAGGTTGTGG TGCAAAGCTG TGTACAATAA ATACTGTTTC TGTTGAGACA AGTACTCTTT CAGGAAAATA TATATATGCC CTTTCAATT GATTACAAA ATAGATGGAT ATGCACCCTG ATCATCTTAG ACACACCATG TGGCAGTTGG GCAGTTGGAA ACATTGGTTG CAAGTACTAC AAACCTCAGC TGAGCCTAGC TTCAACAATA AGAATTTATT GGTTCAGTGA GTGAAAAGTC CAGTTGGTCC AATTGATCA GGATTTGAGC TCCCATCTCT TTTTTTTTTT TCTTTTTCT TTTTCTTTT TTGAGACAGT CTGCTTTGT CACCCAGGTG GAGTGCAATG GCATGATCTC GGCTCACTGC AACCTCCGCC TCCTGGGTTT AAGCCATTCT CTGCCCCGGC CTTCCGAGTA GCTGGGATTA CAGGCATGTG CCACCACGCC CTGCTAATTT TTATATTATT AGTACAGACA GGATTTACC ATGTTGTCCA GGCTGGTCTC AAACCCCTGA CCTCAGGTGA	
--	---	--

[0118]

	TCCACCTGCT TTGGCCTCCG AAACCTGCCGG AATTACAGGC ATGAGCCACC GTACCCGGCC AGCTCCCATC TCTTAATTAT CTTAGCTCTC CTTTCTCCT TGGGTTGACA TTGCATTGAG AATTGTGGCA AAGGGCCACC ATGCTCTTAA GACTCAAAGT TATTTTCCAC ACTGTCCAGA GGAGAGAAAGT TATCCTAGTA GCTTCTACAC AGAGCAAGTG TCTTTCTCAG AAATCCCAGC AAAGGTCTTG CATACATTG CTGGTAGGCC TGTCTCTTAA ACCAATCATG AAAGGGGGGA GAGAAAGTAA TGGGATGAAC TAATTTGCAT AGACTAATTA GAGCCCACCC CTGGAGCCTG GGTGTGGCCA TCTTCCAGA GTTCTGAGC TAGATGGAGA AGGGGTACTT CTCAGAAAGG GAAAATGGAT ACCCAATGGC CCAAACCCAA AATAGCCCCA GTTCCCCTAA CTTTGACTAC AGGGCAGTCC AGTTTGGGTG CCGCTCCGT TGCCTCACA TGTCCTACAT ATCTGTTGAC TACTCACAAG TGCAAATGCT TATTTCTAAC TCAACATTAA CATTTTTTCT GGCAACCCAG GTTCACTGGT TCTTTCAC AGAGCGGCC TGAAGAGCTG AGCCTGCAAG CCACGCAAGC ATCTGTTTCT TCTTTTGCCA AGTACAGGAG GATGTTTGCT CTCTCTGTAG AGAGCTTTCT GAGGTCTCTG GGTGTACCA GAGATTTAAT AGAAATTCTT AACGTAAAGT CACATTCCAG GAAGGAAGGA AGAGTTGTTT GTTCAAATAA GAAAGATAAA TGTTCCGGCAG TGTAGGCCCT GTTTACCCCA TCTGAGGCC TGAATTCATA TATTACAAGA CGGAAGGATT TTGCACAGTT TTTTATGTAG CAAGATTTTG CTCACCCTG AAAAAATGCA GTGTAAATGT GACCGCTTTA AAGATGAGTC AAGTAATTCT TGGAACAGGG AAAAAATGA ATTTGCCAGG TCAGGAGTTC ACCTGCCTTT GTCAGAGTTG AACCAACCA CTCTTGACCT CGACTCACTC CTTAGGGTT AAGAAAGCCC AAACACATTC CTGAGCACAG AGCAAAACT CCCATGTCAC TGAAAAGAAA CAAAAGAATG CTAAGAAAGTG CTCAGACCTG ATCACAATTT TTCCAATATT TTTTCTTTT TTTTTTTTT TTTGAGACAG GGTCTTGCTC TATCACCTAG GCTGGAGTGC ATGTTTTTGA GACAGGGTCT TGCTCTATCA CCTAGGCTGG AGTGCATGAT CATGGCTCAC TATAGCCTTG AACTCCTGGG CTCAAGCCAT CTTAGCCTC CCAAGTTGCG AGGACTACAG GTGTGCACCA CAACGTCCA GCTACTTTTT AAATTTTTAG TAGAAACGAG GTCTCACTAT GGTGCCCAGA CTGGTCTCGA ACTCCGGAGC TCAAGTGATC TTCTGCTTT GGCCTCCCA AGTGTTAGAA TTACAGGCAT GAGCCACCTC GCCTGGCTGG TTTTGCCTT TCTTATAGAC CCTGGGCATG TAAGCATTTA TTAGTTTGCA TTTTGAAC AGTAATTICA ATATTTTAGT GCCAATGTCA GGCCGCTTAA AACTGTATT ACATATCTTC ATCTGTCTGG TGGAATATT GGTGTGATCC	
--	--	--

[0119]

		TAGAGAACTG AGTCCTATTC TGCCATTCAT TTAAAGTGTT TAAACTCTA ATCTCTCTAC TTAATGCACA GTAGTCAGAT TATTCTCTTA AACATTTGCC TAGTAGAGGT TAAAATAGTT TAATCCTTAT GAAGATGGAA TAACTTCAAA CTCACATTGT GGCACCTAGA TCTTCCACCA AGACTTCATC CGTGAAATCC ACACCTCCCT GTTGGGTTC CAATTACATT CCAAATTTAC ATTTCTTTTG AGAATCTCTG CATACTCCAG CTCTGTCTG TTGATCCTAT TCTAGAAGTG CTTAATGCAG CAAGACACAG AAAGTTAAAC GCAAATTGCT GCAAAATTCA CCCTCAGTGG AGGACTAGAA ACACAACATG TCCAATTTAA AGCTCAGTTC ACAAGCAGTT CAATTCTGCT GGCATCAGAA AAGGAGATT TAATTAAACA TTCTTAGGGA AGGACATCAA ATGAGGTAA TGGGAAACGT TACCAGATTA AAAGCAGTTT TTTGACAAAG TAACAGATTT GGAAATTCTG ACTCTCTGAA AGCCTTGATT TGAACCTCAA ACTTGATTTC ACCATGAGAA GTGGGGATCA AGGGCTGCG CAGTCTTTT CCTAAATCGA TTCGGTGCTC CCCACCCCGA CGCAGGCACA GGTCCGCAAC CAGATAGGGA GATGCCTGAA TTTCAGGCTA CCTTTGACAA AGCTTTCTTC CTCCTCCCT CCCTTTGCAC GCTGCATCCC ACGCTGCCTG CTTAAAGCGC CCTCATGTGT CTACAGATGG TAAAACGTTT ATTTCTCAAC AGACATTCCA GTGATAGCAT CCAATGACCT ATGTAACGGC ACCCTTTTTT GCTGTACGCG TTTTTTGAGA TGGAGTCTCG CTCTGTCGCC CAGGCTGGAG TGCAGTGGCG CGGTCTCGGC TCACTGCAAG CTCGCGCTCC CGGGTTCACG CCATTCTCT GCCTCAGCCT CCCGAGTAGC TGGGACTACA GGCACCCGCC ACCACACCTG GCTAATTTTT TGTATTTTTA GTAGATACAG GGTTTCACCG TGTTAGCCAG GATGGTTTTG ATCTCTGAC CTCGTGATCC ACCCCCCTCG GCCTCCCAA GTGCTGGGAT TACAGGGGTG AGCCACTGCG CCCGGCCCCA GTCACCTGTT CTTAAGTTTC TTAAGCAAAC TATAAAATAG CAAAAGACCA AAAAAAAGG AAAAAAGCA GTTCGCCTAA TACATTGTT CAGCATTTCC TTGAAAGTAC TGAGCCATCT CAATTGCTCT GATTTTGTA GAAAAATTATG AAGAGTTGCA AAGTCCAGT GATTCTCTTG TTAATTAGCT AAGAATTTGA AATGTAAAT AAATACTATT CTTTACAATC CATTATAAGG ATTTTAAAT CTTTTTGCTT CTTAATAAAA TTCTAACAAA GAAAAAAAAA AAAAA	
TDRD7	NM_013028.84.1	AGAGCCGAGG CCAGGCTGCC CTCGAAGCGG GGCAGGGCGA AGCGGGGCGG GGCCGAGCAG GGCAGGGCGG GGGCTTGAGG TGATTCCCAA GCCGCGGGGC GGCTCCGGTG GTGCGGGGAA ACCGAAAGTG GCGGCGGGCC GCGGCGGGGC CCCTGGCGGA	26

[0120]

	GACGGCGGCA GGAGCTGGGC CCAGAGACGC GGGGACGGGC CGTGGGCCCC CGGAACGAGA TTACCTGCTA TGCCATGGCC TGCACAGAAA CTGCAAGAAT TGCTCAGCTT GTGGCTCGTC AAAGGAGTTC TAAAAGGAAA ACCGGGCGTC AAGTTAATTG TCAGATGAGA GTGAAGAAAA CCATGCCATT TTTCTAGAA GGAAAACCAA AAGCAACCCT CAGACAACCA GGATTGCTT CAAATTTTTC TGTTGGCAAA AAACCTAATC CAGCACCGTT AAGAGACAAA GGAAACTCTG TTGGAGTTAA GCCTGATGCT GAAATGTCTC CTTATATGCT ACACACAACCT CTTGGAAATG AAGCATTCAA AGACATTCCA GTGCAAAGGC ATGTGACCAT GTCCACCAAC AACAGGTTTA GCCCAAAGGC GTCCCTTCAA CCACCTTTGC AGATGCATCT CTCAAGAACC TCTACTAAGG AAATGAGTGA TAATTTAAAT CAGACTGTTG AAAAACCCAA TGTC AAGCCT CCTGCCTCTT AACTTATAA AATGGATGAG GTTCAAAAAT GCATAAAGGA AATACTAAAC AAGCATAACA ATGGCATTTG GATATCTAAG CTTCACATT TTTACAAAAG GTTATATAAA GAAGACCTTA ATCAAGGAAT TTTACAACAG TTTGAACACT GGCCTCATAT TTGCACGGTG GAGAAACCTT GCAGTGGTGG CCAAGATTTA CTTCTTTATC CAGCTAAGAG AAAGCAGCTT TTGAGAAGTG AACTGGATAC TGAGAAAGTA CCTCTATCCC CACTACCTGG TCCCAAACAA ACACCACCGT TGAAAGGGTG TCCAACAGTT ATGGCAGGAG ACTTTAAAGA AAAAGTGGCA GACCTGCTGG TGAAATACAC AAGTGGCCTT TGGGCCAGTG CACTTCCGAA AGCATTGTAG GAAATGTACA AAGTGAAATT CCCTGAGGAT GCCTTAAAAA ATCTTGCCTC ACTTTCTGAT GTATGCAGCA TAGACTACAT TTCTGGAAAT CCCCAGAAGG CCATTCTCTA TGCTAAACTT CCATTGCCCA CTGACAAAAT CCAAAAGGAT GCAGGGCAAG CACATGGTGA TAAIGATATC AAGGCTATGG TTGAACAAGA GTATTTGCAG GTAGAAGAAA GCATTGCTGA AAGTGCTAAT ACCTTTATGG AGGACATAAC AGTTCTCCTT TTAATGATTG CAACTGAAGC ATCACCATCT GTATTGGTGG TTGAAGTGA CAACACAAAT GAAGTGGTTA TCAGGTATGT GGGCAAAGAC TATTCTGCTG CTCAGGAATT AATGGAAGAT GAGATGAAGG AATATTACAG TAAGAATCCT AAGATCACAC CAGTCCAGGC TGTGAATGTT GGGCAGTTGC TGGCCGTAAA TGCCGAGGAG GACGCCTGGT TACGGGCACA GGTCACTCA ACAGAAGAGA ACAAATAAAA GGTATGCTAT GTTGACTATG GTTTTAGTGA AAATGTTGAA AAAAGCAAAG CATACAAATT AAACCCGAAG TTTTGTTTAC TCTCATTTCA AGCTACAAAA TGTAAGCTTG CAGGCTTGGA AGTCCTAAGC GATGACCCTG ATCTAGTGAA GGTGGTTGAA TCTTTAACTT GTGGAAAGAT CTTTGCAGTG GAAATACTTG	
--	---	--

[0121]

	ACAAAGCTGA CATTCCACTT GTTGTCTCTGT ACGATACCTC AGGAGAAGAT GATATCAATA TCAATGCCAC CTGCTTGAAG GCTATATGTG ACAAGTCACT AGAGGTTTAC CTGCAGGTTG ACGCCATGTA CACAAATGTC AAAGTAACTA ATATTTGCTC TGATGGGACA CTCTACTGCC AGGTGCCCTTG TAAGGGTCTG AACAAGCTCA GTGACCTTCT ACGTAAGATA GAGGACTACT TCCATTGCAA GCACATGACC TCTGAGTGCT TTGTTTCATT ACCCTTCTGT GGGAAAATCT GCCTCTTCCA TTGCAAAGGA AAATGGTTAC GAGTAGAGAT CACAAATGTT CACAGCAGCC GGGCTCTTGA TGTTTCAGTTC CTGGACTCTG GCACTGTGAC ATCTGTAAAA GTGTCAGAGC TCAGGGAAAT TCCACCTCGG TTTCTACAAG AAATGATTGC AATACCACCT CAGGCCATTA AGTGCTGTTT AGCAGATCTT CCACAATCTA TTGGCATGTG GACACCAGAT GCAGTGCTGT GGTTAAGAGA TTCTGTTTIG AATTGCTCGG ACTGTAGCAT TAAGGTTACA AAAGTGGATG AAACCAGAGG GATCGCACAT GTTTATTTAT TTACCCCTAA GAACTTCCCT GACCCTCATC GCAGTATTAA TCGCCAGATT ACAAATGCAG ACTTGTGGAA GCATCAGAAG GATGTGTTTT TGAGTGCCAT ATCCAGTGGA GCTGACTCTC CCAACAGCAA AAATGGCAAC ATGCCCATGT CGGGCAACAC TGGAGAGAAT TTCAGAAAGA ACCTCACAGA TGTCATCAAA AAGTCCATGG TGGACCATAC GAGCGCTTTC TCCACAGAGG AACTGCCACC TCCTGTCCAC TTATCAAAGC CAGGGGAACA CATGGATGTG TATGTGCCTG TGGCCTGTCA CCCAGGCTAC TTCGTATCC AGCCTTGGCA GGAGATACAT AAGTTGGAAG TTCTGATGGA AGAGATGATT CTATATTACA GCGTGTCTGA AGAGCGCCAC ATAGCAGTGG AGAAAGACCA AGTGTATGCT GCAAAAAGTGG AAAATAAGTG GCACAGGGTG CTTTTAAAAG GAATCCTGAC CAATGGACTG GTATCTGTGT ATGAGCTGGA TTATGGCAAA CACGAATTAG TCAACATAAG AAAAGTACAG CCCCTAGTGG ACATGTTCCG AAAGCTGCCC TTCCAAGCAG TCACAGCTCA ACTTGCAGGA GTGAAGTGCA ACCAGTGGTC TGAGGAGGCT TCTATGGTGT TTCGAAATCA TGTGGAGAAG AAACCTCTGG TGGCACTGGT GCAGACAGTC ATTGAAAATG CTAACCCCTG GGACCGGAAA GTAGTGGTCT ACTTAGTGGA CACATCGTTG CCAGACACCG ATACCTGGAT TCATGATTTT ATGTCAGAGT ATCTGATAGA GCTTCAAAA GTTAATTAAT GACTGCCTCT GAAACCTTGA CAACTAATTC AGATTTTTTA GCAATAACAA AATGTAGTAG GCTTAAAAAA AATCTTAACT CTGCTACATG GCTCTGACTG CTGTGGGGGA TTGAAAAGAA TATGCTTATG TTTGATGAAA GATATTTAAC AAGTTTTGTT TTAACAGAGT TGACTTTTCA AAGAAAATIG TACTTGAATT ATTACTATAA	
--	--	--

[0122]

		TATTAGAATA AAAATGTTTA TCAATATAAA AAAAAAAAAA AAAAAAAAAA AA	
TOX4 (하우스 키팅 유전자)	NM_0 013035 23.1	AGCAGAGAGA ACACACGTCC TTGCGGAAGT GACGGCAGTT CCGAGTCCAG TGGGGGCGGT GGGAGCGATG AGGGTCTGAG ACGGTGGGAG CGGTTGTGTG AAGATGGAGA CATTCCATAC ACCAAGCTTG GGTGATGAGG AATTGAAAT CCCACCTATC TCCTTGGATT CTGATCCCTC ATTGGCTGTC TCAGATGTGG TTGGCCACTT TGATGACCTG GCAGACCTT CCTCTTCACA GGATGGCAGT TTTTCAGCCC AGTATGGGGT CCAGACATTG GACATGCCTG TGGGCATGAC CCATGGCTTG ATGGAGCAGG GCGGGGGGCT CCGAGTGGG GGCCTGACCA TGGACTTGA CCACTCTATA GGAAGTCAGT ATAGTGCCAA CCCACCTGTT ACAATTGATG TACCAATGAC AGACATGACA TCTGGCTTGA TGGGGCATAG CCAGTTGACC ACCATTGATC AGTCAGAACT GAGTTCCCAG CTGGGTTTGA GCCTAGGGGG TGGCACCATC CTGCCACCTG CCCAGTCACC TGAAGATCGT CTTTCAACCA CCCCCTCACC TACTAGTTCA CTTCACGAGG ATGGTGTGA GGATTTCGGG AGGCAACTTC CCAGCCAGAA GACAGTCGTG GTGGAAGCAG GGAAGGAGCA GAAGGCCCCA AAGAAGAGAA AAAAGAAAGA TCCTAATGAA CCTCAGAAAC CAGTTTCAGC ATATGCTTTA TTCTTTCGTG ATACACAGGC TGCCATCAAG GGACAGAATC CTAATGCCAC TTTTGGTGAG GTTTCAAAAA TTGTGGCCTC CATGTGGGAT AGTCTTGGAG AGGAGCAAAA ACAGGTATAT AAGAGGAAAA CTGAGGCTGC CAAGAAAGAG TATCTGAAGG CACTGGCTGC TTACAAAGAC AACCAGGAGT GTCAGGCCAC TGTGGAAACA GTGGAATTGG ATCCAGCACC ACCATCACAA ACTCCTTCTC CACCTCCTAT GGCTACTGTT GACCCAGCAT CTCCAGCACC AGCTTCAATA GAGCCCCCTG CCCTGTCCCC ATCCATTGTT GTTAACTCCA CCCTTTCATC CTATGTGGCA AACCAGGCAT CTCTGGAGC TGGGGGTGAG CCCAATATCA CCAAGTTGAT TATTACAAA CAAATGTTGC CCTCTTCTAT TACTATGTCT CAAGGAGGGA TGGTTACTGT TATCCCAGCC ACAGTGGTGA CCTCCCGGG GCTCCAATA GGCCAAACCA GTACAGCTAC TATCCAGCCC AGTCAACAAG CCCAGATTGT CACTCGGTCA GTGTTGCAGG CAGCAGCAGC TGCTGCTGCT GCTGCTTCTA TGCAACTGCC TCCACCCCGA CTACAGCCCC CTCCATTACA ACAGATGCCA CAGCCCCCGA CTCAGCAGCA AGTTACCATT CTGCAGCAGC CTCTCCACT CCAGGCCATG CAACAGCCTC CACCTCAGAA AGTTCGAATC AATTACAGC AACAGCCTCC TCCTCTGCAG ATCAAGAGTG TGCTCTACC CACTTTGAAA ATGCAGACTA CCTTAGTCCC	27

[0123]

	ACCAACTGTG GAAAGTAGTC CTGAGCGGCC TATGAACAAC AGCCCTGAGG CCCATACAGT GGAGGCACCT TCTCCTGAGA CTATCTGTGA GATGATCACA GATGTAGTTC CTGAGGTTGA GTCTCCTTCT CAGATGGATG TTGAATTGGT GAGTGGGTCT CCTGTGGCAC TCTACCCCC GCCTCGATGT GTGAGGTCTG GTTGTGAGAA CCCTCCCAT TGTAGTAAGG ACTGGGACAA TGAATACTGC AGCAATGAGT GTGTGGTGAA GCACTGCAGG GATGTATTCT TGGCCTGGGT AGCCTCTAGA AATTCAAACA CAGTGGTGTT TGTGAAATAG TCCTTCCTGT TCTCCAAGCC AGTGAAGAGT TATCTGCTGG GAAAGTGTC AAGAGCCTGT TTTTGAAACA CAAGCTGGGC TTCTGGTAGT GCCTCATCAC AACCCATGAT GGCTGTTCAT GTTTCACCCC TTTTCTTCCT TCAGCAGAGG CCAGGCTATG GAGCAGGGCC ACTGAATTTG CTGTAATCTG GAGATGCTTT TTACTTTCAA CCATAAGCGG TAATAGCAGA GGAAAGGGTG AAGGGAGTCT GGGCAAGCAA AGCATAGAGA TGGTGGGGTG GTGGTGGGGT TGAAGAACT TGTGGTATA ATTGTCATAG GACTTGCCTA AAATATTATT AAAATTACGG GAGTGTACTC AGCTTTGAGC CTAGGAGAAA ATGCCACTGT GTGCATCCAT TTTAAAGGGT TCCCTCATAA AAAAATGTTA TTCCCATTA TCACATCAGT AACTGCTTT GAAAACAAAA CTTTTCACAA TGGGCATCT GGGCTACATG GAAAATGACA TCACCCAGGA GTGATTTCTC TTTATATATA TTATTTCTGC AGTTACCATC CTTATCTGAG TTATCACAGT TCATGAATCT AAGAGGCGGA ACTCTACATC ATTAGTAAGA GGTTCCACCA AAGTCTAAAG TTGTATTAC TTGTGTTTGA TGAACATCT TTAAGAGACC ATAGGTCTAT CATTATTTCT TAGACATAAT CTAAGAAAA ACAGACTAGA GAAGCCACCT GGTTGTAACA GAATAAGCAG AAGTTTACAG CATGATAGTC CAAGTGGTGA TAACTTTAAA TAAAACTCAA ATTTTACTG TTGTAGACA GGAATGCTGT CCTAGAGAAC CTCCTCCTCA ACCAGCTACG TACATAGTTT TATCCTATGC ATTCTGTTT TCTGTGTGTT TTTTGTGTT TTTTTTTT TTTTTTTT AGACAGAGTC TCGCTCTGTC ACCCAGGCTG GAGTGCAGTG GTGCGACCTC AGCTCACTGA AACCTCTGCC TCCCGGGTTC AAGCGATTCT CCTGCATCAG CCTCCCGAGT AGCTAGGATT ACAGGCGCCC GCCACTACGC CCAGCTAATT TGTGGTATTT TTAGTAGAGA CAGGGTTTCA CCATGTTGGC CAGGCTGGTC TCGAACTCCT GACCTCATGA TCCGCCGCC TTGACCTCCC AAAGTGCTGG GATTACAGGC ATGAGCCACC GCACCCAGCC TGCATTCTCTG TTTTTTTAAT GGTTTTGGAG GGTAGCAGTA GAGATGGGGT CTCACATATG TGCCAGTCT AGTCTTGAAC TCCTGGGCTA CAGTTACCCT CCTACCTCGG CTTCCTAAAG	
--	---	--

[0124]

		TGCTCGGATT ACAGGTGTGA GCCACTGTGC CTAGCCTATA ATGATCAITTT TAATGTTTCC CATGCACITCA TTTAGTTTGA ACCTTCACAG CAACCCAATG AGGTAATACT CCCATTTCAC ATATAATACT GAGAGATGAG TTGCACAAGA TTATACACTG TTAAGTAGCA GAGCCAGAAT GGACTTCAGA ATCCCAACTA CAATACAAAT GTTTATTTAA ATAAAGAAGA AAGCTATTGT ACAAATATCA CTCTTCAGGT TTAGCTTACA GAGCCATGGC TATGGATTCT TAGCTCTGTA AGGAAGTGCT TCTATAAAT CTTAGGTTTA GAGATGATAC CATCTGGGTA CCTTTGCTTG AACCGTGCAA CCACATCTGG GTCTAGTAGG TGGATCCCAT CCAGTTGGTT TCCAAGGGTG ATCCTGAAAC AGTGTAAGAG GAGGGGCAAA CCAGAAATCC TGGAAATTAGA GGGTTTAATA TTGTTAAAAA ATGCATACCA AATGAAGACT GCCTATCATC ATATCAAATA TGCCAATTCT AAAAAGAGCT TAACATTAGA ATAGTATATG GTAGAATTAC TAGTTCAGAA TTGGCATAGA TTCTGGTGTT AAAATAGACT GGATCTGIAT TATCTGAGGG TTAGTAACTA ATGCTTAGCC AGGCCITGCTT CACAGAGTTG CTACCAGGGA GTATTCTTTG GATAAGCAAA ATGCTAGCAG CATGTGTTTT AAGCTCTGTT AAGGGGTGAA AGATGTAATT ATTGACAGAT TAAATAGATA ACTTCGTAAC CACCAGGGGG CAGATTCAAT ACATCACAGA ATGGCTGAGG AAGATCCTTG GGTGTGAAAG AGAGTAGAAA CCCTAGGGAG CAGTGCTTTT GGGTCCTAGA ACCTGTTGAG TTTCTAATGA ATATTTGTAG AATCTCATAA AACAGTTTAA ATACAAGCTT AAGTGGCTTA TGAATCCTGT GAAGCTCATT TATGGACTAG TGTAACAACAA TGTGAAGCTC TACTAAGTTC TGTCTTAAT CATAAATAAT AGCCCCTGA GGAAGTACCT GTTCTCTGGT CACCTACCA GTTGGGTTGC ACATTGTGTG GTCGTCCAAA TAACTCAATC TTGCGAGTGC CAGGAGATAG TCTTTCAATC ATGCCATAGA TTTTCATCTGG TTTATGACTG GTGGAACGAA CCTAGGAAAT AAAAAGTAGC TGCTTTTTAA GTTACACAAG AAAAAA	
TPTI (하우스 키핑 유전자)	NM_0 012862 72.1	CTTCGTGCCA CGTCACCGCC TGCGTCGCTT CCGGAGGCGC AGCGGGCGAT GACGTAGAGG GACGTGCCCT CTATATGAGG TTGGGGAGCG GCTGAGTCGG CCTTTTCCGC CCGTCCCCC CTCCCCCGA GCGCCGCTCC GGCTGCACCG CGCTCGCTCC GAGTTTCAGG CTCGTGCTAA GCTAGCGCCG TCGTCGTCTC CCTTCAGTCG CCATCATGAT TATCTACCGG GACCTCATCA GCCACGATGA GATGTTCTCC GACATCTACA AGATCCGGGA GATCGCGGAC GGGTTGTGCC TGGAGGTGGA GGGGAAGATG GTCAGTAGGA CAGAAGGTAA CATTGATGAC TCGCTCATTG GTGGAATGC CTCCGCTGAA GGCCCCGAGG GCGAAGGTAC	28

[0125]

	CGAAAGCACA GTAATCACTG GTGTGATAT TGTCATGAAC CATCACCTGC AGGAAACAAG TTTCACAAAA GAAGCCTACA AGAAGTACAT CAAAGATTAC ATGAAATCAA TCAAAGGGAA ACTTGAAGAA CAGAGACCAG AAAGAGTAAA ACCTTTTATG ACAGGGGCTG CAGAACAAAT CAAGCACATC CTTGCTAATT TCAAAAACTA CCAGTTCTTT ATTGGTGAAA ACATGAATCC AGATGGCATG GTTGCTCTAT TGGACTACCG TGAGGATGGT GTGACCCCAT ATATGATTTT CTTTAAGGAT GGTTTAGAAA TGGA AAAATG TGATGCAAAA GAAAGAAATC CCTGCGCTTT CTGTCTGTCT TTGTGGCGGC CCAGATTGAA TTGGGGAATA CATCTTTAGC CTGGAAATGT AGGCTGCATG TTAATGGTAA TGTAACTTTT GCAGTGTAAT GTTTGAAAAA TATTAATGTA GTTTTTGCTT TTACAGTAAC AAATGTGGCA ATTATTTTGG ATCTATCACC TGTCATCATA ACTGGCTTCT GCTTGTCTC CACAAACAC CAGGACTTAA GACAAATGGG ACTGATGTCA TCTTGAGCTC TTCATTTATT TTGACTGTGA TTTATTTGGA GTGGAGGCAT TGTTTTTAAG AAAAAATGT CATGTAGGTT GTCTAAAAAT AAAATGCATT TAAACTCATT TGAGAGAATG CCTTTTAGTT TAATGCATAT TAAACTAAA TTGATCCTGT AGTGTTCCTG GAGAAGCTAG AGCCTGATTG TAGGCTACTA CTCATCAATT AACTTCTACA GTGGAGACTA CTTCTGGGAC TGGAATATAA AAAAGAATCA AAGGTTCGA TTTTGAGTTG CAATAAAGGG AAAGACCATG CTCATAGCAG TGCCAACATC TGAAGTGTGG AGCCTTACCC ATTTATCAC CTACAACGGA AGTAGTTAAC TGGAAGAGAT TACCAAGAGA ATAAAAAGAG ACTCATTGAG TGGAAGCAAC TTGTCTCAG CTTATTTTAC ATAAAGAGAG CGAAGTCTTT TGGGATGAAT GTTAATTA CTCCCTGGTA ACTAGAACAG GGAAGTGGCA ACTAGCCTAT CTGACCACCT GTTTGTGACA CTTTAAGGIG GTTGGTTGCC TTTTTAAATG GTTGAGGGGA AAAGAATACC TTGTGGGATA TGGAATTTAA GTTCGAGTCC AGTTTTATTG GAACGTGGCT ATGCTTATTC ATTTATGGAT TGACTGTGGC GTTGTCTAGT GCATGAGCAG AGTTGTGTCT AACAGACTAG AGCCTGCAAG TTTGCCAGCC CCTGATTTAA AAGATGAAGG TACACAGAAT GTGGGCTGGC TGGTGGGCAA AGGGGTAAAA ATGTTCTCTA TATTGTATCT GAAAAGATGG GGTGTCTGAA TAAGAAAATG CATCTATTTG ACAGACCTGG AGCAGTTGCT ATCTGCTGCT ATGGTTTCCA CCACAGATGC AAGAAGAACA TGTCCTTGCG CTTTCCGTCT GTCTAATTGT GGCAGCTGAG ATTGAATAGA GGAATACAGG AGGAAAAAAA GCGGGAAGAG TTTTGTAGGC AGGTCGGTCA CCCAGGCTTG TAGTGCAGTG GCACAAGCAA CTCACTGCAT TCTCTGCATC CTGTGCTCAA GCCATTTTCC	
--	--	--

[0126]

	CACCTCAGTC TCACTAGTTG CTGGGACTGC AGGCATGCAC CCCTATGCCC AGCTAATTTT TGTAAGAGACC GAGTATCGCT TAGTTGCCCA GGGTGGTCTC AACTCCTGGG CTCAAGGAGA TCTGCCACC TCAGCCTCCC AAAGTGCAGG CCTAGCCTGG GAGGGGAATT TTCAAAACGT GAGTTTGGG AAATAGTCTA TCAGCCTTAC CTGGTTGATT ACACTTGTA AAGAAAGATT AAAAGCAGGC CAGTGACTCT GGTCTGCTTG AACATGTGAA TGTAAGTGGT TGAGCAATCT GGAGTTGCC CTAGTGCAA ATTCCAGACT GTCCATAGTG TCCAAAACCT GAGGCAGATA CTAATGTAA CCCCCAGCAC CCCGTGATTG GAAACAAACC TAAATACGTA TTGGGAACCT AATAGCAATT TTAAGCATTC TGATAGATTT TTTGTAGGGA TGGGGTCATG CCATGTGGCC CAGGCTGGTC TGAAGTCTT GGCCTCAAGT GATCTCAAGC TTTGGCCTTC TAAAGTGTG GGATTACAGG TGTGAGGCAT TGCACCTGGC TTAGCGTCT GATTTGACAT TGTAATGAAA AGTGTGAGTC TCATCTACAG GGCCTTTTGT CCTCTGAAAT GATAGCAGGA AGGGAATTTT CAGGCAGTGG TCAAAGCTGG GGAAACCAGG ATAGTGAAGA AGGCCTTGAG GTGAGAGATG GAAGCTAATT GGTGAAGTAG CCTTGGAAGC CTGAAACAGA CAAGTAGCAA TTCAGAGACT TTGTGGGCTC CACTGCTCCA ACTTGTTTG AAGATTTTCA GTTCTGCAGA AGAGGTATTT CCCCAGTTGT CCTTTCAGTG CTCTTAGCTG TTTTCCCAAC ATCCAGATCC AATCAAGGCT GGGACATAGC ATTTTATCAT GTCTATTAA GTCAGAAAGT ATGAACCCCA GCTGTTTACC TCTGGTAAA CCTTGAAGA TTCCAGGTAG AATCTTCTCA GACTTTGAAG ACTGTCTCAT TTTATATCTT TTTCTCGTTA TTCCTAGGGT CAAGACGTTT TGGGCAAGAA TAAGGATGTG AACATCAGAA AGCTCATAAC ATTTTGTTTT TGATGCTAAG TTTAAACAAAG GCATGCTTTA GTAGCCTGTG GGCCCTAGGG TTTGTTAAAG TGTGGAGAAC AACTGAGTGG AGCAAGAGGA CTTTTCTAGG AAGGTCCTTG TAATGTGACA TTTGAAAACA AATGAAGGTG TGGAAGTAGG CCATGTGGAT ATCAGGACAA ACCATCCAG GCCAAGACAA CAGCAGTTAG TCTGGAGTGT GATGTGTTCT GGGAAAAAG TGGCCACTTT GCTAACCCAA GAAGACAGGA AGGTTGTAA AGCAGTGGGA GTGTGCAAGG AAGGAAGACC AGACCTCAAG GAAACCACAG GCGCTCTGAG CAGAAGAGTT ACATGATATG ACTCAAATTT TTAAGGATC ACTTTGGCTG CCAGGTGGCA GGGTAAAAGC ATAGAATAAT TGTGTATAAT GTGTTTTTAA GGCAAAGATA GTGGCTTAGT CTAGGGTAGT AGACTGAGGT GGTAGGAAAT GAAGATAGAG ACAACAGGAT ATGCTGGTGG GTGAGGATGG ATTTAATGTT GATACAAGTA TTTGGTCTG AGCGTTTGA AGAAAGTTGG	
--	---	--

[0127]

		CACTGAGGTG GGAAGTCGAG TTTAGTTTTG TTAGTTTTGG ATGTGTTAAG TTTGAGATGC TGATTCTTCA GAGAAGTCTA AGCTGGAGAA CTATATAGAG AGTGGAAAAGA TAACAATAGA CATTGAAAGC CATGATACAG GATAAGGTCA TTTGGAGAGA GGATAGACTG CATTCCAACA TGAGATTGGT TGACAAAGAG AAACCAACAA AGGTAATTAA GAGGTGCTCC CACTGCACTT GTACTCAGAA GGCTGAGGTA GGATTGTTAG AGGCCAGCCT GGGCACCACA GGGAGACCCC ATCTCTAAAA TTTAGCCAGG AACCATGGCT CATGCCTGTA GCCCCAGGAA TTTGGGAGGC TGAGTGGGGA GGATCGCTTG AGGTCAGGAG TTTGAGACCA GCCTGGGCAA CATAGGGAGA CCTAAAAAAA TTAATTGGGC ATCTGTAGTC CCAGCTACTC AGGCGGCTGA GCTGAGAGGA TGGCTTGAGT CCGAGAGATT GAGGGTGCAG TGAGCTGTGA TCATACCACT GCACTCCAGC CTGGGCGGCA GTGAGACACT ATCTGAAAAA AGTTTAAAAA TTTTAAAAA GAAGGAACTG CCCCTGAGGT AAGAACCAAG GGAGGGCCTC CCAGAGGTCA GGTGAAAAA GTTTTAGGAA GGAGGAAGTA GTCAACAGGG TTACCTGTTG CAAAGTACTT AAGTAATATG AGGCCTGATA GTGGTAAACT TGAATACCGT TGGATTTCAC TAGTGGGAAA GGAAGTCTAA TTAATATGCA CTCAAGAGAC TAACAGTCGC AGGCATGAAA TACAATACAG GTACATGGTT TTTTATTATG TGTGCATCTG CTCAGTAAT AGGTGTGAAT TACTCATTTG GATCATTAGG AGTTTCAAAA TCTAGTTAAA TGACTAGATT TTTGTGATG TAAATTCTGT CATTCTGAAC TGCAGGGATT GTCAGTAACT TAACTGCAAA CTAACTGGT GATAATTATG GTAAAATTGC AAGACGAGCA ATAAATCTCA ACCAACTTGA GAGAACACTG ATAA	
TXK	NM_0 03328. 2	GATTTCAGTT GAAAGATGTG TTTTGTGAG TAGAGCACCG CAGAAGAACT GAAGACTGTT GTGTGCTCCC CGCAGAAGGG GCTACCATGA TCCTTTCCTC CTATAACACC ATCCAGTCGG TTTCTGTTG CTGCTGTTGC TGTTCACTGC AGAAGCGACA AATGAGAACA CAGATAAGCC TGAGCACAGA TGAAGAGCTT CCAGAAAAAT ACACCCAGCG TCGCAGGCCG TGGCTCAGCC AATTGTCAAA TAAGAAGCAA TCCAACACGG GCCGTGTGCA GCCGTCAAAA CGAAAGCCAC TGCCTCCCCT CCCACCCTCT GAGGTTGCTG AAGAGAAGAT CCAAGTCAAG GCACTTTATG ATTTTCTGCC CAGAGAACCC TGTAATTTAG CCTTAAGGAG AGCAGAAGAA TACCTGATAC TGGAGAAATA CAATCCTCAC TGGTGAAGG CAAGAGACCG TTTGGGGAAT GAAGGCTTAA TCCAAGCAA CTATGTGACT GAAAAACAAA TAACTAATTT AGAAATATAT GAGTGGTACC ATAGAAACAT TACCAGAAAT	29

[0128]

	CAGGCAGAAC ATCTATTGAG ACAAGAGTCT AAAGAAGGTG CATTTATTGT CAGAGATTCA AGACATTTAG GATCCTACAC AATTTCCGTA TTTATGGGAG CTAGAAGAAG TACGGAGGCT GCCATAAAAC ATTATCAGAT AAAAAAGAAT GACTCAGGAC AGTGGTATGT GGCTGAAAGA CACGCCTTTC AATCAATCCC TGAGTTAATC TGGTATCACC AGCACAATGC AGCCGGTCTC ATGACTCGTC TCCGATATCC AGTTGGGCTG ATGGGCAGTT GTTTACCAGC CACAGCTGGG TTTAGCTACG AAAAGTGGGA GATAGATCCA TCTGAGTTGG CTTTTATAAA GGAGATTGGA AGCGGTCAGT TTGGAGTGGT CCATTTAGGT GAATGGCGGT CACATATCCA GGTAGCTATC AAGGCCATCA ATGAAGGCTC CATGTCTGAA GAGGATTTC A TTGAAGAGGC CAAAGTGATG ATGAAATTAT CTCATTCAAA GCTAGTGCAA CTTTATGGAG TCTGTATACA GCGGAAGCCC CTTTACATTG TGACAGAGTT CATGGAAAAAT GGCTGCCCTGC TTAACCTATCT CAGGGAGAAT AAAGGAAAGC TTAGGAAGGA AATGCTACTG AGTGTATGCC AGGATATATG TGAAGGAATG GAATATCTGG AGAGGAATGG CTATATTCAT AGGGATTGG CGGCAAGGAA TTGTTTGGTC AGTTCAACAT GCATAGTAAA AATTTAGAC TTTGGAATGA CAAGGTACGT TTTGGATGAT GAGTATGTCA GTTCTTTTGG AGCCAAGTTC CCAATCAAGT GGTCCTCC TGAAGTTTTT CTTTTCAATA AGTACAGCAG TAAATCTGAT GTCTGGTCAT TTGGAGTTTT AATGTGGGAA GTTTTTACAG AAGGAAAAAT GCCTTTTGAA AATAAGTCAA ATTTGCAAGT CGTGGAAGCT ATTTCTGAAG GCTTCAGGCT ATATCGCCCT CACCTGGCAC CAATGTCCAT ATATGAAGTC ATGTACAGCT GCTGGCATGA GAAACCTGAA GGCCGCCCTA CATTIGCCGA GCTGCTGCGG GCTGTACACAG AGATTGCGGA AACCTGGTGA CCGGAAACAG AATGCCAACCC CAAAGAGTCA TCTTGCAAAA CTGTCAATTA TTGTGAATAT CTTACCATA TGGGGTCACT TATGGTGAAT ATCTTTCTTC AGAGTTGCTG ACTCTTGAAA ACAGTGCAAA GATCACAGTT TTTAAAAGTT TAAAAATTT AAGAATATTC ACACAATCGT TTTTCTATGT GTGAGAGGGA TTTGCACACT CTTATTTTTT TGTAATAAT TACACATCCC AAATGTGAAG AAGTGAAAAA GACTTCGCAG CAGTCTTCAT TGTGGTGCTC TTCATGATCA TAGCCCCAGG AACCTTGAG GTTCTTCTTC ACAAGGCTGA GAGTGCTTCC TTCTTGAAGA CGAGTGACAT TCATCACTTC AGTGATCCAT GCATAGAATA TGAAAAATAA TTCTTCCAAC TCATGGGATA AAGGGGACTC CCTTGAAGAA TTTCATGTTT TTGGGCTGTA TAGCTCTTTA CAGAAAATGC ACCTTTATAA ATCACATGAA TGTTAGTATT CTGGAAATGT CTTTGTGTTA TATAATCTTC CCATGTTATT TAACAAATTG	
--	---	--

[0129]

		TTTTGCACA TATCTGATTA TATTGAAAGC AGTTTTTTGC ATTTCGAGTTT TAAACACTGT TATAAAATGT AGCCAAAGCT CACCTTTGAA CAGATCCCGG TGACATTCTA TTTCCAGGAA AATCCGGAAC CTGATTTTAG TTCTGTGATT TTACACTTTT TACATGTGAG ATTGGACAGT TTCAGAGGCC TTATTTTGTG ATACTAAGTG TCTCCTGTAA TTTTCAGGAA GATGATTTGT TCTTTCCAGA AGAGGAGACA AAAGCAAGAT AGCCAAATGT GACATCAAGC TCCATTGTTT CGGAAATCCA GGATTTTGAA TTCGAGATGA AACAACCAGC AATCACAGTT AAATCTTAAC TTTGCCTGCA CTCTTTGTAG GAATGATCAG AAATTTATCT TTATCATTCT GAGTGCCTCA GGAGTACAAT AGGAAGAAAG ATACTGGAGA AAGCACTAAT GTAATCACCA TGAAGTCTGA CAACAGGAGC CCATTATTTG CGTACTGTCC CACCCTGTAT CATGGTTCTC TGGGAACAAG CTTTATGATT CTCATTAGAG TTTATTTGTT GATTGTGAGT AGTTGCGACT TTAAATTAT ATTTCCCCCA CTCAAAGAAT GGTATCTTTA TATATCAATG ACATTCAATA AATGTGTATT ATTTCTAATG AGAA	
YY2	NM_2 06923. 3	ATTAAATAAG AGAAAAAGC ATAAAAGGAG TAGGCTTTTT TGGCAGATAC TGTATATGG GATGGACAGG AGGGGAAGAC ATGAAAATCA ACTAAAATGA AATACATAAA AAATCAGTAA AGAGCCTGCT TACGAAAAGT GAAAAACAAC AGCTGGGCGG GGTCGCAGGG TGGCAAACGT ACGCGGGCAC GTGCACGTGC TTTTGGGGCC GACAGACGCG CCAGTTGCCT AGGCGCATGC GTCTGGCTAT CCCAGAAGCA CCTGCGCCTT CCGGCTCGTG CTTTCCTCAG TCTCGCGCCT TTCTCTGCAG CTCGCGCCTT TCTCTGCAGC TCGCGCCTTT CTCTGCAGCT CGCGCCTTTC TCTGCAGCTC GCGCCTTTCT CTGCAGCTCG CCCCTTCTC TGCAGCTCGC CCCTTCTCT GCAGCTCCCA CCTCACTCCC CTCAGCGTTC TTTTCCAC GGTCTTCCCG TTGCCGCTAA CCTAACTAAC TCTCAGCCAT GGCTTCCAAC GAAGATTCT CCATCACACA AGACCTGGAG ATCCCGGCAG ATATTGTGGA GCTCCACGAC ATCAATGTGG AGCCCCCTTC TATGGAGGAC ATTCCGACGG AAAGCGTCCA GTACGAGGAT GTGGATGGCA ATTGGATCTA CGGTGGCCAC AACCATCCGC CATTGATGGT GTTGCAGCCG CTCTTACGA ACACGGGCTA TGGCGACCAC GACCAGGAAA TGCTTATGTT GCAGACACAA GAGGAAGTGG TGGGCTATTG CGACTCAGAC AACCAGCTAG GCAACGACTT GGAGGACCAG TTGGCCCTCC CGGATAGCAT TGAAGACGAG CACTTCCAGA TGACCCTGGC CTCTCTGTCG GCCTCGGCGG CATCAACATC AACATCAACC CAGAGCCGCA GCAAAAAGCC CAGCAAAAAG CCCAGCGGCA AGAGTGCCAC CAGCACTGAG	30

[0130]

	GCCAACCCGG CAGGCAGCAG CTCCAGCCTG GGCACGAGGA AGTGGGAGCA GAAGCAAATG CAGGTCAAAA CGCTGGAGGG TGAGTTTTCC GTGACTATGT GGTCCCCTAA CGATAACAAT GACCAAGGGG CAGTGGGTGA AGGCCAGGCT GAAAACCCAC CTGATTATTC CGAGTACTTG AAAGGGAAGA AACTTCCTCC TGGGGGGTTA CCAGGCATTG ATCTCTCAGA TCCTAAACAG CTGGCAGAAT TTAATAAAGT GAAGCCCCAA AGGTCCAAAG GAGAACCTCC CAAAACAGTC CCTTGCTCTT ATAGCGGCTG CGAAAAGATG TTCCGGGATT ACGCCGCCAT GAGAAAACAT CTCCACATCC ACGGGGCCAG AGTCCACGTA TGTGCAGAAT GTGGCAAAGC TTTTCTTGAG AGCTCAAAGC TGAGACGACA CCAGCTGGTC CACACCGGCG AGAAGCCCTT TCAGTGCACA TTGGAAGGCT GCGGGAAAACG CTTTCCCTT GATTTC AATT TGCGCACACA CTTGCGCATC CACACCGGCG ATAAGCCCTT CGTGTGCCCC TTCGATGTTT GCAACAGGAA GTTCGCTCAG TCAACCAACC TGA AAAACCCA CATATTAACG CATGTGAAGA CCAAAAACAA CCCGTGAAAA GGAGAAGACC CCTCTCAGAC TTGGGAATTA TCTTCCAGGA CTGCGGTAGG GAATAAATAT GCCTCTCAAA GCTTTGTATG TTGTTTCTAA GAGTTTTAAA AAAAATGAA TCCTGCACAT TTAAGGTTTCG TGTTTTGTAA GAGTAGTAAA AATAGAATTT AAACGTTTTT AAAAAGGTAA ACCTTGACAT AAGATAATAG TGCTAAGATG CCATAGCTTG TTCTGTAAT ATTTTTGTAA AGTTTGGTCC CAACAGGAGA AAAATTCGTA GACTTCACAT CAAGAGACGG TTCTTACAAA CTGTTTAAAA TGGGACTTTT CACATTCTTA GAAATAGGAA GTTCATTTTAT TGTTTACAAT GTTTTAAAA AACTTGTTAA AAAATTCAAA GTGTTTATGT TTATACTTTT AGGAATATGC TTAATAAGTC TATGTATGGT TTTTCTGGAG GTTGATAACT TTGGGAAAGA TTTACTTTAA AAGAGTGAAC AATTATATGC ATACGTGAAG TATTTTCTG CTTAAAAAAG TTATATAGGT GTTATTTGTT TTAATCTTGG TTGTAGTCTT GGATGTTAAC ACATCTTGCA TTTTAGCTGT ATTAGGTCAT GTAGTATTGA TATTAAGTGA TTTAATAGTA CTAGTTTAAA CCTATTTTAG TCATTTTATT TTCCCCAAAA TACTACCAGA TGCTGTTGTT TAGTGTAATT TCTTTGCCTG TTCAGTTAAA GTAGTGCTTG CTTGTAAGAAT ATATTGTGTA TATGTTGACT TTAACACTTA AGAAGTACAT CCTGTGTAAT AGAAAAAGCA AAATAAAACA CCTCTTCTAA AGAAGGAAAA AAGTAGTTTG CCTATATCAG TACAGAAAGT AGAACTAAAG AAAAGGGGGA GGGTGCTACT GGCATCTGGT GAGTGGAGGG AGATCAGGAA TGCCACTAAA CATCTTACAA TGCACAGACA GCCCCACGAA ACACATAATT ATTGGCTAA AATGCCAATA GTGTCAGGTG CAGGGGCTCA	
--	--	--

[0131]

		GGCCTGTAAT GTCAACACTT TGGGAGGCCG AGGTGGGTGG ATCGTTTGAG CTCAGGAATT GAACATCAGC CTGGGCAACA TGGCATAACT CGGTCTCTAC C	
ALG9	NM_0 010776 90.1	GTCTTTTGTC CCTCGGCCGA CACCGTTTGC CAGCCAAAGC TATGTCTGCG CGCTCACC GA CTTCATAGGG TGCCGAATTC TTTTTCCCC AGGCTTGCCA TGGCTAGTCG AGGGGCTCGG CAGCGCCTGA AGGGCAGCGG GGCCAGCAGT GGGGATACGG CCCCGGCTGC GGACAAGCTG CGGGAGCTGC TGGGCAGCCG AGAGGCGGGC GGCGCGGAGC ACCGGACCGA GTTATCTGGG AACAAAGCAG GACAAGTCTG GGCACCTGAA GGATCTACTG CTTTCAAGTG TCTGCTTTCA GCAAGGTTAT GTGCTGCTCT CCTGAGCAAC ATCTCTGACT GTGATGAAAC ATTCAACTAC TGGGAGCCAA CACACTACCT CATCTATGGG GAAGGGTTTC AGACTTGGGA ATATTCCCCA GCATATGCCA TTCGCTCCTA TGCTTACCTG TTGCTTCATG CCTGGCCAGC TGCATTTTCAT GCAAGAATTC TACAAACTAA TAAGATTCTT GTGTTTACT TTTTCGATG TCTTCTGGCT TTTGTGAGCT GTATTTGTGA ACTTTACTTT TACAAGGCTG TGTGCAAGAA GTTTGGGTG CACGTGAGTC GAATGATGCT AGCCTTCTTG GTTCTCAGCA CTGGCATGTT TTGCTCATCA TCAGCATTCCT TTCCTAGTAG CTTCTGTATG TACACTACGT TGATAGCCAT GACTGGATGG TATATGGACA AGACTTCCAT TGCTGTGCTG GGAGTAGCAG CTGGGGCTAT CTTAGGCTGG CCATTCAGTG CAGCTCTTGG TTTACCCATT GCCTTTGATT TGCTGGTCAT GAAACACAGG TGGAAGAGTT TCTTTCATTG GTCGCTGATG GCCCTCATA TATTTCTGGT GCCTGTGGTG GTCATTGACA GCTACTATTA TGGGAAGTTG GTGATTGCAC CACTCAACAT TGTTTGTAT AATGTCTTTA CTCCTCATGG ACCTGATCTT TATGGTACAG AACCCTGGTA TTTCTATTTA ATTAATGGAT TTCTGAATTT CAATGTAGCC TTGCTTTTGG CTCTCCTAGT CCTACCACTG ACTTCTCTTA TGGAATACCT GCTGCAGAGA TTTCATGTTT AGAATTTAGG CCACCCGTAT TGGCTTACCT TGGCTCCAAT GTATATTTGG TTTATAATTT TCTTCATCCA GCCTCACAAA GAGGAGAGAT TTCTTTTCCC TGTGTATCCA CTTATATGTC TCTGTGGCGC TGTGGCTCTC TCTGCACTTC AGAAATGTTA CCACTTTGTG TTTCAACGAT ATCGCCTGGA GCACTATACT GTGACATCGA ATTGGCTGGC ATTAGGAACT GTCTTCCTGT TTGGGCTCTT GTCATTTTCT CGCTCTGTGG CACTGTTTCA AGGATATCAC GGGCCCCTTG ATTTGTATCC AGAATTTTAC CGAATTGCTA CAGACCCAAC CATCCACACT GTCCCAGAAG GCAGACCTGT GAATGTCTGT GTGGGAAAAG AGTGGTATCG ATTTCCCAGC AGCTTCCTTC TTCCTGACAA TTGGCAGCTT CAGTTTATTC CATCAGAGTT CAGAGGTCAG TTACCAAAAAC CTTTTGACA AGGACCTCTG GCCACCCGGA TTGTTCTTAC TGACATGAAT GACCAGAATC TAGAAGAGCC ATCCAGATAT	31

[0132]

	ATTGATATCA GTAAATGCCA TTATTTAGTG GATTTGGACA CCATGAGAGA AACACCCCGG GAGCCAAAAT ATTCATCCAA TAAAGAAGAA TGGATCAGCT TGGCCTATAG ACCATTCTT GATGCTTCTA GATCTTCAAA GCTGCTGCGG GCATTCTATG TCCCTTCCT GTCAGATCAG TATACAGTGT ACGTAAACTA CACCATCCTC AAACCCCGGA AAGCAAAGCA AATCAGGAAG AAAAGTGGAG GTTAGCAACA CACCTGTGGC CCCAAAGGAC AACCATCTTG TTAACATA TG ATTCCAGTGA CTTGACTCCC TGCAAGTCAT CGCCTGTAAC ATTTGTAATA AAGGTCTTCT GACATGAATA CTGGAATCTG GGTGCTCTGG GCTAGTCAAA GTCTATTTCA AAGTCTAATC AAAGTCACAT TTGCTCCCTG TGTGTGCTC TGTTCGCAAT GTAAACTTTT TGCAGCTAGG CAGAGAAAGG CCCTAAAGCA CAGATAGATA TATTGCTCCA CATCTCATTG TTTTTCCTCT GTTCAATTAT TTAGTAGACC GGAGAAGAGC AGAACCAACT TACAGGAAGA ATTGAAAATC CTGGTACTGG ATGGCTGTGA TAAGCTGTTT TCCACACTCT GGCCTGGCAT CTGAGAACTA GCAAGCCTCT CTTAGGCCAT ATGGGCTTCT CCACCAAAGC TGTITGGCAG CTCCTAGCAG ACCTTCTTAT TGAAATCCTC ATGCTGAAAA TGAACACAGC CTAGTTGCCA ACCCATATGT CCTTTTCACC TCCAGCAAGA CTAAGCTTCT TTAAGCACT TCACAGGACT AGGACCCTGT CCTGGAGCTA TCTCAGGAAA AAGGTGACCA TTGAGGGAAC TGTGACCTAA TTTTATTATA ATGATGCCTC TAATTTTCAT TTCTTTTACA ACCAACTGTA ACTATAAGGT TGTATTGCTT TTTTGTTTCA TTTTAGCATG CTATTTTTTG AATTCTAGAC TCCTCCATGT GAAGATATCA ACAGACAAAA CTACAACGT ATAGGACATA TTTGGAGAAA ATTCTATCAA TTGATACATT TGGATGACAT CACATTTTTA AGTAATGTAA TCTGAGGCCA TGCTGAGGA AATTAAGAAT TTTCTTTTTT TTTTAACCAC CCCCAGTGA AAGGATCAGT GTATATTTAT AGCACCTATT TTTTAGTTCT GTCTGTTGTG AGGCACATCC TGCATGGGGC ACTTCTAGTC AAATAGGCAA TGATAAGGAC CTAATTAAAA TGTGATAAGT GTATACTATT ACTTTAAAAG CCTTTACAGT CAGTACTTCA GTTTACAAGG CACTTTCACA GCATCTCGTT TGATCCTCAC AGTCACAACA TGTGGTAGAC AAGGCAGGTG ATTTTTATCC CCATTTTACA GATAAGGAAA CAGGCTGCGG GTGGGGAGTG AGGGGAGGTA AAGATAGTTA GTTGCTTAAG GTCACACAGC CAGTAAGTAA TAGAGCTGGG ACTGGAACCC AGGTTTCCTT ACTCTCATCT ATTGCTCCTC CATATTCCTC ACTCAACCAT GAAAACATTA CTTGAAAGGA CTGATGAGGT TAACCAGAGA CCTAACTGAT ATTGTAACCT TCTATTTTAA GGAAGAATTG TGTCTGTATT TGAGTTCTTT GGAGCCTCCA GTCTGCCTGT GTGTTAGACC AGCACAGCAG TGCTGTGTGA TGCAGCCTGA CCTGTGGCAG GAAAGTAGTG CTCTGTGTTG GAAGTCATGT TCTTTTGCAG CCACACAGGA TCCAAATATC AGTACTATTC CTGTAGTCAA TCTGGGGTCA CATTATAGGT GCCTATTTT CCTAAGGGTA ACTGATCTGA ATATCTGCAA ATAGGATGAA TCTATTTTTT AGAAGTTCCA TCTTTCATTT	
--	--	--

[0133]

	TTCTTTTTTT TTTTGAGACA GAGTCTCATT CTGTCGCCCC TGCTGGAGTG CAGTGGCGCG ATCTCGGCTC GCTGCAACCT CTGCCCTCCA GGTGGAAGCA ATTCTCATGC CTCAGCCACC CGAGTAGCTG GGATTACAGG CATGCGCCAT CATGCCCAGC TAATTTATGT ATTTTTAGTA GAGTTGGAGT TTCACCATGT TGGCCAGGCT GGTCTTGGAC TCTTGACCTC AGGTATCCA CCCCCTCAG CCTCCCAAAG TGCTGGTATT ACAGGCGTGA GCCACCGCAC CCAGCCCCAT CTTTCATTTT CAAAGAGAAG GGCATTCTAA TAGGAACTGG TGCCAAGAGA GAAGAAAAGA AGTGATAACA GAAGAAATGG CTAGTTACAA TATTA AAAAG CTCCTCTTTG AGATCTCCTC TGCAGGAATA TCAGAGACGG AGTTGAAGCG CTGGAGAGGT AATAGGTCTA GACAGTACAG AACAATAACT GGGGAGTGTG TGAGGATAGA CTGGGCTCCC CCTTGCTTGA AAGATCTCTG GCATTTAATT CTCAATTCTT GATTACTATT TTCCAGTGTA AAAGTAGCAC ATATGATCTG ACTACAGGAC AGAGAATTTT AAGTGAAACA TTTGCCTTAC TTGCAGTAAT AATGTGCTGT TCTTCACAGT AGCTAAGGCC CTCTATGTTT CCCAGAGGTA AATAAGAATC CAGGAATGGA GGTCCATCTG TGATGAATGG CTTTTTCTA ATCAAAGTAG TATAATGCTG TTTTATCTGT TTTTGTCATCT TGTTTTTTTT TTTTTTTAAA AAAACAAAAC CTTAATTATA ATATAGCGCA AAGAAAGGCC AGGACTGATG CAGGGATTCC TTGGAATAT CAGTTCCCTAT CACTTTTAAA ACCTGATTTT GGATCTCTCT GTCTATGTGA TGCTTTTAGT GAGAGCACAA TACATGGCAG AACGCTGTGC CAAATGTTAT AGGTAAGGAA TATAGAAATG AATGTTTTTT GTTGTAAGG TGTTCATG TGATATTTTA TAAACACATT TTA AAAAATC TCCATCACTT TTTAGTATAG GAAGGATAGC TTTGCCTGGG AAAAACAGTT TCAACACACC TGCTCAGAGT AGCAGTTCTC CCTCAAAAAA GCAGTGTTCA GCCTGCACTG ACTGTTCTGC TTGCCAAAAG GAGGAAGCAT GCAAGATACT TATTTCTCCA TAGATTGTGG AGTATAGAGG GATGTGGGAC TACAGATTAT TATTTTTTTT CCCCAGACA GAGTCTTGCT CTGTCGCCCC GGTTGGAACA CAATGGCACG ACCTCAGCTC ACTGCAACCT CTGTCTCCCG GGTTCAAGCA ATTCTCCTGC TTCAGCCTCC TGAGTAGCTG GGATTACAGG CACACACCAC CACCGCACTC AGCTAATTTT TGTATTTTTA GTAGAGGTGG GGTTTACCA TGTGGCCAG GCTGGTCTTA AACTCCTGAC CTGTGAATCA TCCCGCCTCG GCCTCCTAAA GTGCTAGGAT TACAGGCATG AGCCACCGCA CCCGGCCCCAG ATAATTTTTA ATAGCCTTTG ATCATGGGGT GAGTGAGGGA GTAGGTATAC TTGGCAAATG CATGGTTCTC TGATTTCATG CTCTAAAGCA GCCTTATCTG AATCCCCAAA TCTTGATGATG CTGAGTACCA TTAAGTGAACC AGTCTGCACG GTAGGCATCT GCTACCAAAA TTTACCTCCT ACCTGGTAGG TGTCATCTGA TAAGAAAGAA GACAGGTTAT TTTAATTTT TGAGATAATC ACAGAAAATT GCAGCCCATC CTCTTTATTA CCGAATTCAA GTTTGGAAT AGACCCTTG TTTAAATCA TGATGGGTCT TTATCCCAAT CATTTATCTG GGTCATTTT CCAACTTTGG	
--	---	--

[0134]

		AGTTCTAGGA AAGAACCTTG AAAACCTGAT ATGATTCTGC AGCATGAGGT CTACGGTGAC CATTGGGGCA AAGCTCCAGT GGCAATCATT TATTGTGTTT TGCATTTCCT GGGATTTATT GAAATAAGAA TTCACGTGA TTATGTAGTC TTCTGGCTAG TATCAGGCAG CTCTGCTTTT AATTGGTTA ATTTATTTT CTCTGAAGAG GGAGAAGAGG TACAATTTAA TCTTGGCCTC CACAAGCATA TTAAAGCTCA CGTGTTAATC AGTGCATTCT TATGCTCCTA CATTAAATGC CTGGGGTAAA TGGATAAATG GACATGTGCC CAGCTTTAAT TTTTTTGCACACAGAAAGAT CAGACTTCCG TATGGCATCG TTGGATTTCA GAGGCTTTCT GGTGTATCTG TAAATCTGAA TGTTGCCCTC TGCCAGTCTG TATAACCAGG TGATTCATGC TGCAAATGAA ATCAGGAAGC AGTAAAGTGT TAAAGCAAGA GTATTGTCCA ATTCACTTGT CTTCTGATC CTGTACTTT ATTTCACGTG TCGGTGTTA CATTACATAC TTATATTTCC TGTGAAAGAA AGAGTTAAAT AAATTGTAGC AGTTTGA	
SEP	NM_031475.2	AGCGGAGCGC CAGGCAGCGC GGAGCGGAGG CCAGGCCAC AGCCGCTCCG CCTCCCGGCC CGCAGATCCC CGACGGCCGC ACCGCGGGCT CCTCTGGCCC GCAAGAACAC GTGCATGGCG TCTGGGGAA GCGCGTGA GTGCGAGTCGC GCGCGCCAC GCGGCACCAT GGCCTGGAG CAGGCGCTGC AGGCGGCGCG GCAGGGCGAG CTGGACGTGC TGAGGTGCT GCACGCCGCA GGCCTCCTGG GGCCTCGCT GCGCGACCCG CTGGACGCGC TGCCCGTGCA CCACGCGGCC CGCGCTGGGA AGCTGCACTG TCTGCGCTTC CTGGTGGAGG AAGCCGCCCT CCCCGCCGCG GCCCGCGCCC GCAACGGCGC CACACCGGCC CACGACGCT CCGCCACCGG CCACCTCGCC TGCTGCACTG GGTGCTGTC GCAGGGCGGC TGCAGAGTGC AGGACAAAGA CAATTCTGGT GCCACAGTCT TGCATCTGGC TGCCCGCTTC GGCCACCCCG AGGTGGTGAA CTGGCTCTTG CATCATGGCG GTGGGGACCC CACCGCGGCC ACAGACATGG GCGCCCTGCC TATCCACTAC GCTGCCGCCA AAGGAGACTT CCCCTCCCTG AGGCTTCTCG TCGAGCACTA CCCTGAGGGA GTGAATGCCC AAACCAAGAA CGGTGCCACG CCCCTGTACC TGGCGTGCCA GGAGGGCCAC CTGGAGGTGA CCCAGTACCT GGTGCAGGAA TGCGGCGCAG ACCCGACGC GCGCGCCAC GACGGCATGA CCCCGCTGCA CGCCGCGCGC CAGATGGGCC ACAGCCAGT CATCGTGTGG TTGGTGAGCT GCACCGACGT GAGCCTGTCC GAGCAGGACA AAGACGGCGC CACCGCCATG CACTTCGCGG CGAGCCGCGG CCACACCAAG GTGCTCAGCT GGCTGCTGCT GCACGGCGGG GAGATCTCGG CTGACCTGTG GGGCGGGACC CCGCTGCACG ACGCCGCCGA GAACGGGGAG CTAGAGTGCT GCCAGATCCT GGTAGTGAA GCGCGGGAGC TGGACGTCCG CGACCGCGAC GGGTACACGG CCGCCGACCT GTCGGACTTC AACGGCCACA GCCACTGCAC CCGCTACCTG CGCAGGTGG AGAACCTGAG CGTGAGCAC CCGTGCTTT CCCGGGATCC ATCCGACAG	32

[0135]

	CTGGAGGCTA AGCAGCCGGA TTCAGGCATG TCCTCACCCA ATACCACGGT GTCGGTCCAG CCGCTGAACT TTGACCTCAG CTCGCTACC AGCACCCTCT CCAACTACGA CTCCTGCTCC TCCAGCCACT CCAGCATCAA GGGCCAGCAC CCTCCATGTG GGCTTTCCAG CGCTAGAGCT GCAGACATAC AGAGCTACAT GGACATGCTG AACCCGGAGC TGGGCCTGCC TCGGGGCACG ATTGGGAAGC CCACACCCCC ACCACCCCCA CCCAGCTTCC CCCCGCCACC CCGCCCCCA GGCACCAAC TGCCCCCACC CCCACCTGGC TACCCAGCTC CCAAGCCTCC TGTAGGACCA CAGGCAGCTG ACATCTACAT GCAGACCAAG AACAACTCC GCCACGTGGA GACAGAGGCC CTCAAGAAGG AGCTGAGCTC CTGTGACGGC CACGACGGGC TGCAGAGGCA GGACTCCAGC CGCAAGCCCC GCGCCTTCAG CAAGCAGCCC AGCACGGGGG ACTACTACCG GCAGCTGGGC CGCTGCCCCG GCGAGACGCT GGCCGCACGC CCGGGCATGG CGCACAGCGA GGAGGTGCGT GCCCCCAGC CCGCGCGCGC CGGCTGCCCC CGCCTCGGCC CTGCCGCCCG CCGCTCACTC GAAGGCCCT CCGTCCCCC GCAGGCGGCG CTGCTTCCTG GGAACCATGT TCCTAACGGC TGCGCCGCGG ACCCAAGGC GTCCAGGGAG CTGCCACCGC CGCCCCACC GCGCCGCGC CCCCTGCCGG AGGCCGCGAG TTCGCCACCG CCGGCCCGC CTCTGCCCCT CGAGAGCGCT GGCCCTGGCT GCGGGCAGCG CCGCTCCTCC TCGTCCACCG GCAGACCAA GTCTTTCAAC ATGATGTCCC CGACGGGCGA CAACTCGGAG CTAAGGCTG AGATTAAGGC AGGCAAGAGC CTGAAGCCGA CGCCCCAGAG CAAGGGGCTG ACCACAGTGT TCTCAGGCAT CCGGCAGCCG GCCTTCCAGC CCGATTGCGC GTGCTTCT GTGTACCTG CACTGTACC AGTCCGAGC CCCACACCGC CAGCTGCGGG GTTTCAGCCG CTGCTCAATG GAAGCTTGGT TCCCGTGCCG CCCACTACTC CTGCGCCGGG AGTGCAGCTG GACGTGGAGG CTCTCATCCC CACGCACGAT GAGCAGGGCC GGCCCATCCC CGAGTGGAAG CGCCAGGTGA TGGTGCGCAA GATGCAGCTG AAGATGCAGG AGGAGGAGGA GCAGAGGCGG AAGGAGGAGG AGGAGGAGGC CCGGCTGGCC AGCATGCCCG CCTGGAGGCG GGACCTCCTG CGGAAGAAGC TGGAAGAAGA GAGGGAGCAG AAGCGGAAAAG AGGAGGAGCG ACAGAAGCAG GAGGAGCTGC GCGGGAGAA GGAACAGTCA GAGAAGCTGC GGACGCTGGG CTACGATGAG AGCAAGCTGG CGCCCTGGCA GCGACAGGTC ATCCTGAAGA AGGGGGACAT CGCTAAGTAC TAGAGGCCCG AGACTCCTGT CCGCAGCCTC GCAGCTCCGT GGGGCCCTCC GCCCCAGCCC CAGCCAGCCA GGCCCTGGTG GAAAGGCTGG GAGCCGCACA GCCCTCCCT CTGCGCTGG AAACCTCCC TGACCCCCAC CCTGGCCCCC CGTATCCCCA GCCCTTGGCA AACTGGAGT GCACACGCCG CCACGGTTGC CCAGAAAAAG TGCCCAAGCT GCTGACGCAA ACAACAACAA ATGCTGCTTA TTTGCATGCC GACTTACATA TATTGTCATG TTCGTTGACT ATCAAAGAGT GCAGAGCTCT CCCCAGCCCC GTGGGTGGTG ACTTTGTTTT CCTGCGGGGC TCAGCCCCCT CCAGGATGCA GCCCCCTCCC CCGCACCCCG	
--	---	--

[0136]

		GAACCGGCGT CGCTGGCGCA TCCTGGGTGG AGGCAGGCC CGAGCTCGGG GAAGGGGTTT TCCCTTCCTC TCTGACCCAG ATCTGCGCGC GGCCTAGCCC GGGCCTCATT TCTTATCCCC GCCAAGGGTT TCCTCTCAGT CATTTGTTTA CCAGAAACAT GAAAACTGCC TGTCTGGCCG GGCCGCACTT GTGGCCCCCG GGACCCACCC TCTGGCCCCA CCTCCCTCAA GTCTGCGCCC CGTCCCCAGC CAGACCCACT CGCTGCCGGG ACCCTTTTAC TGCCCCGGTG GAGTGAATAG AGGATGAGGG GCCCTGACCC TGIGTCTCCA ACTGCTGCAC CCCATCCCGA CCCTGTCTCC GCCACCTCGC AGCCCCATTA AAGCGCTCTC ATCTGGGCTC CGGTTCACTC A	
YWHAQ	NM_0 06826. 3	TTGGGCGGTG GACCGCCCCT CGGCCCCGGG GTAGGCTGAC ACGGGAGGGT CCTCAGCTAA AGCCAAAAGC AGATCAAAGT GGTGGGACTC GCGTCGCGGC CGCGGAGACG TGAAGCTCTC GAGGCTCCTC CCGCTGCGGG TCGGCGCTCG CCCTCGCTCT CCTCGCCCTC CGCCCCGGCC CGGCCCCGC GCCCGCCATG GAGAAGACTG AGCTGATCCA GAAGGCCAAG CTGGCCGAGC AGGCCGAGCG CTACGACGAC ATGGCCACCT GCATGAAGGC AGTGACCGAG CAGGGCGCCG AGCTGTCCAA CGAGGAGCGC AACCTGCTCT CCGTGGCCTA CAAGAACGTG GTCCGGGGCC GCAGGTCCGC CTGGAGGGTC ATCTCTAGCA TCGAGCAGAA GACCGACACC TCCGACAAGA AGTTGCAGCT GATTAAGGAC TATCGGGAGA AAGTGGAGTC CGAGCTGAGA TCCATCTGCA CCACGGTGCT GGAATTGTTG GATAAATATT TAATAGCCAA TGCAACTAAT CCAGAGAGTA AGGTCTTCTA TCTGAAAAATG AAGGGTGATT ACTTCCGGTA CCTTGCTGAA GTTGCGTGTG TGATGATCG AAAACAAACG ATAGATAATT CCCAAGGAGC TTACCAAGAG GCATTTGATA TAAGCAAGAA AGAGATGCAA CCCACACACC CAATCCGCCCT GGGGCTTGCT CTTAACTTTT CTGTATTTTA CTATGAGATT CTTAATAACC CAGAGCTTGC CTGCACGCTG GCTAAAACGG CTTTGTATGA GGCCATTGCT GAACTTGATA CACTGAATGA AGACTCATAC AAAGACAGCA CCCTCATCAT GCAGTTGCTT AGAGACAACC TAACACTTTG GACATCAGAC AGTGCAGGAG AAGAATGTGA TCGGCGAGAA GGGGCTGAAA ACTAAATCCA TACAGGGTGT CATCCTTCTT TCCTTCAAGA AACCTTTTTA CACATCTCCA TTCCTTATTC CACTTGGATT TCCTATAGCA AAGAAACCCA TTCATGTGTA TGGAATCAAC TGTTTATAGT CTTTTCACAC TGCAGCTTTG GGAAACTTC ATTCTTGAT TTGTGTTTGT CTGCGCCTTC CTGGTGTGCA GACTGCTGT AGAAAAGTAT TAATAGCTTC ATTTATATA AACATAAGTA ACTCCCAAAC ACTTATGTAG AGGACTAAAA ATGTATCTGG TATTTAAGTA ATCTGAACCA GTTCTGCAAG TGAATGTGT TTGTATTACT GTGAAAATAA GAAAATGTAG TTAATTACAA TTTAAAGAGT ATTCCACATA ACTTCTTAAT TTCTACATTC CCTCCCTTAC TCTTCGGGGG TTTCTTTCA GTAAGCAACT TTTCCATGCT CTTAATGTAT TCCTTTTTAG TAGGAATCCG GAAGTATTAG ATTGAATGGA	33

[0137]

		AAAGCACTTG CCATCTCTGT CTAGGGGTCA CAAATTGAAA TGGCTCCTGT ATCACATACG GAGGTCTTGT GTATCTGTGG CAACAGGGAG TTTCCTTATT CACTCTTTAT TTGCTGCTGT TTAAGTTGCC AACCTCCCCT CCCAATAAAA ATTCACTTAC ACCTCCTGCC TTGTAGTTC TGGTATTCAC TTTACTATGT GATAGAAGTA GCATGTTGCT GCCAGAATAC AAGCATTGCT TTTGGCAAAT TAAAGTGCAT GTCATTTCTT AATACACTAG AAAGGGGAAA TAAATTAAG TACACAAGTC CAAGTCTAAA ACTTTAGTAC TTTTCCATGC AGATTGTGTC ACAGTGAGA GGGTGTCCAG TTTGTCTAGT GATTGTTATT TAGAGAGTTG GACCACTATT GTGTGTTGCT AATCATTGAC TGTAGTCCCA AAAAAGCCTT GTGAAAATGT TATGCCCTAT GTAACAGCAG AGTAACATAA AATAAAAAGTA CATTTTATAA ACCATTTACT ATGGCTTTGT AACAATTGCA TACCCATATT TTAAGGGACA GGTGAATTTA CTACTTTCTA AAGTTTATTG ATACTTCCTT TTTATGTAAG ATGTAGTAGT GATACCTATA TTTCCACATT GTGCATTGTG ACACACTTGT CTAGGGATGC CTGGAAGTGT ATAAAATTGG ACTGCATTTT TTAGAGTGTT TTAATATAGA TCAGTCTCAT GGGCCATCTC TTCCTCAGAT GTAAATGATA TCTGGTTAAG TGTTATATGG AATAAAGTGG ACATTTTAAA ACTAGCAAAG TTAATAAAAA AAAAAAAAAA AA	
VPS37A	NM_001145152.1	GCAGAGGGGG CGGAGAGCGC CCCCCGGGGC GGGGCACGCA AGTGACGGCG GCGCGGGTGG TGGAGCGCTG GGCGGCCAGG CTCCCTGGCT GGCCGGTTTG GCGCTCTGGG CCGTGAAGGT GGGACCTCCT GTTCCGGGCC GCAAGTTTCC CTCTCCAGCC GCCCCCGGTT CGTAGCATGT CCCCCAGAAC TCGGGGAGCG CAGGCAGGAC AGGCTTAGAG AAGACGCGGT CCCCAGCGCT TGGGCCACGG ACGTCCCACC CCGCTCCTCT GTCGCTGGAG AACC GCCGGG CCGAGCCACT GGGAGAAGCA GGCCAGAGCC TTCCAGGGCC TCCGGCCCGT GGACCCGAGG AGGATGAGCT GGCTTTTTC CCTGACCAAG AGCGCCTCCT CCTCCGCGGC TGGGTCCCCC GGTGGCCTCA CCAGCCTCCA GCAGCAGAAG CAGCGCCTGA TCGAGTCCCT CCGGAACTCA CACTCCAGAT TGCTTCTCC ACAGTTTCTT CAGGAAAAAC CAGTGATCAG TGTTTATCCA CCAATACGAC ATCACTTAAT GGATAAACAA GGAGTGTATG TTACCTCTCC ATTAGTAAAC AATTTTACAA TGCACTCAGA TCTTGGAAAA ATTATTCAGA GTCTGTTGGA TGAGTTTGG AAGAATCCTC CAGTTTTAGC TCCTACTTCA ACAGCATTTT CTTATCTATA CAGTAACCCA AGTGGGATGT CTCCTTATGC TTCTCAGGT TTTCCATTTT TTCCTCCATA TCCTCCACAA GAAGCAAACA GGAGTATCAC TTCTTTATCT GTGTGCTGACA CTGTTTCTTC TTCAACAACA AGTCATACCA CAGCCAAGCC TGCCGCTCCT TCATTTGGTG TCCTTTCAAA TCTGCCATTA CCCATTCCCA CAGTGGATGC TTCAATACCG ACAAGCCAAA ATGGTTTTGG GTACAAGATG CCAGATGTCC CTGATGCATT TCCAGAATC TCAGAATAA GTGTGTACAA ACTCACAGAT ATGAATGAAC AAGAGGAGGT ATTACTAGAA CAGTTTCTGA CTTTGCCTCA ACTAAAACAA ATTATTACCG	34

[0138]

	ACAAAGATGA CTTAGTAAAA AGTATTGAGG AACTAGCAAG AAAAAATCTC CTTTGGGAGC CCAGCTTGGG AGCCAAAAGA CAAACGTGTT TAGATAAGTA TGAATTACTT ACACAGATGA AGTCCACTTT CGAAAAGAAG ATGCAAAGGC AGCATGAACT TAGTGAGAGC TGTAGTGCAA GTGCCCTTCA GGCAAGATIG AAAGTAGCTG CACATGAAGC TGAGGAAGAA TCTGATAATA TTGCAGAAAG CTTCTTGGAG GGAAAGATGG AAATAGATGA TTTTCTCAGT AGCTTCATGG AAAAGAGAAC AATTTGCCAC TGTAAGAGAG CCAAGGAAGA GAACTTCAG CAGGCGATAG CAATGCACAG CCAATTCAT GCTCCACTAT AGATTTTCCT GGAAACATGA ACTGCCAAGA GAGGAATGGG ACACAAAACC AAACACTGTT TTATATTTAT GGTTTGCAA CTGGCATTTC ATCAGTGGCT AAATTCACAG ATATCCTATA TAGATTGTAT ACAGAACTGA GACTGATTTT GTACCGATTA GAATGATTGC TATGATCTTT GAGAAATTTT TCTGCACTAT TTGCACTGAA ATGTTTATTT ATTGTTGATA AATTGTATCA TATTTAAGTT CCACTGCTGT TCCTCTTACC TTGATTAAAT GCCTATGCAT GTACTTTTAG CTAGTTTTTA ATATTTTATA AAACCTCATT TAAATTTGTA TTTTAACTT GAAGTTCCAT TTCTTTATCA AGGATGGTAT TTAGATTTT TTCTCTTAA CCTTTTTTCA AAAACTATTT TCAACTGTGA GGAAACCCTT ATTTTTCTTT CTTTGTGGAT AAAACTTTCA AAAGCAATTT AAGATATTCA TAGTGTAGG AAACACCAAA CCTGCCTATG TGCCATCTCA CAAAAGAAAC TTTTAATACC TACAATAAAT CAAAAGAATA AACCAGCTGT TCTATATAT TGTTTCATTT TAAAACTAA AGATGCATTT AAGAAGCAAT ACAAGTAAAT ATTTTACCTA ATAGGAAAAA AAAAAAGTTGC CTTTCATTTA AACCATTCCA ACAGAAATTC TTATGCTAAT TAAAAACATA TATATATCTG GTAGGTTTGT GGTGGATAG GTTTTCTAAA TTCCTAATGT TAAAAACAAT CTTTATGTTA ATATACACTA AATCTATACA CAAAAAAAGT CAGTGAACCT TTCTGACCTT TACTGTGAGT TACCTTTTCC TAAGAGGAAA GCTATAGTAA TAAGTAAAAAT TTAATTTTTA GGCAATCCTG ATTTTTAATG AATTTAATTG AGTGTCTTG TATACTACAT TGAGCAGTTT GCTTCTATAC CGTGTACAAA AATTCATGTA TTTCTTGAGA AGCCCTAAAA GCTCATAAAG GAAAAATGCCG TGAACATATGT AGCTCAGGCT TGGTAAGGTG CCATCTAAAT TACAAAACAA ACTAATGCAT AATTTTGCTT AAATTTTATC CCAGTATGAT TGICTTCCCA ACACCAGCAT ATAGTATAGA TTGTCTGTCT TTTTATATT TTTTAGTTCT TCCTGTACAT GTTTTGGCA ATAAAGTTAT AGGAAGAACA AAATTATTTT GTTAGAATTA AAACATGCTT AATATTTAGT CTGTTTGTGG AGGGCAGGTA TTCACGTGGA CTGAGATACA ATGTTGGATA CAGAAAATAA CTTTCATTGT CTTCTGACA CTGTGCTAAG GACATGCTGT TAAAGCTTCA AAGTGACCAG ATGAGGAAGG AATAATTAAT TATTACTCCT GATTTGTAGA TAACTGAGGT AAGAGTGTIT CAAATTTATG ATAGTCTTTT GGGTATTCAG AAACCTTTCC TTATACTGCA CTGGCCACCA GAGCTTAATT TTCCAGCAG TTACAGCAAT	
--	--	--

[0139]

		GGGAGATAGA ACAGTCTCAA TCTTTTGCCA ACCATCAGGT TCCTAGAAAC CAGGTAGGTG TATCCCATAA CAAGGGAGGA GCATACCACA GCCCCTCATT TGATTAATTC ATTTGATCTA TCTATGTTAT TAAGTACCTA CTAGGAATAA GGCATTGTGG AAATACTATA CAAAGATAAA CATTTGTTTATG ATGCTTATCT ACTTTCCTTT TCACCAGAAA AACAGAAAAA AAAGAAACAT TTTCTTACAG AGTAAAAATG TTCTACATAA TCACATGAGT AGTTCATCTC AGTGTTTTTT ATTCTTTAAA GTTGAACAT CCCAGTTTCA TTCTATACCA TTCATTGGAT AACCTTGTTA CAACCCAGTC ATGAAACAGA GCAGTGTGAT CAGTTATCTG CATTTAACAA ATAGACAAAT CAGTTTACAT AAAGGTTATG TATGTCACCC ACGATGAAAA GAATCTGCAT TTGAATATGC CCGTATGAAT GTGGGTTCTG TTTTTCGAAC AGAGATTAAG TGACCATTTT TTCTAATTTT ATGGCTATAT ATTTTCTTCA TAAAAATTGG TCACATCGGA GAAGCAGTGC CACAGGAAAA ATGAAATGCA TGTGAAAGTT TGTATTCTGA TTTTACAAGA AGTTGAAAGA ATCAGAAATTA AAGAGGAATA CTTAGGAGTT ACTAGGCTAA TCAGTGTACG AATTTGTCAT AGGTAGAGAT TAAAGGTTA ATATCTTAAA ATAGAAGAAA ATTCTAAATC AATCAATCAG TGAGATATAA ACTAAACAGA CCCACTTCAA AGTTGAAAGA AATTTCTAGG CATAAATTGA GACTAGGAAA TTTATATCAG AATAGAGGGT GCTTGACACA TATATATGCT TAAATTGAAG GACAGCTCAG ATTCATTTTT AGGAGAAGAA AGTAACTAA TGTGCTCTTA AAGAATAAAA ATTTATTCTA TGGTTTCTGT CTCGTGATCAT CACCTTCCAT TCTATAAAAA GCTCAGTTAC TGATTTGCTG GGTGATGGTC AAAATTCTTA CCTATTTATT TCATATCAAC TTTAAAAAAT AAATTACTTG CATTCTATAT ATTACTAATT GGGAAAGTAAT ATGCCTCAA TCAGTTTTAT ACTGGATTAT TCCCTATGCT TTAACCACCT GCTCTCAATA AAACACTTCC TGATTAATGT TTGATTATTA GATATTTTAG TCTTGTTGGG GATATTTTAG TCTTGTTGGG TTAGCCATGC TCTGAAGAAT CTGTGAAAGT ACAGTAAAGT TTAATAAGC AATAAATGTA ACCTTTTATA TAAATCTCAG TGCTAGGTTA ACTTCTAATA AGCAGACGAA CATGTTACAT AAATTATAAT GTCTGTCTTG TAAAAAAGTT GAGGGGACTA AAAGTTTATG ACTCTGATAT GGAAGTTGTC ATATTAAAAA ACTACATTTT AAAACATCAA ATATTTATAC TATTTGCTTT TCAAATAAAA GCATAGTGCT GTTTGGCATA	
PRRC2 B	NM_0 13318. 3	GCAGATCGGG AGCGGTGCCG AGAAAAATTT CCTTACTAGA TGACATTTCA TCGCAATGTC CGATCGTTTG GGGCAAATTA CCAAGGGCAA GGATGGGAAA AGCAAGTACT CGACTCTCAG CCTGTTTGAT AAGTATAAAG GAAAAATCAGT AGACGCGATT AGATCCTCAG TTATTCCTAG ACATGGCTTA CAGAGTCTTG GGAAAGTTGC TGCAGCCCGG CGCATGCCAC CGCCTGCAAA CCTGCCAAGC TTGAAGTCTG AAAACAAAGG AAACGACCCC AACATCGTGA TAGTACCCAA GGACGGGACG GGATGGGCAA ACAAGCAGGA TCAGCAAGAC CCAAAGAGTT CCAGTGCGAC	35

[0140]

	GGCCTCTCAG CCGCCGGAGT CGCTGCCGCA GCCGGGTTTG CAGAAATCTG TCTCCAATTT GCAGAAACCG ACACAGTCAA TCAGTCAGGA GAATACAAAT TCAGTGCCAG GTGGACCAAA GTCATGGGCA CAGCTGAATG GAAAGCCAGT AGGACACGAA GGTGGTTTAA GGGGCTCAAG CCGACTGTIA TCCTTCTCTC CCGAGGAATT TCCGACGCTG AAAGCAGCTG GAGGGCAGGA CAAGGCTGGC AAAGAAAAGG GCGTCTTAGA TCTGTCGTAT GGGCCAGGAC CAAGCCTCCG CCTCAGAAT GTGACAAGCT GGAGGGAGGG CGGTGGGCGA CACATAATTT CTGCCACGTC TCTGAGCACC TCCCCAACTG AGCTGGGCAG CAGGAACTCG AGTACGGGAG ATGGAGCCCC CTCCTCGGCA TGTACCAGCG ATTCTAAGGA CCCCTCTCTC CGCCCGGCTC AGCCTGTCCG AAAAGGGGCT TCACAGTTCA TGGGAAATGT ATACCACCCA CCTACATACC ATGACATGCT TCCTGCTTTT ATGTGTTGCG CGAAGTCATC AGAAAACCAG GGTACAGTGG AACGAGGCTC TTTTCCCTT CCTCAGCTCC GCCTGAACC TCGAGTTCTT TTTAGCAGT TCCAGATGAA TGACCAAGAC GGAAAAGAAA ACAGGCTGGG ATTGTCTCGC CCACTCCGCC CACTAAGGCA GCTGGTGGAG CGGGCACCAC GGCCACCAT TATCAATGCG GAAAACCTGA AGGGCCTTGA CGATCTGGAC GCCGATGCCG ATGATGGCTG GGCAGGCCTC CATGAAGAAG TGGACTATTC TGAGAACTG AAGTTCAGTG ATGATGAAGA GGAGGAAGAA GTTGTGAAGG ACGGCAGGCC AAAGTGGAAAC AGTTGGGACC CTAGGAGGCA GCGGCAGTTG TCAATGAGCT CTGCAGACAG TGCGGACGCT AAGCGGACTC GAGAGGAAGG GAAGGACTGG GCTGAAGCAG TGGGTGCGTC CCGTGTGGTC CGAAAGGCGC CAGACCCTCA GCCACCGCCC AGGAAGCTTC ATGGCTGGGC ACCAGGCCCT GACTACCAGA AGTCATCAAT GGGCAGCATG TTCCGGCAAC AGTCCATCGA GGACAAGGAG GACAAGCCCC CACCAAGGCA GAAGTTCATT CAGTCAGAGA TGTCCGAGGC GGTGGAGCGA GCGCGAAAGC GCCGGAAGA AGAGGAGCGC CGAGCCCGGG AGGAGAGGCT GGCCGCCTGT GCTGCCAAAC TCAAGCAGCT GGACCAGAAG TGTAAGCAGG CACGAAAGGC AGGTGAGGCC CGGAAGCAGG CAGAGAAGGA AGTGCCCTGG TCTCCAAGTG CTGAGAAGGC ATCTCCCCAG GAAAACGGCC CTGCTGTCCA CAAAGGCTCC CCAGAAATCC CTGCCCAAGA GACCCCCACC ACATTCCCAG AAGAGGCACC CACAGTGTCC CCAGCAGTGG CACAGAGCAA CAGCAGTGAG GAAGAGGCCA GAGAGGCTGG GTCCCCTGCA CAGGAGTTCA AGTATCAGAA GTCCCTTCTT CCCCATTCC AGCGCCAGCA GCAGCAACAA CAGCAGGAGC AGCTGTACAA GATGCAGCAC TGGCAGCCGG TGTACCCCCC GCCGTCCAC CCCCAGCGCA CCTTTTACCC ACACCACCCC CAGATGTTGG GCTTCGATCC CAGGTGGATG ATGATGCCCTT CCTACATGGA CCCACGTATC ACGCCCACTC GGACCCCGGT GGACTTCTAC CCCTCCGCCC TGCATCCCTC AGGACTGATG AAGCCCATGA TGCCCCAGGA GTCCCTCAAT GGGACAGGCT GTCGCTCTGA GGATCAGAAC TGTGTGCCCC CACTCCAAGA AAGAAAAGTG ACCCCCATCG ACTACCCCC	
--	--	--

[0141]

	TGTGTGGAGC CCAGAGGGCT ACATGGCACT GCAGAGCAAG GGCTACCCGC TCCCGCACCC GAAGTCGAGT GACACCTTGG CTATGGACAT GCGTGTCAAG AATGAAAGCT CTTTCTCTGC CTCCTCGGA AGGGCAGGGG GCGTAAGTGC TCAGCGCGAT CTCTTTGAGG AGAGAGGGGA GGAGTACTTG AGTGCTTTTG ACAAGAAGGC CCAAGCAGAC TTTGACAGCT GTATCTCTTC TCAAAGAATA GGCCAGGAGC TTTTGTTC ACCCCAAGAA AATGTTCAAG ATGCAGGTGC TCCTGGGGGT CACACCCAAA ACCTCAGGTG TTCCCATTTG GAGCCTGACT TTGTCCAGAG TGAGAAAAAG CCAGAGTGTG GCAGTTGGGA TGTTAGCCAC CAGCCAGAGA CCGCTGACAC AGCCCATGGT GTTGAGCGGG AGACACCCCG GGAGGGGACG GCCTTTAACA TCTCCTCTG GGACAAGAAC GGGAGCCCCA ACAAACAGCC ATCCTCGGAG CCTGAATGGA CTCCCGAGCC CCGGAGCTCC AGCAGCCAGC ACCCGGAGCA GACGGGCAGG ACCCGGAGGT CGGGACCCAT CAAGAAACCA GTCCTGAAAG CCTCAAGGT GGAAGACAAG GAGAAGGAGC TTGAGAAGAT TAAGCAGGAG CTAGGGGAGG AGAGTACCCG GCTGGCCAAG GAGAAGGAGC AGAGCCCCAC GGCAGAAAAG GATGAGGACG AAGAGAACGA TGCCTCTCTG GCCAACTCCT CCACCACCAC TTTGGAGGAC AAAGGCCCTG GCCATGCCAC TTTTGGCCGC GAGGCCACCA AATTTGAAGA GGAGGAGAAA CCGACAAGG CCGGGAAGC CAGACCCCCA CGAGAGTCCA GCGATGTTCC CCCCATGAAG AGAAATAACT GGATCTTTAT TGATGAGGAG CAAGCCTTTG GGGTCAGAGG ACAGGCCCGG GGCCGGGGCC GTGGTTTCAG AGAGTTCACT TTTCTGTGTC GGCCTGCTGG CGGAAATGGG AGCGGCCTCT GTGGTGGGGG GTCTCTGGGG GCGCGCAGCA TCTACTGCAG CAGTCAGCGC AGCGGCCGTG GCGGGGGCCT GCGAGAGTTT GCGCGGCCAG AGGACTGCCC CAGAGCCAAG CCCCAGCGGA GAGTTGCCAG TGAGACCCAT AGCGAGGGCT CAGAGTATGA AGAACTTCCC AAGCGCCGCC GGCAGAGGGG CTCCGAGAAC GGGAATGAAG GCTCGCTCCT GGAGAGGGAG GAGAGCACCT TGAAGAAGGG CCACTGCAGA GATTCTTGGC GGTCCAACAA GGGGTGCTCT GAGGACCACA GCGGTCTAGA TGCCAAGAGC CGAGGCCCTC GGGCCTTTGG GCGAGCCCTC CCTCCCCGGC TGAGCAATTG CGGGTATGGA CGGAGAACCT TCGTCTCCAA AGAGTCACCC CACTGGCAGA GCAAAAGTCC AGGCAGCTCT TGGCAGGAAT ATGGCCCTTC CGACACATGC GGATCCCGGC GACCTACAGA CAGAGACTAT GTCCCAGATT CCTACAGACA CCCTGACGCA TTTGGTGGCC GGGGCTTTGA GGACAGCCGC GCGGAGGACA AGAGATCCTT CTTCCAAGAT GAACACGTGG CAGATTCTGA AAATGCAGAG AACCAGGCCCT TCAGGAGAAG GCGCCCCCA CGCCAAGATA AGCCCCCTCG ATTCCGGCGC CTCCGGCAAG AGCGGGAGTC CCTGGGCCTG TGGGGACCCG AGGAGGAGCC CCACCTGCTG GCAGGTCAGT GGCCAGGCAG GCCCAAACCTG TGTCTGGGG ACAAGAGTGG CACTGTGGGC CGCAGGTCCC CTGAGCTCTC CTACCAGAAC TCCTCCGATC ACGCCAATGA GGAGTGGGAG ACGGCCTCCG AAAGCAGCGA	
--	--	--

[0142]

	CTTCAGCGAG CGGCGGGAGC GCGGGGAAGG CCCTGGGTCC GAGCCCCACT CCCAGGTGGA TGGTGGCCTG TCGGGGGCTA GTTTGGGTGA GAAGAAGGAG CTGGCCAAGA GGAGCTTCTC CAGTCAGAGA CCCGTGGTTG ACAGACAGAG CCGAAAGCTG GAGCCGGGAG GGTITGGGGA GAAGCCCGTT AGGCCAGGTG GTGGTGACAC CTCCCCTCGC TATGAGAGCC AACAGAATGG GACGCCCTTG AAAGTGAAAA GATCCCCAGA CGAGGCCTTG CCTGGAGGTC TTAGTGGCTG CAGCAGTGGG AGTGGCCACT CCCCCTATGC CTGGAGCGG GCAGCCCATG CCAGTGCTGA CCTTCCCGAA GCCTCCAGTA AAAAGGCAGA GAAGGAGGCC AAGTTGGCTG CTCGAGGGC AGGTGAACAG GGAGAGGCCA TGAAACAGTT TGACCTGAAC TATGGAAGTG CCATCATTGA AAATTGCGGG TCCAGCCCCG GGGAGGAGAG TGAGGTGGGT TCTATGGTGG GCGAAGGCTT CATCGAAGTC CTGACCAAGA AGCAGCGCCG CCTGCTGGAG GAAGAGAGAA GAAAGAAGGA GCAGGCCGTG CAGGTGCCTG TCAAAGGTG AGGCCCTTCC TCCCGTATTC CTCTCGATT TGCAAAAAAG CAGAACAAC TATGTCTGGA GCAAGGTGAC GTGACCGTGC CTGGCAGCAG CCTGGGCACT GAGATCTGGG AGAGCAGCAG CCAGGCTCTC CCTGTGCAGG CCCCAGCCAA CGACTCCTGG AGGAAAGCTG TCACTGCCTT CAGCAGCACC GAGACTGGCT CTGCGGAGCA GGGTTTTAAG AGCAGCCAGG GAGATAGTGG CGTTGACTTG AGTGCCGAGT CTCGGGAGTC GTCTGCGACC TCCTCGCAGC GCAGCTCCCC ATATGGGACT CTGAAGCCAG AGGAGATGAG CGGGCCCCGGC CTGGCGGAAC CCAAGGCCGA CAGCCACAAG GAGCAGGCTC CAAAGCCATC TGAGCAGAAG GATTGAGAAC AAGGCTCTGG ACAGAGCAAG GAGCACAGAC CAGGACCCAT CGGCAACGAG CGTTCTCTGA AAAACAGAAA GGGCTCGGAG GGGGCCGAGC GGCTGCAAGG GGCTGTCTGC CCGCCTGTTA ACGGGGTGGA GATTACGTG GACTCCGTGC TGCCTGTGCC ACCCATTGAA TTTGGAGTCA GTCCAAAAGA CTCCGATTTT AGCTTGCCAC CTGGTTCTGC CTCTGGTCCT ACTGGGAGTC CAGTTGTTAA ACTTCAGGAT GCCTTGGCCA GTAATGCAGG GTTAACACAG AGTATCCCCA TCCTGCGGCG GGACCATCAC ATCCAGAGGG CCATCGGTCT CTCCCCAATG TCCTTCCCCA CCGCCGACCT TACTCTGAAG ATGGAGTCTG CGCGCAAGGC TTGGGAAAAC TCCCCAGTT TGCCGGAGCA GAGCTCTCCA GGCGGCGCTG GCTCAGGCAT CCAGCCTCCA TCCTCTGTGG GTGCCTCCAG CGGGGTCAAC TACAGCTCCT TCGGTGGAGT GTCCATGCCA CCCATGCCTG TGGCCTCTGT AGCACCTTCT GCTTCTATGC CAGGCAGCCA CCTCCCGCCC CTGTACCTGG ATGGCCATGT GTTTGCAAGT CAGCCCCGGC TGGTTCTCA AACGATACCT CAGCAGCAGA GTTACCAACA GGCCGCGCT GCCAGCAGA TCCGATCTC CCTTCACACA TCTCTGCAGG CACAAGCTCA GCTTGGACTG AGGGGTGGGC TTCCTGTGTC CCAGTCCCAG GAGATCTTCA GCTCCTTGCA GCCCTTCAGA TCTCAGGTGT ACATGCACCC CAGCCTGTCA CCGCCAGCA CCATGATCCT CTCTGGGGGC ACAGCCTTGA AGCCTCCATA	
--	--	--

[0143]

	CTCGGCGTTC CCAGGCATGC AGCCCTTGGA GATGGTGAAG CCGCAGTCTG GCTCACCTTA CCAGCCCATG AGCGGGAACC AAGCCCTGGT CTACGAGGGC CAGCTCAGCC AGGCTGCTGG CCTGGGTGCC TCCCAGATGT TGGACTCCCA GCTCCACAG CTGACCATGC CACTGCCTCG GTACGGCTCC GGGCAGCAGC CACTGATCCT GCCCCAGTCT ATTCACTGC CACCTGGGCA GAGCCTCTCC GTTGGGGCCC CCGAAGGAT TCCTCCGCC GGGTCCAGC CGCCAGTCCT GAACACCAGC AGAGAGCCCT CTCAGATGGA GATGAAAGGC TTCCACTTTG CCGACAGTAA ACAGAATGTC CCTTCAGGAG GCCCCGTGCC ATCGCCACAG ACCTACAGGC CTAGCTCTGC TAGCCCCAGT GGGAAAGCCCT CTGGATCAGC AGTTAACATG GGCTCTGTGC AGGGACACTA CGTGCAACAG GCAAAACAAC GAGTGGATGA GAAACCCAGC CTGGGAGCCG TGAAGCTGCA GGAGGCCCCC TCGGCTGCCT CCCAGATGAA GCGAACCAGG GCGATCAAGC CTCGGGCTGT CAAAGTGGAG GAGAGTAAGG CCTGACAGTG CTGGCTGCC ACCTCGCCTC TCCCTACTGA GGACGGTGCC GCCATGCGGC CTCGACACAG CCGACACTCG GGAGCCTCAC CAGATCCACC GTCCAAATGC GTGGCCAGA CTGAGAGACC TCCCTCCTCT CCACTCCCGA AAGCTCCGTT GTCAACCAGC TTGCACCCGT GGATATATGG CATTGACCCG CTTGCTTTGA TACGAAACAA AAAAGCAGAC GACTCCTTCA TCCCATCTGC TCCTACCGTG ACTGTGGAGT GACGCCTCCT GTGCAGTGCA GATTTGCCCT CCCTGCCCTC TCCCTGTCTT GCCGCGCAGC CAGGGCGCCT TCTCAGCAGT GCTTCCGGCC CAGCCGCCCA TCCTAGGCA CAGATATTTG GCAGCAGGGT CATTTTACTT TGAGGCTTTT TGTTTTAAAA TGTAGCCAAG GTTTTTACAA AGGGGAAAAGG AAAAGAAAAAC AAAAACGCAA GCTCCATGTG TATAGCTGAA CTTTTATATG TTCTTGCCA GCCCCCTCCG TCCCTTCCAT CTCTAGCCTC TGTCTGTTT AGTTTGATAC GTCACTGCAG TACCTAAGA GGTGACTCTT AAGAATGCAT CCCCTCCTGA TTCCTCAGCT GGTTCACCCT TGAGGTTATT TGCAAAAAGA AAAGGAGGTT CTTGAGGGCA CCGATTGCGA GCATTCTGGT GCCTGGCTCC CCGCCTGGGA AGCGATGGGG TGCTCAGAGC AGCAGGCAGG TTGGGGGAGG GGGGGGGTCA TAGTTGGGTT CCAGCTCCTG GCTTGATGAG CCCAGGGCGC TTACAGGCAG CCCATGAAGT TGATGACAGT TTAGCATGA GAATCACACA GGGTCCCTGT CCTGGGCTCC TCTAAAGCCA GTGGATGTGC TGGGCACCAG AGACAAATCA TGGAGATGGC TGCTGGTGGC TCCCAGGTTG GCCCAGATGG GGTGAGCTGA CATAACACAG GCCCATCCA GGCCCCGTGG GCTCTGCTTC TGGGGTCCA TACCCTGCCC TGCAGGGGTG CTGTGTTTTT CACACATTTT TTTCCTGAA GCCTTCTGTA ACCTGTCTT TTCTTCTTT CCTCTCCGG AGCCTGCTGC TTTCTCTGGA CCTGTCTCCA CCTCCACAC AGCTCATCGT GAACACCACT TGGTGATGGA GGGAGTGGAC CCGTGTGTGG TCCCAAGTG AGGCCACTGG GAGTTTGTC TTTTCTCTT TTGCTTCACT CCCAGCAGCA GACCCAGGTT GTCAGGACAG GAGGGCCTGA GCTAAGCAGT	
--	--	--

[0144]

	AGGCATCAGT CTCGTTTGTC TTCAGACGGC GGGGGCAGGT CCAGGGTGAG GCTGGGTGGA GGGCTGACCA AGGTCCAAAG GGCCTGCGCA GCCTCCGGGA GGGCAGCTTC TCCAGCCAGA GGCTTGTGTG AGCCATCGTG TGCTGGGCTT GTTTTTAAGT AAGAAACAAG GAAATCACTC CAGATTCTGT CATTCCAAGG AAAGGGAAGG GGACAGTTCA GGTTCCTCAG CTGTTCTTAG GGGTCACTGA GCGTCTACCT CCTCCTCCAG AGGAGGCTGG CTCAGAACAC CTAGAGGAGG GGGCCGGGGA TGCACCCCCC ACCAGAGGCT GCCTTCAGCG TCTACGGGT GCAGGACAGC GCTCAGGCTT GGGCTCTAAG CTCTGTGTCT AGTGTAAGAC ATGGGGAAGG AGCATCTTAG GAACTGCTGA AGTAACCTCT TACTGTCTC ACAATTCTAA GGAAGCGGGA GAACGGCCTC CTACCAACAG CGCCACCCC AGAGCTGCCT GGGAAAGGGC AGTTTTACTG AAAGGTGCTT TACTGTTTAC CTGCATCTTT CAGCAGCTCC CCTCTGCCC TCACCTGGTC TTTTCCCTCT TTATCCCAAG CCTTTATGCT TGAGTCCCTT CCCCAGGGGC TGCCACCCG ACAGTTCAG GCATTCCCTA CTTGAGCTTC TTGTCTGCTT TTCCTTCTCC CACTGCAAGC GGCTGCTTGT GGGGCCTGGG ATGAGCCCTC TCTGTCCCA CCGGCCCTCC TTGCCAAGCC ATTCCTGGGT GAGTTCAGGC CTGCGGGAGC CACACATTCA TCTCCACCTG GACACTTGAG CCGCATGGCC AGACCCCTCC CACCTGATGC GGTGGTGCGT GTGATTTGTC AAAAGAAAGC CTTCTGGATG CTGTAAAGAT GTACCCTTCA GGTGAACCTG GTATCAGACC CACAGTACTT GCTGTTTGAG AAAAATAAA AACAAAAAGG TCACCTGTTT TCCAGCCCTT TTCTTTACC TGGTATTTCC TTCCTTTCTC CTCCCCACC CCAAATAAAA AAACAAAAAA CACTAGAATT TATTTATATG TATTGATGTT GTAGGTCTAG GTGAAAAAAA AAGAAGTAAA TGTTTCACTG CTCTATTTAT ATATAATGTC TGAATTAATT CTGTGCAGGA AAGGCCAGGA AATTGCATGT GAAGTTCGGT GCAGTCACCA CCTGTGTGTG ACCTGAGCTG CAGTCTCTTC GCTGAGATGC AGGTTTTAAA TGAGACTTG GGGGCTGAGG GCAGGCCTCA GGCCTCCCAG CGCCCCAACC CCTCCTTGGT CTAATGAAAT GCAGTCTTA GTGCAGAGAT GTTTAAGGT GCAATATATC TCTTCCTTC CCGTGGTTTT AGAGCCAAGC TCAAGGTAGT AGGACGTAGG GTCTTATTT GTTTTCAAAC CCCCATCTC AGAGCGCAGA TACATGCAGA GGCTTCTGCC AGGATACCAC GGGGCCTTAG TGGGAACAGG TGGAGACCAG CACTTCCCTT TCCTGCTGCT GAGGTAGGGA TTGGGGGGTC AGAACCCACT CACTTTTGCC TGTTAAAGTT GCCCTCTGA CGCTGGCAGC TCTGCCTTGG TCACTGGGGA TGCGGCTCGT TGCTCAGCCA CCAGTGGCCT TGCGGTATTG TCCACCATCC ACTAGAGTGG GATGAAGTCC AGAGTGTGGG TATACATCTC AGATGCCCAT CTACCCACTG GGGACTTCAA TGCCAGCTGC ATTTGGTTTG GTTTTCTTAA CTGTTGGCTT CTCCCCACAG CGTTTTTGT TTTTTTTAA ACATTCATAT TGTTTTCAA CTTGGAATTC ATAGACACTC TGGCTCTAGG TTCCTTAAGG GGGAAAACAA AAGATGACTT TATTTACAT TCAAGAAAAAT	
--	--	--

[0145]

		CAGTTCAGTT CCAAAGCTGT GGTCTTCCA GCCACTTCTA GGGACACTGG GGAACCTTGT TAAACGTTGA CATCAGTGCT CTCCAGCCGT GCTGTCACCC TCCTATCTTC TGGATCTGCC TTCGCGATGG TCAGTGACAG CTCTGGAAG CTGAGCACAC ACAGGTGCAC AGCCATGCTG TGGTCTGGCC TGCTACGGCA GCATGGCAGC TCTGGTGGAG CCTTCTCCCT TGCCATTGG TTCCCTGTG CCAAGTAGCT GCAGGCTGCC CCTCAAATCT TCATTGTCC CTTTTCACCT CCTGCAGAAC AAGCCTGGGT TAGAGGGTCT GCTGGAAATG GCCTTTGAAG ACCAAGGATA CCAGGATGTG TGCACCTCTGT CGTGTTCTGT GATGAATGGG AAACGTAGGC TTCCAGAAAG CCAGCTCTCT TCTGAAATGT GACGGACCTA AGCAGGAAGT CATCCAGGAC AGGAGTGGCT CAGTGTGGG GATGGACGCT GTCGCCCAGC CATGCTCCAC CAGGGCCACC AATGTGTAGT TGGCTGGTGG TCTTCGGGCA TGTGAGACCT GCTCTTCACT GTTTCACCC CACTTGGTGG CCTCCAGGAT GGTAGTGGCA CCCTCAGAGC CCCATCTTCA GCATGTTCTG AAGCCTCAGA GTGGAAATTC CTGCTAAGGC TCTGTGTGGA CGCCTTCTC CCGTGATCTA AAGGGGACAC TGTACTCAAG CTTTGTACCT CATGCCTTGT GTAGTAAAAA AGGATTTGGG GGTTTTGTGTT GGTTCCCTGAG AGGGTTGTGT TTTGTTTTG TTTCTTTTG TTTATGTTTT GGCCTTTCCT CTTTGTCTTT CCATGTAGAC CAGATATTTG AAAGGGCAGA CGATGGCTAG AGGTGTAATG TGCAGCTTGT TTATACGGTA TTTGGGAAA CTACCTTGG ATGGGAAATC GAATCGTGGG TTCACCAGGC CGGTGCTGGC ACACTCACCC TCGCCCTTC CCTCCGGTTC AGTACCTATT GTTCTCCTT TCAAATATGT GATTGTAATA GCTCTTTCCA TATGAAAGAA TTCTCCTTAT TTAAATAAAA AAAGTTTAAA AA	
DOPEY 2	NM_0 05128. 3	TCCCACAGTG CCTGGCCAG AAGCCTTGCT AAATATTTGA ACAGGATTGC CCAATACTTT TCTGCTGTGA GAATGTAAGA TGGATCCAGA AGAGCAGGAG CTCTTAAATG ATTACAGATA CAGAAGCTAC TCTTCAGTGA TTGAAAAGGC TTTGAGAAAT TTTGAGTCTT CGAGTGAATG GGCGGATCTC ATATCTTCAC TTGGCAAACCT CAACAAGGCT CTTCAGAGTA ACCTGAGGTA CTCCTTGTG CCAAGACGGC TCCTCATCAG CAAAAGATTA GCTCAGTGTT TGCACCCTGC CCTGCCAGT GGTGTCCACT TAAAAGCTCT GGAAACCTAC GAGATTATCT TAAAAATCGT GGGGACCAA TGGCTGGCCA AGGACTTGTT TCTGTACAGC TGCGGGTTAT TTCTCTCCT GGCACACGCG GCGGTTGCGG TGAGGCCGGT GCTGCTCACC CTGTACGAGA AGTACTTCCT CCCCTGCAG AAGCTGCTCC TGCCCAGTCT GCAGGCCTTC ATCGTGGGCC TGCTGCCCGG CCTTGAAGAG GGCTCCGAGA TCTCCGACAG AACGGATGCT CTGCTCCTGA GACTGTGCT GGTGGTTGGC AAAGAGGTGT TTTACACCGC CCTCTGGGGG AGCGTCTGG CCAGCCCGTC CATCCGCCTC CCTGCCTCAG TCTTCGTGGT GGGCCACATC AACAGGGATG CCCCCGGCCG	36

[0146]

	GGAGCAGAAG TACATGCTGG GGACCAATCA CCAACTCACG GTGAAGTCTT TGGGTGCTTC CCTGTTGGAC TCAAAATGTTT TTGTGCAAAG AAATAATCTG GAAATCGTTC TGTTTTTCTT CCCATTATAT ACCTGTCTGG ATTCCAATGA GAGAGCCATC CCCCTCCTCA GATCTGACAT CGTGCGCATT CTCTCAGCCG CCACCCAGAC CCTACTGAGA AGGGACATGT CCCTGAACAG AAGACTGTAT GCATGGTTAC TAGGCTCAGA CATAAAAGGA AATACCGTTG TGCCAGAATC TGAATCTCA AATTCTTATG AAGACCAGTC GTCTTATTTT TTGAAAAAT ACTCCAAGGA TCTTTTAGTT GAGGGTTTGG CTGAGATATT GCATCAGAAG TTCATAGATG CTGACGTGGA GGAACGCCAT CATGCATACC TGAAGCCTTT TCGCGTCCTC ATCAGTCTGC TTGACAAGCC AGAAATAGGG CCTCAAGTGG TTGGGAATTT GTTCTCGAA GTCATCAGGG CCTTTTATTC TTAGTGCAGA GATGCCCTTG GCTCTGATCT TAAACTTAGC TACACCCAGA GTGGAAATTC GCTGATAAGT GCAATCAAGG AAAACAGAAA TGCCTCTGAG ATTGTCAAAA CGGTAAATTT GCTGATAACT TCTCTAAGCA CAGACTTTCT CTGGGATTAT ATGACAAGGT GTTTTGAGGA ATGCTTTAGA CCAAGTGAAGC AGCGTTACAG CGTGAGGAAC AGCGTCAGCC CTCCCCCAC GGTCCTGGAG CTCTGCGCCC TCTGGTCTT CCTGCTGGAT GTCATTCTT TGGAACTTTA CTCTGAGGTG CAAACCCAGT ATCTCCCTCA GGTGCTCGGC TGCCTGGTGC AGCCTCTTGC TGAGGACATG GAGGCCTTAA GTTTACCTGA ACTCACGCAT GCCTTGAAGA CGTGTTCAA GGTGCTCAGC AAAGTCCAGA TGCCTCTTC CTACCTCGAC ACGGAGTCCA CCAGCGGAAC CTCGAGTCCA GTAAAAGGTG AAAACGGCAA AATAATTTTG GAAACAAAGG CAGTGATTCC CGGTGACGAA GATGCTTCGT TTCCCCCTCT GAAGTCTGAG GACAGTGGGA TCGGGCTCAG TGCCTCGTCA CCGGAGCTCT CTGAGCACTT GAGGGTTCTT CGAGTTTCTC TGGAAAGGGA CGACGTTTGG AAGAAGGGCG GGAGCATGCA GAGGACGTTT CTTTGCATCC AAGAGCTAAT CGCCAACTTT GCCAGCAAGA ACATTTTGG AGTACAGCTG ACAGCGTCAG GAGAAGAAAAG CAAGTCCGAG GAGCCTGCAG GGAAGAGGGA CAGGGATGGG ACGCAGAGCC TGGCAGCCAA TGATTCCAGC AGGAAGAAGT CTTGGGAGCC CAAGCCCATC ACTGTGCCTC AGTTCAAGCA GATGCTGTCA GACTTGTTCA CAGCACGAGG GTCTCCATTC AAGACAAAAA GTTCAGAGTC ACCATCGTCT TCGCCAGCA GCCCTGCCAG GAAAAACGGG GGAGAATGGG ATGTTGAGAA GGTGGTCATT GACCTGGGGG GTTCCAGGGA GGAACGCAGG GAGGCCTTTG CCGCCGCTG CCACCTGCTG CTGGATTGTG CCACTTTCCC TGTTTACCTG TCCGAGGAAG AGACCGAGCA GCTCTGTGCA ACGCTCTTCC AGCTGCCAGG AGCCGGTGAT TCCAGTTTTC CATCTTGGCT GAAGTCCCTC ATGACTATTT GCTGTGTGT GACTGACTGC TACCTCCAGA ACGTGGCCAT TTCCACTCTG CTGGAAGTGA TAAACCATTC CCAGTCCCTG GCGCTTGTC TGAAGACAA GATGAAACGC TATAAGAGCT CTGGACACAA CCCTTTTTTT GGCAAGCTGC AGATGGTGAC	
--	--	--

[0147]

	GGTTCCCTCCC ATTGCTCCAG GGATATTGAA AGTCATTGCA GAGAAAACAG ATTTCTATCA GAGGGTGGCT CGTGTGCTTT GGAATCAGCT GAACAAAGAG ACCCGGGAGC ATCACGTAC CTGCGTAGAA TTGTTCTACC GGCTGCACTG CCTGGCCCCT ACGGCCAACA TCTGCGAGGA CATCATCTGC CATGCCCTCC TGGACCTGA CAAGGGAACA AGGCTGGAAG CTCTGTTTAG ATTTCCCGTG ATCTGGCATC TGACAAGAGA GATCCAAGGC AGTCGAGTAA CATCTCACA TCGCTCCTTT GATAGGTCTT TGTTTGTCGT GCTGGACAGC CTGGCCTGCA CGGATGGTGC CATCGGTGCG GCAGCCCAGG GCTGGCTGGT GCGTGCGCTC TCCCTCGGGG ACGTGGCTCG CATCTCGAA CCCGTGCTCC TGCTGCTGCT GCAGCCAAAA ACCCAGAGAA CCTCCATCCA CTGCCCAAG CAGGAGAACT CGGCCGATGA CTTGCACCGT TGGTTAACA GGAAGAAAAC CTCTTCAGA GAGGCATGCG CAGTGCCCGA GCCTCAGGAG AGCGGCTCTG AAGAGCACCT GCCTCTGAGC CAGTTCACCA CAGTGGACCG TGAAGCCATT TGGGCCGAAG TGGAGAAGGA GCCCGAGAAG TACCCGCTGC GAGGCGAGCT GAGCGAGGAA GAGCTGCCCT ACTACGTGGA GCTTCCAGAC AGGACGGCCC ACGGCGCCCC GGACAGCAGC GAGCACACCG AGTCTGCAGA TACAAGCTCC TGCCACACGG ACAGCGAGAA CACGTCTCTT TTCTCCTCCC CTTCCCACGA CCTGCAGGAG CTGAGCAACG AAGAGAACTG CTGTGCACCC ATCCCCATGG GGGGCAGGGC GTACCCCAAG CGCTCGGCCC TGCTGGCGGC CTTCAGTCA GAAAGCTTCA AGGCTGGGGC CAAGTTAAGC CTGGTGCGGG TGGACTCGGA CAAGACGCAG GCTTCTGAGT CGTTCTCCAG CGACGAGGAG GCGGACTTGG AGCTCCAGGC CCTCACCACA TCCAGGCTGC TAAAGCAGCA GCGGGAAAGG CAGGAGGCCG TCGAGGCCTT GTTCAAGCAC ATCTGCTCT ACCTGCAGCC CTACGACTCT CGGCGGGTCC TCTATGCCTT CTCGGTGCTG GAGGCTGTGC TAAAAACCA CCCTAAGGAA TTCATCGAGG CTGTGTCCAG GACTAGCATG GATACCAGCT CCACCGCGCA CCTCAACCTC ATCTCCAACC TCCTCGCTCG CCACCAGGAG GCCCTCATTG GCCAGAGTTT CTACGAAAAG CTCCAGACCC AGGTCCCCAA CGTGTGCCCC CACTCTCTGC TCCTGGAGCT GCTCACCTAC CTCTGCCTGA GCTTCTTGGC TCCTACTAC CTTTGCTATT TGAAGGTCTC GCACCGAGAC ATTCTCGGCA ACCGGGACGT GCAGGTCAAA AGTGTGAGG TTTTGATCAG GATAATGATG CAGCTGGTCT CAGTGGCCAA GTCTTCGGAA GGAAGAAGC TGGAGTTTAT CCACAGCTTG CTGCAGAGGT GCAAAGTTCA GGAGTTTGTC CTGCTCTCCC TGTCGGCGTC CATGTACACG AGCCAGAAGC GCTACGGGCT GGCCACCGCC CACCACGGCA GGGCCCTGCC AGAGGACAGC CTCCTTGAGG AGAGTCTCAT TAACTTGGGT CAGGACCAGA TCTGGAGTGA GCACCCGCTG CAGATTGAGC TGCTGAAGCT GCTGCAGGTG CTGATTGTCT TGAACACCA CCTGGGTGCG GCCCATGAGG AGGCGGAAAA CCAGCCCGAC CTGTCCCGGG AGTGGCAGAG AGCCCTGAAC TTCCAGCAGG CCATCAGCGC CTTGCAGTAC GTGCAGCCCC ACCCCTCAC	
--	--	--

[0148]

	CTCCAGGGT CTTCTGGTCT CTGCGGTGGT GAGGGGTCTG CAGCCCGCCT ACGGTTACGG CATGCATCCG GCCTGGGTGA GCTTGGTCAC GCATTCCTTG CCCTACTTCG GAAAGTCCCT GGGCTGGACG GTGACACCCT TTGTTGTCCA GATTTGCAAA AAGTTGGATG ACTTGGTCAA GCAGTATGAA AGCGAATCTG TGAAGCTCTC TGTACGACA ACCTCCAAGA GGGAAAACAT TTCTCCAGAT TATCCACTCA CCCTTCTAGA AGGTCTAACG ACCATTAGTC ATTTTGTCT TTTGGAACAA GCCAACCAAA ACAAAAAGAC CATGGCTGCA GGTGATCCTG CCAACTGAG GAATGCCAGA AATGCCATTT TGGAAGAGCT GCCTCGAACT GTTAACACCA TGGCCCTTCT CTGGAATGTT CTCAGAAAGG AGGAGACTCA AAAGAGACCT GTCGATCTCC TAGGGGCCAC GAAGGGATCC TCTTCCGTTT ACTTTAAAAC CACCAAAACC ATAAGACAAA AAATTTTAGA CTTCTTAAAC CCCTTGACGG CCCATCTTGG GGTTCAGTTG ACAGCGGCTG TTGCGGCAGT GTGGAGCAGA AAGAAAGCCC AGCGTCACAG TAAGATGAAG ATTATCCCAA CGGCAAGTGC ATCCCAAGCTA ACCCTTGTG ACTTGGTGTG TGCACTCAGC ACCCTGCAGA CTGACACGCT GCTGCACCTG GTGAAGGAGG TGGTGAAGAG GCCACCCCAA GTCAAAGGGG GTGATGAGAA ATCGCCCTA GTGGACATTC CTGTGTGCA GTTTTGCTAT GCTTTTCTCC AAAGGCTCCC AGTACCAGCC TTGCAAGAGA ACTTTTCTC ACTGTTGGGA GTATTGAAAG AGTCTGTACA GTTGAATCTA GCCCCACCTG GGTATTTTCT GCTTCTCAGC ATGCTGAATG ACTTTGTAAC AAGAAGTCCC AACCTGGAAG ACAAGAAGGA CAAAAAGAC CTGCAGGAAA TCACTCAGAA AATCCTAGAA GCTGTGGGA ACATTGCCGG CTCTTCTTG GAGCAACCA GCTGGCTAAG CAGAAACCTG GAAGTGAAGG CCAACCTCA GGCCTCTCTA GAAGAATCTG ATGCTGAGGA GGACCTGTAT GATGCTGCTG CAGCTTCAGC AATGGTGTCT TCATCCGCCC CGTCGGTGTA CAGCGTGCAA GCCCTCTCTC TCCTGGCAGA GGTACTGGCT TCCCTCCTGG ACATGGTTTA TCGAAGTGAT GAGAAGGAGA AAGCTGTGCC GTTAATCTCC CGTCTGCTTT ACTATGTTTT TCCATACTTA CGCAACCACA GTGCCTACAA TGCTCCCAGC TTCCGGGCTG GCGCTCAGCT GCTGAGCTCC CTGAGTGGCT ATGCCTACAC AAAGCGAGCC TGGAGGAAGG AGGTCCTGGA GCTGTTTCTC GACCCGCTT TCTTTCAGAT GGATACTTCC TGTGTTCAAT GGAAGTCCAT TATTGACCAT CTTTGGACTC ATGAGAAAAC AATGTTTAA GATTAAATGA ACATGCAGAG CAGTTCTTTG AAAGTATTCT CAAGTTTGA ACAGAAAGCC ATGCTGTTAA AGCGCCAGGC TTTTGTGTG TTCAGTGGAG AAGTTGATCA ATACCACCTT TACCTTCCAC TGATACAAGA ACGCCTGACA GACAATCTCA GAGTTGGACA GACATCCATA GTTGCTGCTC AGATGTTTCT TTTTTCAGA GTTTTGCTGC TAAGAATATC TCCTCAACAT TTGACTTCAT TGTGGCCAAT AATGGTCTCT GAATTGATTG AGACATTCAC ACAGCTTGAA GAAGATCTAA AAGATGAAGA TGAGTCATTG AGAAGCACCA ACAAAGTAAA CAGAACGAAA GTTTCAGTCC CGGATGCAAA	
--	--	--

[0149]

		TGGACCCCTCA GTGGGGGAGA TACCCACAGAG TGAACCTCATC TTGTATTTAT CAGCTTGCAA ATTCTTGGAC ACAGCGCTTT CTTTTCCACC TGACAAGATG CCATTATTTT AAATTTATAG GTGGGCATT ATTCCAGAAG TGGACACAGA GGGCCCTGCC TTCTGTGCGG ATGTAGAGGA GAATCACCAA GAATGCAAAAC CCCACACTGT CAGGATTCTA GAACTTCTAA AATTTAAAGTT TGGGGAAATC AGTAGCTCTG ATGAGATCAC CATGAAGAGT GAATTTCCGC TTCTGCGCCA ACATTCTGTT TCCAGCATCA GGCAGTTGAT GCCATTCTTC ATGACTCTAA ATGGTGCATT TAAGACCCAG AGACAGCTGC CTGCTGATAG CCCAGGAACT CCATTCTTGG ACTTTCTGT CACAGATAGC CCAAGGATCT TAAAACAACT GGAAGAATGC ATCGAATATG ATTTTCTGGA ACATCCAGAA TGTTAACCAT GTGAGAGAGA ATATGTTTAA TCCATGTATT GGTACTTTAC TGAAAACCAG GTTATATTCT AAAGAAGAAA GAAGGCAGGA TAGTGCTTTT GAACAAGCCT ATTTCCATTT TGAAAGTAGA TTTCAGGCTA GGTGCGGTGG CTCACACCTG TAATCTCAGC ACTTTGGGAG GCCAAGGCAG GCAGATCACT TGAGGTCAGG AGTTCGAGAC CAGCCTGACC AACATGGTGA GACCCGTGCT CTAATAAAAA TACAAAAATT AGCTGGGTGT GGTGGCGGCG CCTGTAATCC CAGCTACTTG GGAGGCTAAG GCATGAGAAT TGCTTGAACC CAGGAGGTGG AGGCTGCAGT GAGCCGAGAT CACGACACTG CACTCCAGCT GTGTGACAGA ATGAGACCAT CTCAAAAAA AAAAAAAGT AGATTTCAGA TAATTTACTG TTCAGCAACA GGACACACCT CCCTAAATGC CTTGTAATAT ATTTGAATCT GATTCTGCAT TTCTTCTCA ATTTATGTAA TGAAAATAAA ATTAAATAT CATCTAACAG TAGCACAAAA TTTGTAATAT GAAGTAAAGT ATGAAGATAA TGAAGAAGTT GTTTCTTTG TTGAAGCAGT TATATGGGTC TTCTCAGTA TATTCTCTT TTCTCTAAAA GTTTAAACTT ATTTAAAGAA TGTTATTTT AACCTTTCAA AAAAAAAAA	
NDUFB 11	NM_0 19056. 6	GCTCTGGCCG GCCCCGGCGA TTGGTCACCG CCCGCTAGGG GACAGCCCTG GCCTCCTCTG ATTGGCAAGC GCTGGCCACC TCCCCACACC CCTTGCGAAC GCTCCCCTAG TGGAGAAAAG GAGTAGCTAT TAGCCAATTC GGCAGGGCCC GCTTTTLAGA AGCTTGATTT CCTTTGAAGA TGAAAGACTA GCGGAAGCTC TGCTCTTTT CCCAGTGGGC GAGGGAACCT GGGGCGATTG GCTGGGAACT GTATCCACCC AAATGTCACC GATTTCTTCC TATGCAGGAA ATGAGCAGAC CCATCAATAA GAAATTCTC AGCCTGGCCG AAAATGGTTG GCCCCACGAA GCCACGACAA CTGGAGGCAA AGAGGGTTGC TCAACGCCCC GCCTCATTTG AAAACCAAAT CAGATCTGGG ACCTATATAG CGTGGCGGAG GCGGGGCGAT GATTGTCGCG CTCGCACCCA CTGCAGCTGC GCACAGTCGC ATTTCTTTCC CCGCCCCGTA GACCCTGCAG CACCATCTGT CATGGCGGCT GGGCTGTTT GTTTGAGCGC TCGCCGTCTT TTGGCGGCAG CGGCGACGCG AGGGCTCCCG	37

[0150]

		GCCGCCCCGCG TCCGCTGGGA ATCTAGCTTC TCCAGGACTG TGGTCGCCCC GTCCGCTGTG GCGGGAAAAGC GGCCCCCAGA ACCGACCACA CCGTGGCAAG AGGACCCAGA ACCCGAGGAC GAAAACCTTGT ATGAGAAGAA CCCAGACTCC CATGGTTATG ACAAGGACCC CGTTTGGAC GTCTGGAACA TGGCACTTGT CTTCTTCTTT GCGCTCTCCA TCATCCTGGT CCTTGGCAGC ACCTTTGTGG CCTATCTGCC TGAACACAGG TGCACAGGGT GTCCAAGAGC GTGGGATGGG ATGAAAGAGT GGTCCCGCCG CGAAGCTGAG AGGCTTGTGA AATACCGAGA GGCCAATGGC CTTCCCATCA TGGAAATCAA CTGCTTCGAC CCCAGCAAGA TCCAGCTGCC AGAGGATGAG TGACCAGTTG CTAAGTGGGG CTCAAGAAGC ACCGCCTCC CCACCCCTG CCTGCCATTC TGACCTCTTC TCAGAGCACC TAATTAAAGG GGCTGAAAGT CTGAAAAAAA AAAAAAAA	
ND4	NC_01 2920.1	ATGCTAAAACTAATCGTCCCAACAATTATATTACTACCACTGAC ATGACTTTCCAAAAAACACATAATTTGAATCAACACAACCACCC ACAGCCTAATTATTAGCATCATCCCTCTACTATTTTTTAACCAAA TCAACAACAACCTATTTAGCTGTTCCTCAACCTTTTCCCTCCGACC CCCTAACAACCCCTCCTAATACTAATACTGACTCCTACCC CTCACAATCATGGCAAGCCAACGCCACTTATCCAGTGAACCACT ATCAGCAAAAAAATCTACCTCTCTATACTAATCTCCCTACAAA TCTCCTTAATTATAACATTACAGCCACAGAATAATCATATTT TATATCTTCTTCGAAACCACTTATCCCCACCTTGGCTATCATC ACCCGATGAGGCAACCAGCCAGAACGCCTGAACGCAGGCACAT ACTTCCTATTCTACACCTTAGTAGGCTCCCTTCCCTTACTCATCG CACTAATTTACACTCACAACACCTTAGGCTCACTAAACATTCTA CTACTACTCTCACTGCCCAAGAACTATCAAACTCCTGAGCCAA CAACTTAATATGACTAGCTTACACAATAGCTTTTATAGTAAAGA TACCTCTTTACGGACTCCACTTATGACTCCCTAAAGCCCATGTC GAAGCCCCCATCGCTGGGTCAATAGTACTTGCCGCACTACTCTT AAAACCTAGGCGGCTATGGTATAATACGCCTCACACTCATTCTCA ACCCCTGACAAAAACACATAGCCTACCCCTTCTTGTACTATCC CTATGAGGCATAATTATAACAAGCTCCATCTGCCTACGACAAAC AGACCTAAATCGCTCATTGCATACTCTTCAATCAGCCACATAG CCCTCGTAGTAACAGCCATTCTCATCAAAACCCCTGAAGCTTC ACCGGCGCAGTCATTCTATAATCGCCACGGGCTTACATCCTC ATTACTATTCTGCCTAGCAAACTCAAACTACGAACGCACTCACA GTCGCATCATAATCCTCTCTCAAGGACTTCAAACTTACTCCAC TAATAGCTTTTTGATGACTTCTAGCAAGCCTCGCTAACCTCGCC TTACCCCTCACTATTAACCTACTGGGAGAACTCTCTGTGCTAGT AACCACGTTCTCTGATCAAAATACACTCTCCTACTTACAGGAC TCAACATACTAGTCACAGCCCTATACTCCCTCTACATATTTACC ACAACACAATGGGGCTCACTCACCACACATTAACAACATAA AACCTCATTCACACGAGAAAAACCCCTCATGTTTCATACACCTA TCCCCCATTCCTCTCTATCCCTCAACCCCGACATCATTACCGG TTTTCTCTT	38

[0151]

<i>MORF4</i> <i>L1</i>	NM_0 012656 03.1	CGGCGTGCCC TGGGGCGGCG CGGGCGCAGG GGCGCGTGCG CGGCGGGCTG TCGTTGGCTG GAGCAGCGGC TGC GCGGGTC GCGGTGCTGT GAGGTCTGCG GCGGCTGGCA AATCCGGCCC AGGATGTAGA GCTGGCAGTG CCTGACGGCG CGTCTGACGC GGAGTTGGGT GGGGTAGAGA GTAGGGGGCG GTAGTCGGGG GTGGTGGGAG AAGGAGGAGG CGGCGAATCA CTTATAAATG GCGCCGAAGC AGGACCCGAA GCCTAAATTC CAGGAGGTTG GGATGAATGG GTTCCGGAGA GCAGAGTACT CAAATACGTG GACACCAATT TGCAGAAACA GCGAGAATT CAAAAAGCCA ATCAGGAGCA GTATGCAGAG GGGAAAGATGA GAGGGGCTGC CCCAGGAAAAG AAGACATCTG GTCTGCAACA GAAAAATGTT GAAGTGAAAA CGAAAAAGAA CAAACAGAAA ACACCTGGAA ATGGAGATGG TGGCAGTACC AGTGAGACCC CTCAGCCTCC TCGGAAGAAA AGGGCCCGGG TAGATCCTAC TGTGAAAAT GAGGAAACAT TCATGAACAG AGTTGAAGTT AAAGTAAAGA TTCTTGAAGA GCTAAAACCG TGGCTTGTG ATGACTGGGA CTTAATTACC AGGCAAAAAC AGCTCTTTTA TCTTCCTGCC AAGAAGAATG TGGATTCCAT TCTTGAGGAT TATGCAAATT ACAAGAAATC TCGTGGAAC ACAGATAATA AGGAGTATGC GGTTAATGAA GTTGTGGCAG GGATAAAGA ATACTTCAAC GTAATGTTGG GTACCCAGCT ACTCTATAAA TTTGAGAGAC CACAGTATGC TGAAATCTT GCAGATCATC CCGATGCACC CATGTCCCAG GTGTATGGAG CGCCACATCT CCTGAGATTA TTTGTACGAA TTGGAGCAAT GTTGGCTTAT ACACCTCTGG ATGAGAAGAG CCTTGCTTTA TTAACAATT ATCTTCACGA TTTCTTAAAG TACCTGGCAA AGAATTCTGC AACTTTGTTT AGTGCCAGCG ATTATGAAGT GGCTCCTCCT GAGTACCATC GGAAAGCTGT GTGAGAGGCA CTCTCACTCA CTTATGTTTG GATCTCCGTA AACACATTTT TGTCTTAGT CTATCTCTTG TACAAACGAT GTGCTTTGAA GATGTTAGTG TATAACAATT GATGTTTGT TCTGTTTGA TTTTAAACAG AGAAAAAATA AAAGGGGGTA ATAGCTCCTT TTTTCTCTT TCTTTTTTTT TTTCATTTCA AAATTGCTGC CAGTGTTTTC AATGATGGAC AACAGAGGGA TATGCTGTAG AGTGTTTTAT TGCCTAGTTG ACAAAGCTGC TTTTGAATGC TGGTGGTTCT ATTCTTTTGA CACTACGCAC TTTTATAATA CATGTTAATG CTATATGACA AAATGCTCTG ATTCTAGTG CCAAAGGTTT AATTCAGTGT ATATAACTGA ACACACTCAT CCATTTGTGC TTTTGTTTT TTTTATGGTG CTTAAAGTAA AGAGCCCATC CTTTGCAAGT CATCCATGTT GTTACTTAGG CATTTTATCT TGGCTCAAAT TGTGAAAGAA TGGTGGCTTG TTTTATGGTT TTTGTATTTG TGTCTAATGC ACGTTTAAAC ATGATAGACG CAATGCATTG TGAGCTAGT TTTCTGGAAA AGTCAATCTT TTAGGAATTG TTTTTCAGAT CTTCAATAAA TTTTCTTTT AAATTTCAAA GAACAAAAAA AAAAAAAA	39
<i>MORF4</i> <i>9</i>	NM_0 14763. 3	GTAGTCTTGA CGTGAGCTAG CTGGCATGGC GGCCTGCATT GCAGCGGGGC ACTGGGCTGC AATGGGCCTA GGCCGGAGTT TCCAAGCCGC CAGGACTCTG CTCCCCCGC CGGCCTCTAT	40

[0152]

	CGCCTGCAGG GTCCACGCGG GGCCTGTCCG GCAGCAGAGC ACTGGGGCCTT CCGAGCCCGG TGC GTTCCAA CCGCCGCCGA AACCGGTCAT CGTGGACAAG CACCGCCCCG TGGAAACCGGA ACGCAGGTTT TTAGTCTCTG AATTCATTCC TCGAAGGGGA AGAACAGATC CTCTGAAAT TCAAAATAGAA AGAAAAGATA TGTTAGAAAAG GAGAAAAGTA CTCCACATTC CAGAGTTCTA TGTTGGAAGT ATTCTTCGTG TTA CTACAGC TGACCCATAT GCCAGTGGAA AAATCAGCCA GTTCTGGGG ATTTGCATT AGAGATCAGG AAGAGGACTT GGAGCTACTT TCATCCTTAG GAATGTTATC GAAGGACAAG GTGTCGAGAT TTGCTTTGAA CTTTATAATC CTCGGGTCCA GGAGATTCTAG GTGGTCAAAT TAGAGAAAACG GCTGGATGAT AGCTTGCTAT ACTTACGAGA TGCCCTTCTT GAATATAGCA CTTTTGATGT GAATATGAAG CCAGTAGTAC AAGAGCCTAA CCAAAAAGTT CCTGTTAATG AGCTGAAAGT AAAAAATGAAG CCTAAGCCCT GGTCTAAACG CTGGGAACGT CCAAATTTTA ATATTAAGG AATCAGATTT GATCTTTGTT TAACTGAACA GCAAATGAAA GAAGCTCAGA AGTGAATCA GCCATGGCTT GAATTTGATA TGATGAGGGA ATATGATACT TCAAAAATTG AAGCTGCAAT ATGGAAGGAA ATTGAAGCGT CGAAAAGGTC TTGATTCTGA GAATGAATTT GGTTAGTTGC AGAAGATACA TTGGCTCTAA GAGGATATAT TTTGAGACCA ATTAAATTTT ATTTATAAGA ACATAGTAAT TAAGTGAAC T AAGCATTCTAT TGTTTTATTA ATACTTTTTT TCTAAATAA AACTTGTA CAAGTTTATT ACTCTAAAA GAGAATTACA CATGCCAAAT GGACCAATGT CCATTTGCTT ATTGGAGGCA AAGCTACAAT AGAAGTCAGA GCATCACCAG AATGGTCTTT AATGAGCATG GAACCTGAGC AAAAGGGAATA GGTGGGATGA ATTTTTTTTT TAATTGTGAA ACAATTCATA AGCACAATAT GATTACAGA ATAATAAACA TTCATGTACC CACTATCAGG TTAAGAAATA GAACATTTAT TAATATGTAG GAATGTTAAG AAATAAAACA TTTAATAAGA TCTCAGAAGA CTCCAGTAAA TCTGCAATTG TATCTCTCTC CTTTTTAAAT GTAAATATCA TCTTGACTTG TTAATTATTC CCTTGCATTT CTTTTAGTTT ACTGCCAACA CATATATTCT TCAACAATAT ATTTAATTTT GAAAAACCTG AAAAAAAAAA CCTGTTAGCA AGTATAAAGG GGCAGTATTA CTATTATTGC ATGAAGGCTT CAAGGGAAAC GTTACAGTCT TTGGGTCTATA GTCTGGCTTC AGCTTCTCTT GAGAGTTTAC AGAGGCCAAT TTGAGCAAA TTCATGGCTA AGGTATGAG TGAGTTCTGC TAAACAGAAG GCTCACCACA AGGTATCTGG CAGGATTATA CTGGGTAGCT GGATGTTGCA GAAATGTGGT TAGAGGAAGT AAACGTGTTT TTGATGCTCA CAGCATGATG AATCAAACTC TGTATCTTAG GATTAGGTTA AAACAATACC TTTGGTATGA TATGAGTGTT GTTGCTGATC CATGCAGCAT GGATTGGAAA GCTGGGGTAT AAGCACACAT GCTAAAGAAA AACATGTAAT TTGGTCCATA CTCACCTGGA TATACTGTTT CTCAGGTTAA AAAATACAGT ACTATCCTAA ATCTTGAAGG CAACCTCTCAG CCTATCCATT GAGTTACCTT CAGATCTGCC CTCGGTTCC TAGCTGTCTT	
--	--	--

[0153]

	GGGACTAACTTCCTTCTGC GCTCAGCTGT TTTCTGGATT CCATGTTTTT CATTTTTATTG AGTACTAACT TGTTTTGCTG CAGCACATCC TTTGGTAGCT TCTAGAGGAA GTTTGTGTGG AGGTAAAATT TTTGAGACCT TGCATGTCTC ATGTTTGATT GATACTTTAT ACGTTTAGGT AGGAGGTAAT TTTCCCTCAG GACTTTAAAA ATATTGTTCG TCCATTTTCT TGTCTCTAT TGTTGTATTG AGAAATCCAA TGCCATTTTG ATTTCCCAT CATAAATTTT ATGATGATGT GTCTTGGTGT GGGTCTATAT TTATCCATTG TATTGGGTTT TAGGTGAACC CTTCAGATA GTAACCTATT TCTGTCAGTT CTGGGAAACA CTTAGCATTG GTTGATGATT TATTCTCTGC TGCTTTGTTT TCCCAACTAT TATTGGATG TTGGATATCC AGCACTGGGT ATCTATTTTC TTACCTCCCT CCCTTGACCC CAGTCTCTGT TTTTGTAGCTC TTAGCTCAA TCTTCCAACCT CTTGCTATT GTATTTTAAA ATCTTAAGAC CCCTTCTTGA TTTGTAGAAG TTCCTTTTCT TACAACCAAA AAGCCTTTAT CTATGGATTT GTTCACAGAT AAGGGGTATT CAATATAGTG TATTTTTTTT TCATTTAAAA TTGTTTGGCG ATCTATTTCC TCCAAATTTT TTTCTGTATT TATTTTTTGT TGCTATATT TCAGACTTTT CCAGGATATC TGATAATCTT TGGCTGTCTT CTTATGGTTG AAAGAGGGAC TAAAAAGCTT GGAAAGCCTT TGGGTTGTGG GAAGGGGCTG TCTTTAGGAT TATCTGAATG GGCTTTTITG GGAGTCCCT CCTCCACATG AATATTTTGG TTTGTGAGA TTCCCTAGAA TAGAGGGCTC CAATCTCCTT CCTGGAGGGG TCTGTCCAGG AAGGAGATTG TCTAGGGGTC TGTCAGACAG CAGCTTTTCT CTACTTCCTT GATCTTTTTC ACTAATGATT ATATAGTCAT CTAACTACTG TCAACAAGTA ATAGATATCC TATCCTTCAC TTGTTTAGAT TATTTGCTGA GATAACCTCT CAAAAGAACC TCTCAAAAATA AAAGGTAAAC AAGAGCCTAT ATCTTATATT TTTCTTCTCT TTATCTTGT AGAAGATAGC TATTTAAACC TGTTCTTTTT CTGTCTTGAT AAACACACTT CAATCTTGGT AGAATGGTAG ATGGGACAGT ATATTTTAGG ACCTAAAGCT CTGCAAATGT ATGATCAGCT TGTAAGTACA GGTGCTCAA AACATGTAAA CAATCATGCT TTTTACTCTG TAGGAATATC TTTAAAAATC TTGTGAATTT TTCCCCAGAA GTAAAGCAAA TCTTCCCCCA GAAATAAAAT TAAATGTGCA TAATCTAAAG CTTTTTTTTT TTATTGTGGT AGGATATATA TATAAAACAT AATTGCCAT TGTAACATT TTAATTTTAC AAGTCAGAGG CATTAATTAC ATCACAATGT TGTGAAATTA TTACTACTAT TTCCAAAATT TTCTCATCAC CCCAACTGA AACTCTGTAA CTGTTGAGCA ATAACCTCAT TCCTGTATCT CTCCCAACCC CAGGTAACCT CAAATCTTTC TTTTATCTT TGAGACAAGG TCTCATTCTA TCACTCAGGT AGGAGTGCAG TGGTGTGATC ATAGCTCATT GCAGCCTCAA AATCCTGGGC TCAAGCAATC CTCCTTGAGT AGCTAAGACT ATAGGCACAC ATTAAGTGG CCGGGCTGAT TTTGTTTTTT GTAGAGATGT GGTCTTGCTA TGTTTCCCAT GCTGGTCTTG AGTTCCTGGC CTCAAGCAGT CCTAAGATT CATCCATGTT GTGGCATGTG TCAGAATTTT	
--	--	--

[0154]

	ATTTGTTTT ATGACTAAAT AATATTCCAT TGTATGTATA TACATTTTTG TCATCCATCT TCTGATGAAC ACTGGGATAT GTCTACCTTT TGGCTATTGT GAATAATGCT GCAGTAAACA TTGACATAAC AAGTATGTAT TTGATTGCCT GTTTCTAAGT TCTTTTGGGT ATACATCTTG AGTAGAATTG CTAGATAATG TCATGTTTTA TTTCTCTTGT GATTCTTCT TCGATCCCC GGTGAGTGT GTTAATTTCT ACATGTTTAT GAATTTCCCA CTGTTTTTTT GTTATTGATT TCCAAGTTCA TTCCATTGTG ATTAGAGAAG ATACTTAGTA TGATTTTAAT GTTTTIGAGA ATTGGTGTGT GGCCTGATAG ATGGTCTGTC CTGGAGAATG TTCCTCATAC ACTTGAGCAA AATATTTATC ATGCTATTGT TGACTGTAGT TTTCTATATG TCTCTTAGGT CAAGGTGGTT TACAATGTGT TAAGGTTCTC TTTTTTAAA AAAATTTTTG CACAGAGTAT CTTTTCTAT GTGTCCATG TATTTGTGTC TTTGGAGCTA TAGTCTCTTG TAGACAGCAT ATCACTATCT TGTTTGTGTT TGTTTTTCT GTCCATTCTG CCAATTTCTG CCTTTTGATT GGAAAATTTA ATCCATTTGC ATTTAAAGTA ATTAAGGAAG GACTTCTTC TACCATTTAA CACTTCTTCT ATATGTCATA TACTTTTTTG GCCCCTCATT TCCTCTTAT GGCCTTCTTT TCTGTTTTTT TGTAGTGAAC TAGTCTGATT CTCTTCCAC TCCCCTTGT GTATATTTGT TAGATGTTTT ATTTGTGGTT GCTATGGGGA TTATAGTTAA CATCCTACAC TTTAAACAAT CTAATTTAAA CTGATACCAA TTTACCTCA ATAGCATACA AAATCTCTAC TCCTGTAAAG CTCTGCCCT GCCCCCTTA TGTTATTGAT GGCACAAAT GCCTAATAAA TAATTTATAG TTATTTGTAT GAGTTTGTCT TTTAAATCAT TTAGGAAATA AAAAGTGGAG TTAGAAAACA GTATGATAGT AATACTGACT TTTATATTG TCAATATATT TATCTTATT TGGATCCTTA TTTCATTATA TAGATTTGAG TTAGTGTCTA GTGCCCTTC ATTTCCGGCC AAAGGATTCC CTTATGCATT TCTTGCAGGG CAAGTCTAAT TGTAATAAAC TCCCTCAGCT TTTGTTTTAT CTGAGAATGT CTGATTTCT CCCTTATTTT TGATGGATAA TTTTGCCAGA TACATGAATT TTTGGTAAAC GTATTTTCT TTCAGCACTT TAAATATGTC ATCCCACTAC CTTCTGACTT CATGGTTTCT CATGAGATAT TAGATGTTAT AAAATTIGAG GATTCTCAT TCTTGATGAG TCAGTTCTGT CTTATTGCTT TTCCGATTTG CTCAGCTTTT GTCTTTTGAC AGTTTGATTA TAACGCGGCT CAGTGTGGGT CTCTGAGTTT ATCCCACTTA GAGTTTGTG AGTTTCTTGG AGTCATAGAT TTATGTCCTT TATCAAATTT TGGACAATT TGGCTATTAT TTCTTCAATT TTTTTCACTG CTCTTTCTT TTCTTCTGA AATATTCTTA ATGTATATGT TGGTCTGTTT GATGCTGTCT CACCAGTTT TTAGGCTGTG TTCTCTTTG TTCCTCAGAC TTGATTATTG CAGTTGCCCT TCTTTTATT TTTTCAAGT TTGTTGATT TCTCCCTGT TCAGATCAAC TGTTGAACTC CTCTAGTGAA TTTATTTTCT TTAGTGTACT TTTAGCTCC AAGATTTATC TTTGGTTCT TTTATAACG TCTGTGTCTT TATIGATATT CTCATTTTGT TCATATGICT CTCTCTCTT	
--	---	--

[0155]

	TTAGTTCCTTT GTCCATGTTT TCCTTTAGCT CTTTGGGCTT ATTTAAGACA ATTGTTTAAA GTCTTTGCAT AGTAAGTCCA ATGTCGTGTG TTCTTCAGGG ATGGTTTTCA TTATTTTGT TTCAATGAGC CATACTTTCC TGTGCTTTG TATGCTGTCT TTTTGTGTG TAAAACTGTA TGTTTGAACA TCATAACGTG GTGGCCCTGA AAATCAGATA TTCCCCCTT CCTGAGAGTT AGTTTTATTT TTATTATTGA AGATTGTAGC AGTCTATTGC TACATGTGCA GTCATTTCCA AACTATTTTT GCAAAGACTG TATTCCTTCT GTGTGTCATC ACTGAAGTCT CTGTTCTTA GTTTGTGTTT AATAGTTTGA CATAGATTTC CTTGAAAGGA GTTAAACTA GCAGAAAAAT CTCTCTCCCA GTCTTTCCAG TCTTTGTAGA TTGGTTCTGT GCTGGGCTT TCCATTAATA CTTAGCCAGG CTTGTACTGA GCCTAACAAT CAGGCCAAA AGCGTAGGGT CTTGCAGAT CTGTCTGAG CATGCTTCTT GCTGTGTATG CACGTAGTTT TCTAAATCTC CCTGTATGTG CTGTTGAATA TTCTAATTTT CCAAAGAAAC TCCTTTGCAG CTTTTTCTCA CAGAACATAG ATGGTTTTTT GGATATCTTG ACCATAGTCT TTCGACCCAG GTGTTTGCGG TTGTTAGTTC ACCTTACACT TTTTCAAGC ATTGCCTACT GCTTACGATG AGTGCTCTGT CAATCCTTTA AGTAGCCCCA GACAGGCTAC CAGAGACTTA AACAAGAATT TGTAAGTTCT GCTCAGCTTC CTCTAGAAAT GGGGATCAGG GTCCAAGACA GAATGCAGTT GCTGATTTCA AGACTGCTGC AACACCAGGG AGCTTGTGGG GGAAGGGCAA GCAGAAATGT CACAAAGCTT TCTTGCCATT TAAAGTTGC CTGTTCTTGA CTCAGCATTT GCTTCATTGC TATAAACTT TTACTGTTTT TCAGAGTTCT GATAAAATTG GCTATGCCG TTCTGCTTT AAAAAATATA TATATATTTT TTAGGGATTG GGGTCTCACT ATACTGACCA GGCTGGTCTT GAACTTCTGG CCTCAAGCCA TCCTCTCATT TCAGCTTCCC AAAGTGCTGC AATTACACGC GTGAACCACC ACACCCAGCC CCTGCTTGT TTTCAATGTG CCTACTCCAC CATGTTGCTC AAGTATGTAT ATTTTCTAAA CTACCTTGTA GTGTTGTGAT GGGAAATAAA TCCCTGAGCC TTTTGAATAA CTCAGAGAGA TCAAAAACCT AGTTTATCCT ATTCTGAAGGA TTAGAAAAAT GATATATCTT TCACTTTTTC AGGGATAGGC TCCTCATTAG AAGGCTCCTA TGTGCCGATG CTGTACAAGA CATTTCATTT CTCTAATGT TTACAACAAG CTTGTTGCCA AGGCTGATCT TGAACCTCTG GCCTCAAACG ATCCTCCCAG CTCAGTCTCA CAAAGTGTG GGATGCTGG CCAACTAATG ACTATCTTAA CTCTGTGTT TCAATGTTTA TGCCTTCTTT TATCTTGACT GATTGATGA CTATGTCCTC TAGAACAATG TTGAACAGAA ATGGTGAGAG CAGACATCCT TGCTTTAATA TTTACCATTT ATATATGATG TTAGGTATAG ATTTTCTCA CAGATGCCTT TTATCAGATT GAGGAATTTA TATTCCTACT TTGCCGAAAG GTTTTTGTAG TATGAGGGGG TGCTGAATTT TGTCAAACAC TTTTTCGGTA ATAATTGAGA TGATTGGTTC TGCAGTCATC GAGATGTGGA TTTTCTCCTT TATTCTGTTT GTGAGTGATT ACACTGGTTG ACTAATGTTA AAACAACCTT ACTTTCAGG	
--	--	--

[0156]

		AATAAACCCCT ATTATCTTTT TTATACA	
PSMC4	NM_1 53001. 2	TGCGGGTACG GACAGCGCAT GAGCTTATGT TGAGGGCGGA GCCCAGACCA GCCCTTCGTC CTATCCTGCC CTTCCAGCAC C'CTCAGCCG TAACTTAAAC TACACTTCCC AGAAGCCTCC TCAGCCAGGG ACTTCCGTTG TCGTCAGCGG AAGCGGTGAC AGATCATCCC AGGCCACACA GAGGCCGGCT TGGTCACTAT GGAGGAGATA GGCATCTTGG TGGAGAAGGC TCAGGATGAG ATCCCAGCAC TGTCCGTGTC CCGGCCCCAG ACCGGCCTGT CCTTCCTGGG CCCTGAGCCT GAGGACCTGG AGGACCTGTA CAGCCGCTAC AAGGAGGAGG TGAAGCGAAT CCAAAGCATC CCGCTGGTCA TCGGACAATT TCTGGAGGCT GTGGATCAGA ATACAGCCAT CGTGGGCTCT ACCACAGGCT CCAACTATTA TGTGCGCATC CTGAGCACCA TCGATCGGGA GCTGCTCAAG CCAAACGCCT CAGTGGCCCT CCACAAGCAC AGCAATGCAC TGGTGGACGT GCTGCCCCCC GAAGCCGACA GCAGCATCAT GATGCTCACC TCAGACCAGA AGCCAGATGT GATGTACCGG GACATCGGAG GCATGGACAT CCAGAAGCAG GAGGTGCGGG AGGCCGTGGA GCTCCCGTC ACGCATTTTC AGCTCTACAA GCAGATCGGC ATCGATCCCC CCCGAGGCGT CCTCATGTAT GGCCACCTG GCTGTGGGAA GACCATGTTG GCAAAGGCGG TGGCACATCA CACAACAGCT GCATTCATCC GGGTCGTGGG CTCGGAGTTT GTACAGAAGT ATCTGGGTGA GGGCCCCCGC ATGGTCCGGG ATGTGTTCCG CCGGCCAAG GAGAATGCAC CTGCCATCAT CTTCATAGAC GAGATTGATG CCATCGCCAC CAAGAGATTG GATGCTCAGA CAGGGGCCGA CAGGGAGGTT CAGAGGATCC TGCTGGAGCT GCTGAATCAG ATGGATGGAT TTGATCAGAA TGTCAATGTC AAGGTAATCA TGGCCACAAA CAGAGCAGAC ACCCTGGATC CGGCCCTGCT ACCGCCAGGA CGGCTGGACC GTAAAATTGA ATTTCCACTT CCTGACCGCC GCCAGAAGAG ATTGATTTTC TCCACTATCA CTAGCAAGAT GAACCTCTCT GAGGAGGTTG ACTTGGGAAGA CTATGTGGCC CGGCCAGATA AGATTTCAGG AGCTGATATT AACTCCATCT GTCAGGAGAG TGGAAATGTTG GCTGTCCGTG AAAACCGCTA CATTGTCTTG GCCAAGGACT TCGAGAAAAGC ATACAAGACT GTCATCAAGA AGGACGAGCA GGAGCATGAG TTTTACAAGT GACCCCTCCC TTCCCTCCAC CACACCACTC AGGGGCTGGG CCTTCTCTG CACCCCCAGC ACCTCTGTCC CAAAACCTCA TTCCCTTTTT TCTTTACCCA GGATTGGTTT CTTCAATAAA TAGATAAGAT CGAATCCATT TAATTTCTTC TTAGAAGTTT AACTCCTTTG GAGAATGTGG GCCTTGAATA GGATCCTCTG GGTCCTCTT AATCTGACAG ATGAGCAGAC GAGGTGCATG GCCTGGGTTG CAGCTTGAGA GAACCAAAAT ATTCAAACCA GATGACTTCC AAAATGTGGG GAAAGGGATG GAAAATGAAC CTGAGATGGA GTCCTTAATC ACGGGATAAA GCCCTGTGCA TCTCCCTCAT TTCCTACAGG TAAAAGACAG TAAAGAAATT CAGGTCACAG GCCTTGGGAG TTCATAGGAA GGAGATGTCC AGTGCTGTCC AGTAGAACTT T	41

[0157]

SF3A1	NM_005877.5	GGTCCCGGAA GTGCGCCAGT CGTACCTTCG CGGCCGCAAC TCGCTCGGCC GCCGCCATCT TCGAGGCTCG TCGTACTGAC CGAGCGGGGA GGCTGTCTTG AGGCGGCACC GCTCACCGAC ACCGAGGCGG ACTGGCAGCC CTGAGCGTCG CAGTCATGCC GGCCGGACCC GTGCAGGCGG TGCCCCCGCC GCCGCCCGTG CCCACGGAGC CCAAACAGCC CACAGAAGAA GAAGCATCTT CAAAGGAGGA TTCTGCACCT TCTAAGCCAG TTGTGGGGAT TATTTACCTT CCTCCAGAGG TCAGAAATAT TGTTGACAAG ACTGCCAGCT TTGTGGCCAG AAACGGGCCT GAATTTGAAG CTAGGATCCG ACAGAACGAG ATCAACAACC CCAAGTTCAA CTTTCTGAAC CCCAATGACC CTTACCATGC CTAATACCGC CACAAGGTCA GCGAGTTCAA GGAAGGGAAG GCTCAGGAGC CGTCCGCCGC CATCCCCAAG GTCATGCAGC AGCAGCAGCA GACCACCCAG CAGCAGCTGC CCCAGAAGGT CCAAGCCCAA GTAATCCAAG AGACCATCGT GCCCAAAGAG CCTCCTCCTG AGTTTGAGTT CATIGCTGAT CCTCCCTCTA TCTCAGCCTT CGACTTGGAT GTGGTGAAAG TGACGGCTCA GTTTGTGGCC AGGAATGGGC GCCAGTTTCT GACCCAGCTG ATGCAGAAAG AGCAGCGCAA CTACCAGTTT GACTTCTCC GCCCAGCA CAGCCTCTTC AACTACTTCA CGAAGCTAGT GGAACAGTAC ACCAAGATCT TGATTCCACC CAAAGGTTTA TTTTCAAAGC TCAAGAAAGA GGCTGAAAAC CCCCAGAGAAG TTTTGGATCA GGTGTGTTAC CGAGTGGAAT GGGCCAAATT CCAGGAACGT GAGAGGAAGA AGGAAGAAGA GGAGAAGGAG AAGGAGCGGG TGGCCTATGC TCAGATCGAC TGGCATGATT TTGTGGTGGT GGAAACAGTG GACTTCCAAC CCAATGAGCA AGGGAACCTC CCTCCCCCA CCACGCCAGA GGAGCTGGGG GCCCGAATCC TCATTAGGA GCGCTATGAA AAGTTTGGGG AGAGTGAGGA AGTTGAGATG GAGGTTCGAGT CTGATGAGGA GGATGACAAA CAGGAGAAGG CGGAGGAGCC TCCTTCCCAG CTGGACCAGG ACACCCAAGT ACAAGATATG GATGAGGGTT CAGATGATGA AGAAGAAGGG CAGAAAGTGC CCCCACCCCC AGAGACACCC ATGCCTCCAC CTCTGCCCCC AACTCCAGAC CAAGTCATTG TCCGCAAGGA TTATGATCCC AAAGCCTCCA AGCCCTTGCC TCCAGCCCCCT GCTCCAGATG AGTATCTTGT GTCCCCCATT ACTGGGGAGA AGATCCCCGC CAGCAAAATG CAGGAACACA TGCGCATTGG ACTTCTTGAC CCTCGCTGGC TGGAGCAGCG GGATCGCTCC ATCCGTGAGA AGCAGAGCGA TGATGAGGTG TACGCACCAG GTCTGGATAT TGAGAGCAGC TTGAAGCAGT TGGCTGAGCG GCGTACTGAC ATCTTCGGTG TAGAGGAAAC AGCCATTGGT AAGAAGATCG GTGAGGAGGA GATCCAGAAG CCAGAGGAAA AGGTGACCTG GGATGGCCAC TCAGGCAGCA TGGCCCGGAC CCAGCAGGCT GCCCAGGCCA ACATCACCCT CCAGGAGCAG ATTGAGGCCA TTCACAAGGC CAAAGGCCTG GTGCCAGAGG ATGACACTAA AGAGAAGATT GGCCCCAGCA AGCCCAATGA AATCCCTCAA CAGCCACCGC CACCATCTTC AGCCACCAAC ATCCCCAGCT CGGCTCCACC CATCACTTCA GTGCCCCGAC CACCCACAAT GCCACCTCCA GTTCGTACTA	42
-------	-------------	--	----

[0158]

	CAGTTGTCTC CGCAGTACCC GTCATGCCCC GGCCCCCAAT GGCATCTGTG GTCCGGCTGC CCCCAGGCTC AGTGATCGCC CCCATGCCGC CCATCATCCA CGCGCCCAGA ATCAACGTGG TGCCCATGCC TCCCTCGGCC CCTCCTATTA TGGCCCCCG CCCACCCCCC ATGATTGTGC CAACAGCCTT TGTGCCTGCT CCACCTGTGG CACCTGTCCC AGCTCCAGCC CCAATGCCCC CTGTGCATCC CCCACCTCCC ATGGAAGATG AGCCCACTC CAAAAACTG AAGACAGAGG ACAGCCTCAT GCCAGAGGAG GAGTTCCTGC GCAGAAACAA GGGTCCAGTG TCCATCAAAG TCCAGGTGCC CAACATGCAG GATAAGACGG AATGGAAACT GAATGGGCAG GTGCTGGTCT TCACCCTCCC ACTCACGGAC CAGGTCTCTG TCATTAAGGT GAAGATTTCAT GAAGCCACAG GCATGCCTGC AGGGAAACAG AAGCTACAGT ATGAGGGTAT CTTCATCAAA GATTCCAAC CACTGGCTTA CTACAACATG GCCAATGGCG CAGTCATCCA CCTGGCCCTC AAGGAGAGAG GCGGGAGGAA GAAGTAGACA AGAGGAACCT GCTGTCAAGT CCCTGCCATT TTGCCTCTCC TGTCTCCAC CCCCTGCCCC AGACCCAGGA GCCCCCTGA GGCTTTGCCT TGCCTGCATA TTTGTTTCGC TCTTACTCAG TTTGGGAATT CAAATTGTCC TGCAGAGGTT CATTCCCCTG ACCCTTTCCC CACATTGGTA AGAGTAGCTG GGTTTTCTAA GCCACTCTCT GGAATCTCTT TGTGTTAGGG TCTCGATTG AGGACATTCA TTTCTTCAGC AGCCCATTAG CAACTGAGAG CCCAGGGATG TCCTACAGGA TAGTTTCATA GTGACAGGTG GCACTTGGCT AATAGAATAT GGCTGATATT GTCATTAATC ATTTTGTACC TTGACATGGG TTGTCTAATA AAACCTCGGAC CCTTCTTGTG AAATCAGTTA AATAAGACTT GTCTCGGTCA CCTGTGCCCT GTCCAGACTC GAGGCAGTGG TAACACTGCA CAGTGCTATG TGGCTTCTCT TTGAGGATT TTGGGTTTTG TAACTAAATT CTTGCTGCCC TCATACTTTT TATGTATTAG AATCATATTC GTATTGCCCT TTTAAAACAT TGGGATCCTC CAAAGGCCCTG CCCCATGTAT TTAACAGTAA TACAGGAAGC ATGGCAGGCA CCATGCAAAC CAAGGATGGA TGGTGCAGTC CCTGTGTCAG TGGGCGGTGG TTTCCTGCTG GCCTGGAATC ACTCATCACC TGATTGATTG GCTCTGTGGT CCTGGGCAGG TGCCTCATAG GTGTGTGGAT ATGATGACGT TTCTTTAAAA TGTATGTATT TAACAAATAC TTAATTGTAT TAAGGTCATG TACCAAGGAT TTGATAAAGT TTAAATAAAT TACTCTCTAC TTTTATCCAT TTTATCCATT TTAACTCATG TAATCCTCAT GTGAGTATTC CTGTTTAAAC CTTGAGTAAA CTGAGGCACA GAGAACATAA GTTGTCATGCC ATAGTCACAC ACTGTGAAAG TGAAAAGAGA ATGTGTGCAA AACACGTCAC AGTCCTGGTT TCTGAGTAAA GGCAGGCTGT TATCTTTAGA ATCAAGCTAT CACAGGGAGA TAGGCAATGC TGTGGGTGTT GGAGGAAGGT GAGAGCCTGT TGCTAACAA TTCTTGGTTT TAAAGCTAAG GCTGATTTTA TTGGGAAGAT CTCACATGTG TGTGGCCCCC GAGAGTTCCC AGTGCCTTT ATTTGCAGTC CTTCCATTG GACCTCCTAG CTGCCCCATC AGGTCATCTC CAGGGCTCAG AGGGGTGAGA CCATTTCCTCA	
--	---	--

[0159]

		AGGTCACAGA ACCAGCTCTC TAGTCACCAC CCTGCCTCTC CCTCTCACCC AGAGTCAGTA CCAGTTTTAT GGCCTTATTA CAAACIGCTG GGTCCCTCCC ATTTTCAACT TGATTGATGG GATGTTCATCC CTTATCCTGT CTGACATTTC CCTCTGGCCT GGTTGCTAGA AGTTTGCCCC AGGGGCAAGA GTTGAAATTT GGCTTCCTGA GGTGGGCTTT GTGGTTTGCG TCCCTAAAGT GAGCCCCA CTGGTTGCTT GTCCATGGCC AACACCAGAA ATCCCTGAG CACTACCTGG GTCTCATTCC AAGAAGGAAG AGGGTCAGGA GACCTGGGGA GTCTCATATT CCAAGTTCTT CTTTCTTTCT GGGAGCAGTG GGCAGTTCAT GGTGTTAGGG CACTACCCCC CACAGACTGG CAAACCCTGC AGGACTTCCG TGGCTGAGGC TGTGACCGGA GGCCAGGAAT GCCGTGGGT GGATTGTGAG TGAATGGGCC CTTTGAGCTG CCTCTAGAG AGCAAATCCA GTTTCCTGGA GCTCCTGAAT GAATATCTGT ACTGGCTCGC TCAGATGCAG AAGCTCCATT GACCATGAGG CCTTGTGAAC ATCAGTGGCC ACAGGCCAG TGTGCTGCTT GGCACTGCAC TAGTTTAGGA CCTGCAGCAT GTAGGTAGCG TCCTAGTGTT TATAATACAA AGCTGCTCTG CACAGCTTTT CTGATTCTTC TTGCAATCTC CTGAGGATTA TCTGCCCAT TTTTAAAACG AGGTGGAATA CCCAAGGTCA TGTAAGCCAGT GAGTGTCTTG GAAAGCCAAA GCAGCTCATC CCTTCTGGG GACCACACTG CTCTGCTCCA CCAGACCACA CTATGAAATA GGAATAAGTG CTCCTGTTGC AGGACTGCTG GGAAAACAGG TGGTGTGGGA CTAAAGTCAC CATAATTTTG AAGACTTGCA TGCAGAGGGC TCCAGGAATT GTAGACATTA AGGAATTTCA CTTTCAGTTC TACCCACTAC TTAAGTACTT GTCATGTACT CTTAGAGGAG GCCAGTAATG ATCAGAACCA TTTTACTTTA AAATTAATAA TATTGTATTA GAGAATATAT TAAATGGTTA TATTGGGTTA TGTTAGGATA TATACTTGAA TGGAATACA TGTAATATTA GCAATCATAT TTCATTTATC CCTGTAATTA GACAAGAAAAG CATAATATAG CTCTACTCAT GGGTACACAT ACCAGTGTAT AAGATTTTTA GAAGTTTACT TTTTAAAAAT AAAAGCAAAA TGTAAGATCT TAAAAAAAAA AAAAAAAAAA	
PUMI	NM_010206 58.1	AGTGGGCCGC CATGTTGTCG GAGTGAAAAGG TAAGGGGGAG CGAGAGCGCC AGAGAGAGAA GATCGGGGGG CTGAAATCCA TCTTCATCCT ACCGCTCCGC CCGTGTGGT GGAATGAGCG TTCATGTGT CTTGAAGAGA AAAGCAGTGC TTTGGCAGGA CTCTTTCAGC CCCCACCTGA AACATCACCC TCAAGAACCA GCTAATCCCC ACATGCCTGT TGTTTTGACA TCTGGAACAG GGTCGCAAGC GCAGCCACAA CCAGCTGCAA ATCAGGCTCT TGCAGCTGGG ACTCACTCCA GCCCTGTCCC AGGATCTATA GGAGTTGCAG GCCGTTCCTA GGACGACGCT ATGGTGGACT ACTTCTTTCA GAGGCAGCAT GGTGAGCAGC TTGGGGGAGG AGGAAGTGGA GGAGGCGGCT ATAATAATAG CAAACATCGA TGGCCTACTG GGGATAACAT TCATGCAGAA CATCAGGTGC GTTCCATOGA TGAAGTGAAT CATGATTTTC AAGCACTTGC TCTGGAGGGA AGAGCGATGG GAGAGCAGCT CTTGCCAGGT AAAAAGTTTT GGGAAACAGA TGAATCCAGC AAAGATGGAC	43

[0160]

	CAAAAGGAAT ATTCCTGGGT GATCAATGGC GAGACAGTGC CTGGGGAACA TCAGATCATT CAGTTTCCCA GCCAATCATG GTGCAGAGAA GACCTGGTCA GAGTTTCCAT GTGAACAGTG AGGTCAATTC TGTACTGTCC CCACGATCGG AGAGTGGGGG ACTAGGCGTT AGCATGGTGG AGTATGTGTT GAGCTCATCC CCGGGCGATT CCTGTCTAAG AAAAGGAGGA TTTGGCCCAA GGGATGCAGA CAGTGATGAA AACGACAAAG GTGAAAAGAA GAACAAGGGT ACGTTTGATG GAGATAAGCT AGGAGATTTG AAGGAGGAGG GTGATGTGAT GGACAAGACC AATGGTTTAC CAGTGCAGAA TGGGATTGAT GCAGACGTCA AAGATTTTAG CCGTACCCCT GGTAAATTGCC AGAACTCTGC TAATGAAGTG GATCTTCTGG GTCCAAACCA GAATGGTTCT GAGGGCTTAG CCCAGCTGAC CAGCACCAAT GGTGCCAAGC CTGTGGAGGA TTCTTCCAAC ATGGAGTCCC AGAGTGTCCC CTTGGACCCC ATGGAACATG TGGGCATGGA GCCTCTTCAG TTTGATTATT CAGGCACGCA GGTACCTGTG GACTCAGCAG CAGCAACTGT GGGACTTTTT GACTACAATT CTCAACAACA GCTGTTCCAA AGACCTAATG CGCTTGCTGT CCAGCAGTTG ACAGCTGCTC AGCAGCAGCA GTATGCACTG GCAGCTGCTC ATCAGCCGCA CATCGGTTTA GCTCCCGCTG CGTTTGTCCT CAATCCATAC ATCATCAGCG CTGCTCCCC AGGGACGGAC CCCTACACAG CTGGATTGGC TGCAGCAGCG AACTAGGCC CAGCTGTGTT CCCTACCAG TATTATGGAG TTAATCCCTG GGGAGTCTAC CCTGCCAGTC TTTCCAGCA GCAAGCTGCC GCTGCCGCTG CAGCAACTAA TTCAGCTAAT CAACAGACCA CCCCACAGGC TCAGCAAGGA CAGCAGCAGG TTCTCCGTGG AGGAGCCAGC CAACGTCCTT TGACCCCAAA CCAGAACCAG CAGGGACAGC AAACGGATCC CCTTGTTGGCA GCTGCAGCAG TGAATTCTGC CCTTGCATTT GGACAAGGTC TGGCAGCAGG CATGCCAGGT TATCCGGTGT TGGCTCCTGC TGCTTACTAT GACCAAACTG GTGCCCTTGT AGTGAATGCA GGCGCGAGAA ATGGTCTTGG AGCTCCTGTT CGACTGTAG CTCTTGCCCC AGTCAICATT AGTTCTCAG CTGCACAAGC AGCTGTTGCA GCAGCCGCAG CTTACGAAA TGGAGCAGCT GGTGGTCTTG CTGGAACAAC AAATGGACCA TTTCCGCCCT TAGGAACACA GCAGCCTCAG CCCCAGCCCC AGCAGCAGCC CAATAACAAC CTGGCATCCA GTTCTTTCTA CGGCAACAAC TCTCTGAACA GCAATTCA GAGCAGCTCC CTCTTCTCCC AGGGCTCTGC CCAGCCTGCC AACACATCCT TGGGATTCCG AAGTAGCAGT TCTCTCGGCG CCACCTGGG ATCCGCCCTT GGAGGGTTTG GAACAGCAGT TGCAAACTCC AACACTGGCA GTGGCTCCCG CCGTGACTCC CTGACTGGCA GCAGTGACCT TTATAAGAGG ACATCGAGCA GCTTGACCCC CATTGGACAC AGTTTTTATA ACGGCCTTAG CTTTCTCTCC TCTCTGGAC CCGTGGGCAT GCCTCTCCCT AGTCAGGGAC CAGGACATTC ACAGACACCA CCTCCTTCCC TCTCTTACA TGGATCCTCT TCAAGCTTAA ACCTGGGAGG ACTCACGAAT GGCAGTGGAA GATACATCTC TGCTGCTCCA GGCGCTGAAG CCAAGTACCG CAGTGCAAGC AGCGCCTCCA	
--	---	--

[0161]

	GCCTCTTCAG CCCGAGCAGC ACTCTTTTCT CTTCCTCTCG TTTGCGATAT GGAATGTCTG ATGTCATGCC TTCTGGCAGG AGCAGGCTTT TGGAAAGATT TCGAAACAAC CGGTACCCCA ATTTACAAC TCGGGGAGATT GCTGGACATA TAATGGAATT TTCCCAAGAC CAGCATGGGT CCAGATTCAT TCAGCTGAAA CTGGAGCGTG CCACACCAGC TGAGCGCCAG CTTGTCTTCA ATGAAATCCT CCAGGCTGCC TACCAACTCA TGGTGGATGT GTTTGGTAAT TACGTCATTC AGAAGTCTT TGAATTTGGC AGTCTTGAAC AGAAGCTGGC TTTGGCAGAA CGGATTCGAG GCCACGTCCT GTCATTGGCA CTACAGATGT ATGGCTGCCG TGTTATCCAG AAAGCTCTTG AGTTTATTCC TTCAGACCAG CAGGTAATTA ATGAGATGGT TCGGGAAC TAATGGCCATG TCTTGAAGTG TGTGAAAGAT CAGAATGGCA ATCACGTGGT TCAGAAATGC ATTGAATGTG TACAGCCCCA GTCTTTGCAA TTTATCATCG ATGCGTTTAA GGGACAGGTA TTTGCCTTAT CCACACATCC TTATGGCTGC CGAGTGATTC AGAGAATCCT GGAGCACTGT CTCCCTGACC AGACACTCCC TATTTTAGAG GAGCTTCACC AGCACACAGA GCAGCTTGTA CAGGATCAAT ATGGAATTA TGTAATCCAA CATGTACTGG AGCACGGTCG TCCTGAGGAT AAAAGCAAAA TTGTAGCAGA AATCCGAGGC AATGTACTTG TATTGAGTCA GCACAAATTT GCAAGCAATG TTGTGGAGAA GTGTGTTACT CACGCCTCAC GTACGGAGCG CGCTGTGCTC ATCGATGAGG TGTGCACCAT GAACGACGGT CCCCACAGTG CTTATACAC CATGATGAAG GACCAGTATG CCAAC TACGT GGTCCAGAAG ATGATTGACG TGGCGGAGCC AGGCCAGCGG AAGATCGTCA TGCATAAGAT CCGGCCCCAC ATCGCAACTC TTCGTAAAGTA CACCTATGGC AAGCACATTC TGGCCAAGCT GGAGAAGTAC TACATGAAGA ACGGTGTTGA CTTAGGGCCC ATCTGTGGCC CCCCTAATGG TATCATCTGA GGCAGTGTCA CCCGCTGTT CCTCATTCCT GCTGACCTCA CTGGCCCACT GGCAAATCCA ACCAGCAACC AGAAATGTTT TAGTGTAGAG TCTGAGACGG GCAAGTGGTT GCTCCAGGAT TACTCCCTCC TCCAAAAAAG GAATCAAATC CACGAGTGGA AAAGCCTTTG TAAATTTAAT TTTATTACAC ATAACATGTA CTATTTTTTT TAATTGACTA ATTGCCCTGC TGTTTTACTG GTGTATAGGA TACTTGTACA TAGGTAACCA ATGTACATGG GAGGCCACAT ATTTTGTTC CTGTTGTATC TATATTTTAC ATGTGGAAC TTTCAGGGTG GTTGGTTTAA CAAAAA AAGCTTTAAA AAAAAAAGAA AAAAAAGGAAA AGGTTTTTAG CTCATTTGCC TGGCCGGCAA GTTTTGCAA TAGCTCTTCC CCACCTCTC ATTTTAGTAA AAAACAAACA AAAACAAAAA AACCTGAGAA GTTTGAATTG TAGTTAAATG ACCCCAAACT GGCATTTAAC ACTGTTTATA AAAAAATAT ATATATATAT ATATATATAT AATGAAAAAG GTTTCAGAGT TGCTAAAAGCT TCAGTTTGTG ACATTAAGTT TATGAAATTC TAAAAATGC CTTTTTTGA GACTATATTA TGCTGAAGAA GGCTGTTTCT GAGGAGGAGA TCGAGCACC CAGAACGTCT TTTGAGGCTG GGCGGGTGTG ATTGTTTACT GCCTACTGGA TTTTTTTCTA	
--	--	--

[0162]

		TTAACATTGA AAGGTAAAAT CTGATTATTT AGCATGAGAA AAAAAAATCC AACTCTGCCT TTGGTCTTGC TTCTATAAAT ATATAGTGTA TACTTGGTGT AGACTTTGCA TATATACAAA TTTGTAGTAT TTTCTTGTTT TGATGTCTAA TCTGTATCTA TAATGTACCC TAGTAGTCGA ACATACTTTT GATTGTACAA TTGTACATTT GTATACCTGT AATGTAAATG TGGAGAAGTT TGAATCAACA TAAACACGTT TTTGGTAAG AAAAGAGAAT TAGCCAGCCC TGTGCATTCA GTGTATATTC TCACCTTTTA TGGTCGTAGC ATATAGTGTT GTATATTGTA AATTGTAATT TCAACCAGAA GTAAATTTTT TTCTTTTGAA GGAATAAATG TTCTTTATAC AGCCTAGTTA ATGTTTAAAA AGAAAAAAT AGCTTGGTTT TATTTGTCAT CTAGTCTCAA GTATAGCGAG ATTCTTTCTA AATGTTATTC AAGATTGAGT TCTCACTAGT GTTTTTTTAA TCCTAAAAAA GTAATGTTTT GATTTTGTGA CAGTCAAAAG GACGTGCAAA AGTCTAGCCT TGCCCGAGCT TTCCTTACAA TCAGAGCCCC TCTCACCTTG TAAAGTGTGA ATCGCCCTTC CCTTTTGTAC AGAAGATGAA CTGTATTTTG CATTTTGTCT ACTTGTAAGT GAATGTAACA TACTGTCAAT TTTCTTGTT TGAATATAGA ATTGTAACAC TACACGGTGT ACATTTCAG AGCCTTGTGT ATATTTCCAA TGAACTTTTT TGCAAGCACA CTGTAAACCA TATGTGTATA ATTAACAAAC CTGTGTATGC TTATGCCTGG GCAACTATTT TTTGTAACCT TTGTGTAGAT TGTCTCTAAA CAATGTGTGA TCTTTATTTT GAAAAATACA GAACTTTGGA ATCTGAAAAA AAAAAAAAAA AAAAAAAAAA AAAAAA	
ACTB	NM_0 01101. 4	GAGTGAGCGG CGCGGGGCCA ATCAGCGTGC GCCGTTCCGA AAGTTGCCCTT TTATGGCTCG AGCGGCCGCG GCGGCGCCCT ATAAAACCCA GCGGCGCGAC GCGCCACCAC CGCCGAGACC GCGTCCGCCC CGCGAGCACA GAGCCTCGCC TTTGCCGATC CGCCGCCCCG CCACACCCGC CGCCAGCTCA CCATGGATGA TGATATCGCC GCGCTCGTCG TCGACAACGG CTCCGGCATG TGCAAGGCCG GCTTCGCGGG CGACGATGCC CCCC GGCGCG TCTTCCCTC CATCGTGGGG CGCCCCAGGC ACCAGGGCGT GATGGTGGGC ATGGGTCAGA AGGATTCCTA TGTGGGCGAC GAGGCCCAGA GCAAGAGAGG CATCCTCACC CTGAAGTACC CCATCGAGCA CGGCATCGTC ACCAACTGGG ACGACATGGA GAAAATCTGG CACCACACCT TCTACAATGA GCTGCGTGTG GCTCCCGAGG AGCACCCCGT GCTGCTGACC GAGGCCCCCC TGAACCCCAA GGCCAACCGC GAGAAGATGA CCCAGATCAT GTTTGAGACC TTCAACACCC CAGCCATGTA CGTTGCTATC CAGGCTGTGC TATCCCTGTA CGCCTCTGGC CGTACCACTG GCATCGTGAT GGA CTCCGGT GACGGGGTCA CCCACACTGT GCCCATCTAC GAGGGGTATG CCCTCCCCCA TGCCATCCTG CGTCTGGACC TGGCTGGCCG GGACCTGACT GACTACCTCA TGAAGATCCT CACCGAGCGC GGCTACAGCT TCACCACCAC GGCCGAGCGG GAAATCGTGC GTGACATTAA GGAGAAGCTG	44

[0163]

		TGCTACGTCG CCCTGGACTT CGAGCAAGAG ATGGCCACGG CTGCTTCCAG CTCCTCCCTG GAGAAGAGCT ACGAGCTGCC TGACGGCCAG GTCATCACCA TTGGCAATGA GCGGTTCGGC TGCCCTGAGG CACTCTTCCA GCCTTCCTTC CTGGGCATGG AGTCTGTGG CATCCACGAA ACTACCTTCA ACTCCATCAT AAAGTGTGAC GTGGACATCC GCAAAGACCT GTACGCCAAC ACAGTGCTGT CTGGCGGCAC CACCATGTAC CCTGGCATTG CCGACAGGAT GCAGAAGGAG ATCACTGCCC TGGCACCCAG CACAATGAAG ATCAAGATCA TTGCTCCTCC TGAGCGCAAG TACTCCGTGT GGATCGGCGG CTCCATCCTG GCCTCGCTGT CCACCTTCCA GCAGATGTGG ATCAGCAAGC AGGAGTATGA CGAGTCCGGC CCCTCCATCG TCCACCGCAA ATGCTTCTAG GCGGACTATG ACTTAGTTGC GTTACACCCT TTCTTGACAA AACCTAACTT GCGCAGAAAA CAAGATGAGA TTGGCATGGC TTTATTGTTT TTTTGTGTTT TGTTTTGGTT TTTTTTTTTT TTTTGGCTTG ACTCAGGATT TAAAACTGG AACGGTGAAG GTGACAGCAG TCGGTGGAG CGAGCATCCC CCAAAGTTCA CAATGTGGCC GAGGACTTTG ATTGCACATT GTTGTTTTTT TAATAGTCAT TCCAAATATG AGATGCGTTG TTACAGGAAG TCCCTTGCCA TCCTAAAAGC CACCCCACTT CTCTCTAAGG AGAATGGCCC AGTCCTCTCC CAAGTCCACA CAGGGGAGGT GATAGCATTG CTTCGTGTA AATTATGTAA TGCAAAATTT TTTAATCTT CGCCTTAATA CTTTTTATT TTGTTTTATT TTGAATGATG AGCCTTCGTG CCCCCCTTC CCCCTTTTTT GTCCCCAAC TTGAGATGTA TGAAGGCTTT TGGTCTCCCT GGGAGTGGGT GGAGGCAGCC AGGGCTTACC TGTACACTGA CTTGAGACCA GTTGAATAAA AGTGCACACC TAAAAAATGA GGAAAAAAAA AAAAAAAAAA	
GAPD	NM_002046.6	GCTCTGTGCT CCTCCTGTTT GACAGTCAGC CGCATCTTCT TTTGCGTCGC CAGCCGAGCC ACATCGCTCA GACACCATGG GGAAGGTGAA GGTCGGAGTC AACGGATTGG GTCGTATTGG GCGCCTGGTC ACCAGGGCTG CTTTAACTC TGGTAAAGTG GATATTGTTG CCATCAATGA CCCCTTCATT GACCTCAACT ACATGGTTTA CATGTTCCAA TATGATTCCA CCCATGGCAA ATTCCATGGC ACCGTCAAGG CTGAGAACGG GAAGCTTGTC ATCAATGGAA ATCCCATCAC CATCTTCCAG GAGCGAGATC CCTCCAAAAT CAAGTGGGGC GATGCTGGCG CTGAGTACGT CGTGGAGTCC ACTGGCGTCT TCACCACCAT GGAGAAGGCT GGGGCTCATT TGCAGGGGGG AGCCAAAAGG GTCATCATCT CTGCCCCCTC TGCTGATGCC CCCATGTTTG TCATGGGTGT GAACCATGAG AAGTATGACA ACAGCCTCAA GATCATCAGC AATGCCTCCT GCACCACCAA CTGCTTAGCA CCCCTGGCCA AGGTCATCCA TGACAACTTT GGTATCGTGG AAGGACTCAT GACCACAGTC CATGCCATCA CTGCCACCCA GAAGACTGTG GATGGCCCCC CCGGGAAACT GTGGCGTGAT GGCCGCGGGG CTCTCCAGAA CATCATCCCT GCTCTACTG GCGCTGCCAA	45

[0164]

		GGCTGTGGGC AAGGTCATCC CTGAGCTGAA CGGGAAGCTC ACTGGCATGG CCTTCCGTGT CCCCCTGCC AACGTGTCAG TGGTGGACCT GACCTGCCGT CTAGAAAAAC CTGCCAAATA TGATGACATC AAGAAGGTGG TGAAGCAGGC GTCGGAGGGC CCCTCAAGG GCATCCTGGG CTACACTGAG CACCAGGTGG TCTCCTCTGA CTTCAACAGC GACACCCACT CCTCCACCTT TGACGCTGGG GCTGGCATTG CCTCAACGA CCACCTTGTC AAGCTCATTT CCTGGTATGA CAACGAATTT GGCTACAGCA ACAGGGTGGT GGACCTCATG GCCCATATGG CCTCCAAGGA GTAAGACCCC TGGACCACCA GCCCCAGCAA GAGCACAGA GGAAGAGAGA GACCTCACT GCTGGGGAGT CCCTGCCACA CTCAGTCCCC CACCACACTG AATCTCCCCT CTCACAGTT GCCATGTAGA CCCCTTGAAG AGGGGAGGGG CCTAGGGAGC CGCACCTTGT CATGTACCAT CAATAAAGTA CCCTGTGCTC AACCAGTTAA AAAAAAAAAA AAAAAAAAAA	
GUSB	NM_00181.3	GTCCTCAACC AAGATGGCGC GGATGGCTTC AGGCGCATCA CGACACCGGC GCGTCACGCG ACCCGCCCTA CGGGCACCTC CCGCGCTTTT CTTAGCGCCG CAGACGGTGG CCGAGCGGGG GACCGGGAAG CATGGCCCGG GGGTCGGCGG TTGCCTGGGC GGCGTCGGG CCGTTGTTGT GGGGCTGCGC GCTGGGGCTG CAGGGCGGGA TGCTGTACCC CCAGGAGAGC CCGTCGCGGG AGTGCAAGGA GCTGGACGGC CTCTGGAGCT TCCGCGCCGA CTTCTCTGAC AACCGACGCC GGGGCTTCGA GGAGCAGTGG TACCGGCGGC CGCTGTGGGA GTCAGGCCCC ACCGTGGACA TGCCAGTTCC CTCCAGCTTC AATGACATCA GCCAGGACTG GCGTCTGCGG CATTTTGTCT GCTGGGTGTG GTACGAACGG GAGGTGATCC TGCCGGAGCG ATGGACCCAG GACCTGCGCA CAAGAGTGGT GCTGAGGATT GGCAGTGCCC ATTCTATGC CATCGTGTGG GTGAATGGGG TCGACACGCT AGAGCATGAG GGGGGCTACC TCCCCTTCGA GGCCGACATC AGCAACCTGG TCCAGGTGGG GCCCCTGCCC TCCCGGCTCC GAATCACTAT CGCCATCAAC AACACACTCA CCCCCACCAC CCTGCCACCA GGGACCATCC AATACCTGAC TGACACCTCC AAGTATCCCA AGGGTTACTT TGTCCAGAAC ACATATTTTG ACTTTTCAA CTACGCTGGA CTGCAGCGGT CTGTACTTCT GTACACGACA CCCACCACCT ACATCGATGA CATCACCGTC ACCACCAGCG TGGAGCAAGA CAGTGGGCTG GTGAATTACC AGATCTCTGT CAAGGGCAGT AACCTGTTCA AGTTGGAAGT GCGTCTTTTG GATGCAGAAA ACAAAGTCGT GGCGAATGGG ACTGGGACCC AGGGCCAACT TAAGGTGCCA GGTGTCAGCC TCTGGTGGCC GTACCTGATG CACGAACGCC CTGCCTATCT GTATTCAATG GAGGTGCAGC TGA CTGCACA GACGTCACTG GGGCCTGTGT CTGACTTCTA CACACTCCCT GTGGGGATCC GCACTGTGGC TGTCACCAAG AGCCAGTTCC TCATCAATGG GAAACCTTTC TATTTCCACG GTGTCAACAA GCATGAGGAT GCGGACATCC GAGGGAAGGG CTTCGACTGG CCGCTGCTGG TGAAGGACTT CAACCTGCTT CGCTGGCTTG GTGCCAACGC TTTCGTACC AGCCACTACC CCTATGCAGA GGAAGTGATG CAGATGTGTG	46

[0165]

		ACCGCTATGG GATTGTGGTC ATCGATGAGT GTCCCGGCGT GGGCCTGGCG CTGCCGCAGT TCTTCAACAA CGTTTCTCTG CATCACCACA TGCAGGTGAT GGAAGAAAGTG GTGCGTAGGG ACAAGAACCA CCCCAGCGTC GTGATGTGGT CTGTGGCCAA CGAGCCTGCG TCCCACCTAG AATCTGCTGG CTACTACTTG AAGATGGTGA TCGCTCACAC CAAATCCTTG GACCCCTCCC GGCCTGTGAC CTTTGTGAGC AACTCTAACT ATGCAGCAGA CAAGGGGGCT CCGTATGTGG ATGTGATCTG TTTGAACAGC TACTACTCTT GGTATCACGA CTACGGGCAC CTGGAGTTGA TTCAGCTGCA GCTGGCCACC CAGTTTGAGA ACTGGTATAA GAAGTATCAG AAGCCCATTA TTCAGAGCGA GTATGGAGCA GAAACGATTG CAGGGTTTCA CCAGGATCCA CCTCTGATGT TCACTGAAGA GTACCAGAAA AGTCTGCTAG AGCAGTACCA TCTGGGTCTG GATCAAAAAC GCAGAAAATA CGTGGTTGGA GAGCTCATTT GGAATTTTGC CGATTTTCATG ACTGAACAGT CACCGACGAG AGTGTGCGGG AATAAAAAGG GGATCTTCAC TCGGCAGAGA CAACCAAAAA GTGCAGCGTT CCTTTGCGA GAGAGATACT GGAAGATTGC CAATGAAACC AGGTATCCCC ACTCAGTAGC CAAGTCACAA TGTGTGGAAA ACAGCCTGTT TACTTGAGCA AGACTGATAC CACCTGCGTG TCCCTTCCTC CCGAGTCAG GGCGACTTCC ACAGCAGCAG AACAAAGTGCC TCCTGGACTG TTCACGGCAG ACCAGAACGT TTCTGGCCTG GGTTTTGTGG TCATCTATTC TAGCAGGGAA CACTAAAGGT GGAATAAAAA GATTTTCTAT TATGGAAATA AAGAGTTGGC ATGAAAGTGG CTACTGAAAA AAAAAAAAAA AAAAAAAAAA A	
RPLP0	NM_01002.3	GTCTGACGGG CGATGGCGCA GCCAATAGAC AGGAGCGCTA TCCGCGGTTT CTGATTGGCT ACTTTGTTTCG CATTATAAAA GGCACGCGCG GGCGCGAGGC CCTTCTCTCG CCAGGCGTCC TCGTGGAAGT GACATCGTCT TTAACCCCTG CGTGGCAATC CCTGACGCAC CGCCGTGATG CCCAGGGAAG ACAGGGCGAC CTGGAAGTCC AACTACTTCC TTAAGATCAT CCAACTATTG GATGATTATC CGAAATGTTT CATTGTGGGA GCAGACAATG TGGGCTCCAA GCAGATGCAG CAGATCCGCA TGTCCCTTCG CGGGAAGGCT GTGGTGCTGA TGGGCAAGAA CACCATGATG CGCAAGGCCA TCCGAGGGCA CCTGGAAAAC AACCCAGCTC TGGAGAACT GCTGCCTCAT ATCCGGGGGA ATGTGGGCTT TGTGTTACCC AAGGAGGACC TCACTGAGAT CAGGGACATG TTGCTGGCCA ATAAGGTGCC AGCTGCTGCC CGTGCTGGTG CCATTGCCCC ATGTGAAGTC ACTGTGCCAG CCCAGAACAC TGGTCTCGGG CCCGAGAAGA CCTCCTTTTT CCAGGCTTTA GGTATCACCA CTAAAATCTC CAGGGGCACC ATTGAAATCC TGAGTGATGT GCAGCTGATC AAGACTGGAG ACAAAGTGGG AGCCAGCGAA GCCACGCTGC TGAACATGCT CAACATCTCC CCCTTCTCCT TTGGGCTGGT CATCCAGCAG GTGTTCGACA ATGGCAGCAT CTACAACCCG GAAGTGCTTG ATATCACAGA GGAAACTCTG CATTCTCGCT TCCTGGAGGG TGTCCGCAAT	47

[0166]

		GTTGCCAGTG TCTGTCTGCA GATTGGCTAC CCAACTGTTG CATCAGTACC CCA'TTCTATC ATCAACGGGT ACAAACGAGT CCTGGCCTTG TCTGTGGAGA CGGATFACAC CTTCCTACTT GCTGAAAAGG TCAAGGCCCTT CTTGGCTGAT CCATCTGCCT TTGTGGCTGC TGCCCTGTG GCTGCTGCCA CCACAGCTGC TCCTGCTGCT GCTGCAGCCC CAGCTAAGGT TGAAGCCAAG GAAGAGTCGG AGGAGTCGGA CGAGGATATG GGATTGCTC TCTTTGACTA ATCACCACAAA AGCAACCAAC TTAGCCAGTT TTA'TTTGCAA AACAAGGAAA TAAAGGCTTA CTTCTTTAAA AAGTAAAAAA AAAAAAAAAA AAAAAAAAAA	
TFRC	NM_03234.3	AGAGCGTCGG GATATCGGGT GGCGGCTCGG GACGGAGGAC GCGCTAGTGT GAGTGCAGGC TTCTAGAACT ACACCGACCC TCGTGTCC'TC CTTTATCCT GCGGGGCTGG CTGGAGCGGC CGCTCCGGTG CTGTCCAGCA GCCATAGGGA GCCGCACGGG GAGCGGGAAA GCGGTGCGGG CCCCAGGCGG GGCGGCCGGG ATGGAGCGGG GCCGCGAGCC TGTGGGGAAG GGGCTGTGGC GCGGCCTCGA GCGGCTGCAG GTTCTTCTGT GTGGCAGTTC AGAATGATGG ATCAAGCTAG ATCAGCATTC TCTAACTTGT TTGGTGGAGA ACCATTGTCA TATACCCGGT TCAGCCTGGC TCGGCAAGTA GATGGCGATA ACAGTCA'TGT GGAGATGAAA CTTGCTGTAG ATGAAGAAGA AAATGCTGAC AATAACACAA AGGCCAATGT CACAAAACCA AAAAGGTGTA GTGGAAGTAT CTGCTATGGG ACTATTGCTG TGATCGTCTT TTTCTTGATT GGATTTATGA TTGGCTACTT GGGCTATTGT AAAGGGGTAG AACCAAAAAC TGAGTGTGAG AGACTGGCAG GAACCGAGTC TCCAGTGAGG GAGGAGCCAG GAGAGGACTT CCCTGCAGCA CGTCGCTTAT ATTGGGATGA CCTGAAGAGA AAGTTGTCCG AGAAACTGGA CAGCACAGAC TTCACCGGCA CCATCAAGCT GCTGAATGAA AATTCATATG TCCCTCGTGA GGCTGGATCT CAAAAAGATG AAAATCTTGC GTTGTATGTT GAAAAATCAAT TTCGTGAATT TAAACTCAGC AAAGTCTGGC GTGATCAACA TTTTGTAAAG ATTCAGGTCA AAGACAGCGC TCAAAACTCG GTGATCATAG TTGATAAGAA CGGTAGACTT GTTTACCTGG TGGAGAATCC TGGGGGTTAT GTGGCGTATA GTAAGGCTGC AACAGTTACT GGTAAACTGG TCCATGCTAA TTTTGGTACT AAAAAAGATT TTGAGGATTT ATACACTCCT GTGAATGGAT CTATAGTGAT TGTACAGAGCA GGGAAAATCA CCTTTGCAGA AAAGGTTGCA AATGCTGAAA GCTTAAATGC AATTGGTGTG TTGATATACA TGGACCAGAC TAAATTTCCC ATTGTTAACG CAGAACTTTC ATTCTTTGGA CATGCTCATC TGGGGACAGG TGACCCTTAC ACACCTGGAT TCCCTTCCTT CAATCACACT CAGTTTCCAC CATCTCGGTC ATCAGGATTG CCTAATATAC CTGTCCAGAC AATCTCCAGA GCTGCTGCAG AAAAGCTGTT TGGGAATATG GAAGGAGACT GTCCCTCTGA CTGGAAAACA GACTCTACAT GTAGGATGGT AACCTCAGAA AGCAAGAATG TGAAGCTCAC TGTGAGCAAT GTGCTGAAAG AGATAAAAAT	48

[0167]

	TCCTAACATC TTGGAGTTA TTAAAGGCTT TGTAGAACCA GATCACTATG TTGTAGTTGG GGCCACAGAGA GATGCATGGG GCCCTGGAGC TGCAAAATCC GGTGTAGGCA CAGCTCTCCT ATTGAAACTT GCCCAGATGT TCTCAGATAT GGTCTTAAAA GATGGGTTTC AGCCCAGCAG AAGCATTATC TTGGCCAGTT GGAGTGTCTG AGACTTTGGA TCGGTTGGTG CCACTGAATG GCTAGAGGGA TACCTTTTCG CCCTGCATTT AAAGGCTTTC ACTTATATTA ATCTGGATAA AGCGGTTCTT GGTACCAGCA ACTTCAAGGT TTCTGCCAGC CCACTGTTGT ATACGCTTAT TGAGAAAACA ATGCAAAATG TGAAGCATCC GGTTACTGGG CAATTTCTAT ATCAGGACAG CAACTGGGCC AGCAAAGTTG AGAAACTCAC TTTAGACAAT GCTGCTTTCC CTTTCCTTGC ATATTCTGGA ATCCCAGCAG TTTCTTTCTG TTTTGGCAG GACACAGATT ATCCTTATTT GGGTACCACC ATGGACACCT ATAAGGAACT GATTGAGAGG ATTCCTGAGT TGAACAAAGT GGCAGGAGCA GCTGCAGAGG TCGCTGGTCA GTTCGTGATT AAACTAACC ATGATGTTGA ATTGAACCTG GACTATGAGA GGTACAACAG CCAACTGCTT TCATTTGTGA GGGATCTGAA CCAATACAGA GCAGACATAA AGGAAATGGG CCTGAGTTTA CAGTGGCTGT ATTCTGCTCG TGGAGACTTC TTCCGTGCTA CTTCCAGACT AACAACAGAT TTCGGGAATG CTGAGAAAAC AGACAGATTT GTCATGAAAG AACTCAATGA TCGTGTATG AGAGTGGAGT ATCACTTCCT CTCTCCCTAC GTATCTCCAA AAGAGTCTCC TTTCCGACAT GTCTTCTGGG GCTCCGGCTC TCACACGCTG CCAGCTTTAC TGGAGAACTT GAAACTGCGT AAACAAAATA ACGGTGCTTT TAATGAAACG CTGTTCAAGAA ACCAGTTGGC TCTAGCTACT TGGACTATTC AGGGAGCTGC AAATGCCCTC TCTGGTGACG TTTGGGACAT TGACAATGAG TTTTAAATGT GATACCCATA GCTTCCATGA GAACAGCAGG GTAGTCTGGT TTCTAGACTT GTGCTGATCG TGCTAAATTT TCAGTAGGGC TACAAAACCT GATGTTAAAA TTCCATCCCA TCATCTGGT ACTACTAGAT GTCTTTAGGC AGCAGCTTTT AATACAGGGT AGATAACCTG TACTTCAAGT TAAAGTGAAT AACCACCTAA AAAATGTCCA TGATGGAATA TTCCCTATC TCTAGAATTT TAAGTGCTTT GTAATGGGAA CTGCCTCTTT CCTGTTGTTG TTAATGAAAA TGTCAGAAAC CAGTTATGTG AATGATCTCT CTGAATCCTA AGGGCTGGTC TCTGCTGAAG GTTGTAAGTG GTCGCTTACT TTGAGTGATC CTCCAACCTC ATTTGATGCT AAATAGGAGA TACCAGGTG AAAGACCTTC TCCAAATGAG ATCTAAGCCT TTCCATAAGG AATGTAGCTG GTTTCTCAT TCCTGAAAGA AACAGTTAAC TTTCAGAAGA GATGGGCTTG TTTTCTTGCC AATGAGGTCT GAAATGGAGG TCCTTCTGCT GGATAAAATG AGGTTCAACT GTTGATTGCA GGAATAAGGC CTTAATATGT TAACCTCAGT GTCATTTATG AAAAGAGGGG ACCAGAAGCC AAAGACTTAG TATATTTTCT TTTCTCTGT CCTTCCCC ATAAGCCTCC ATTTAGTTCT TTGTTATTTT TGTTTCTTCC AAAGCACATT GAAAGAGAAC CAGTTTCAGG TGTTAGTTG CAGACTCAGT TTGTCAGACT	
--	---	--

[0168]

	TTAAAGAATA ATATGCTGCC AAATTTTGGC CAAAGTGTTA ATCTTAGGGG AGAGCTTTCT GTCTTTTGG CACTGAGATA TTTATTGTTT ATTTATCAGT GACAGAGTTC ACTATAAATG GTGTTTTTTT AATAGAATAT AATTATCGGA AGCAGTGCCT TCCATAATTA TGACAGTTAT ACTGTCCGTT TTTTTAAAT AAAAGCAGCA TCTGCTAATA AAACCCAACA GATACTGGAA GTTTTCATT TATGGTCAAC ACTTAAGGGT TTTAGAAAAC AGCCGTCAGC CAAATGTAAT TGAATAAAGT TGAAGCTAAG ATTAGAGAT GAATTAAAT TAATTAGGGG TTGCTAAGAA GCGAGCACTG ACCAGATAAG AATGCTGGTT TTCCTAAATG CAGTGAATTG TGACCAAGTT ATAAATCAAT GTCACTTAAA GGCTGTGGTA GTACTCCTGC AAAATTTTAT AGCTCAGTTT ATCCAAGGTG TAACTCTAAT TCCCATTTTG CAAAATTTCC AGTACCTTTG TCACAATCCT AACACATTAT CGGGAGCAGT GTCTTCCATA ATGTATAAAG AACAAGGTAG TTTTTACCTA CCACAGTGTG TGTATCGGAG ACAGTGATCT CCATATGTTA CACTAAGGGT GTAAAGTAAT ATCGGGAACA GTGTTTCCCA TAATTTTCTT CATGCAATGA CATCTTCAAA GCTTGAAGAT CGTTAGTATC TAACATGTAT CCCAATCCT ATAATTCCCT ATCTTTTAGT TTTAGTTGCA GAAACATTTT GTGGTCATTA AGCATTGGGT GGGTAAATC AACCACTGTA AAATGAAAT ACTACAAAAT TTGAAATTTA GCTTGGGTTT TTGTACCTT TATGGTTTCT CCAGGTCCTC TACTTAATGA GATAGTAGCA TACATTIATA ATGTTTGCTA TTGACAAGTC ATTTTAACTT TATCACATTA TTTGCATGTT ACCTCCTATA AACTTAGTGC GGACAAGTTT TAATCCAGAA TTGACCTTTT GACTTAAAGC AGAGGGACTT TGTATAGAAG GTTTGGGGGC TGTGGGGAAG GAGAGTCCCC TGAAGGTCTG ACACGTCTGC CTACCCATTG GTGGTGATCA ATTAATGTA GGTATGAATA AGTTCGAAGC TCCGTGAGTG AACCATCATT ATAAACGTGA TGATCAGCTG TTTGTATAG GGCAGTTGGA AACGGCCTCC TAGGGAAAAG TTCATAGGGT CTCTTCAGGT TCTTAGTGTG ACTTACCTAG ATTACAGCC TCACTTGAAT GTGCTACTAC TCACAGTCTC TTTAACTTC AGTTTTATCT TTAATCTCCT CTTTTATCTT GGACTGACAT TTAGCGTAGC TAAGTGAAAA GGTATAGCT GAGATTCTG GTTCGGGTGT TACGCACACG TACTTAAATG AAAGCATGTG GCATGTTTAT CGTATAACAC AATATGAATA CAGGGCATGC ATTTTGCAGC AGTGAGTCTC TTCAGAAAAC CCTTTTCTAC AGTTAGGGTT GAGTTACTTC CTATCAAGCC AGTACGTGCT AACAGGCTCA ATATTCCTGA ATGAAATATC AGACTAGTGA CAAGCTCCTG GTCTTGAGAT GTCTTCTCGT TAAGGAGATG GGCCTTTTGG AGGTAAAGGA TAAAATGAAT GAGTTCTGTG ATGATTCACT ATTCTAGAAC TTGCATGACC TTTACTGTGT TAGCTCTTTG AATGTTCTTG AAATTTTAGA CTTTCTTTGT AAACAAATGA TATGTCCTTA TCATTGTATA AAAGCTGTTA TGTGCAACAG TGTGGAGATT CCTTGTCTGA TTTAATAAAA TACTTAAACA CTGAAAAAAA AAAA	
--	---	--

[0169]

18S	X0320 5.1	TACCTGGTTG ATCCTGCCAG TAGCATATGC TTGTCTCAA GATTAAGCCA TGCATGTCTA AGTACGCACG GCCGGTACAG TGAAACTGCG AATGGCTCAT TAAATCAGTT ATGGTTCCIT TGGTCGCTCG CTCCTCTCCC ACTTGGATAA CTGTGGTAAT TCTAGAGCTA ATACATGCCG ACGGGCGCTG ACCCCCTTCG CGGGGGGGAT GCGTGCATTT ATCAGATCAA AACCAACCCG GTCAGCCCCC CTCCGGCCCC GGCCGGGGGG CGGGCGCCGG CGGCTTTGGT GACTCTAGAT AACCTCGGGC CGATCGCACG CCCCCGTGG CGGCGACGAC CCATTGGAAC GTCTGCCCTA TCAACTTTCG ATGGTAGTCG CCGTGCCTAC CATGGTGACC ACGGGTGACG GGAATCAGG GTTCGATTCC GGAGAGGGAG CCTAGAGAAAC GGCTACCACA TCCAAGGAAG GCAGCAGGCG CGAAATTAC CCACTCCGA CCCGGGGAGG TAGTGACGAA AAATAACAAT ACAGGACTCT TTCGAGGCCG TGTAATTGGA ATGAGTCCAC TTAAATCCT TTAACGAGGA TCCATTGGAG GGCAAGTCTG GTGCCAGCAG CCGCGGTAAT TCCAGCTCA ATAGCGTATA TTAAGTTGC TGCAGTTAAA AAGCTCGTAG TTGGATCTTG GGAGCGGGCG GCGGGTCCGC CGCGAGGCGA GCCACCGCCC GTCCCGCCC CTTGCCTCTC GGCGCCCCCT CGATGCTCTT AGCTGAGTGT CCCGCGGGGC CCGAAGCGTT TACTTTGAAA AAATTAGAGT GTTCAAAGCA GGCCCGAGCC GCCTGGATAC CGCAGCTAGG AATAATGGAA TAGGACCGCG GTTCTATTTT GTTGGTTTTT GGAAGTGGG CATGATTAA GAGGGACGGC CGGGGGCATT CGTATTGCGC CGCTAGAGGT GAAATTCCTG GACCGGCGCA AGACGGACCA GAGCGAAAGC ATTTGCCAAG AATGTTTTCA TTAATCAAGA ACGAAAGTCG GAGGTTGCGA GACGATCAGA TACCGTCGTA GTTCCGACCA TAAACGATGC CGACCGGCGA TGCGGCGGCG TTATCCCAT GACCCGCGCG GCAGCTCCG GGAAACCAAA GTCTTTGGGT TCCGGGGGGA GTATGGTTGC AAAGCTGAAA CTTAAAGGAA TTGACGGAAG GGCACCACCA GGAGTGGAGC CTGCGGCTTA ATTTGACTCA ACACGGGAAA CCTCACCCGG CCCGGACACG GACAGGATTG ACAGATTGAT AGCTCTTCT CGATTCCGTG GGTGGTGGTG CATGGCCGTT CTTAGTTGGT GGAGCGATTT GTCTGGTTAA TTCCGATAAC GAACGAGACT CTGGCATGCT AACTAGTTAC GCGACCCCCG AGCGGTCCGC GTCCCCAAC TTCTTAGAGG GACAAGTGGC GTTCAGCCAC CCGAGATTGA GCAATAACAG GTCTGTGATG CCCTAGATG TCCGGGGCTG CACGCGCGCT AACTGACTG GCTCAGCGTG TGCCTACCCT ACGCCGCGAG GCGCGGGTAA CCCGTTGAAC CCCATTCTG ATGGGGATCG GGGATTGCAA TTATTCCCCA TGAACGAGGA ATTCCCAGTA AGTGCGGGTC ATAAGCTTGC GTTGATTAAG TCCCTGCCCT TTGTACACAC CGCCCGTCGC TACTACCGAT TGGATGGTTT AGTGAGGCC TCGGATCGGC CCCGCCGGG TCGGCCACG GCCCTGGCGG AGCGCTGAGA AGACGGTCGA ACTTGACTAT CTAGAGGAAG TAAAAGTCGT AACAAAGTTT CCGTAGGTGA ACCTGCGGAA GGATCATT	49
-----	--------------	---	----

[0170]

PPIA	NM_021130.4	GGGGCCGAAC GTGGTATAAA AGGGGCGGGA GGCCAGGCTC GTGCCGTTTT GCAGACGCCA CCGCCGAGGA AAACCGTGTA CTATTAGCCA TGGTCAACCC CACCGTGTTT TCGACATTG CCGTCGACGG CGAGCCCTTG GGCCGCGTCT CTTTGAGCT GTTTGCAGAC AAGGTCCCAA AGACAGCAGA AAATTTTCGT GCTCTGAGCA CTGGAGAGAA AGGATTTGGT TATAAGGGTT CCTGCTTTCA CAGAATTATT CCAGGGTTTA TGTGTCAAGG TGGTGACTTC ACACGCCATA ATGGCACTGG TGGCAAGTCC ATCTATGGGG AGAAATTTGA AGATGAGAAC TTCATCCTAA AGCATACGGG TCCTGGCATC TTGTCCATGG CAAATGCTGG ACCCAACACA AATGGTTCCC AGTTTTTCAT CTGCACTGCC AAGACTGAGT GGTTGGATGG CAAGCATGTG GTGTTTGGCA AAGTGAAAGA AGGCATGAAT ATTGTGGAGG CCATGGAGCG CTTTGGGTCC AGGAATGGCA AGACCAGCAA GAAGATCACC ATTGCTGACT GTGGACAACT CGAATAAGTT TGACTTGTGT TTTATCTTAA CCACCAGATC ATTCCTTCTG TAGCTCAGGA GAGCACCCCT CCACCCCATT TGCTCGCAGT ATCCTAGAAT CTTTGTGCTC TCGCTGCAGT TCCCTTTGGG TTCCATGTTT TCCTTGTTCC CTCCCATGCC TAGCTGGATT GCAGAGTTAA GTTTATGATT ATGAAATAAA AACTAAATAA CAATTGTCCT CGTTTGAGTT AAGAGTGTGG ATGTAGGCTT TATTTTAAGC AGTAATGGGT TACTTCTGAA ACATCACTTG TTGTCTAAT TCTACACAGT ACTTAGATTT TTTTACTTTT CCAGTCCCAG GAAGTGTCAA TGTTTGTGTA GTGGAATATT GAAAATGTAG GCAGCAACTG GGCATGGTGG CTCACTGTCT GTAATGTATT ACCTGAGGCA GAAGACCACC TGAGGGTAGG AGTCAAGATC AGCCTGGGCA ACATAGTGAG ACGCTGTCTC TACAAAAAAT AATTAGCCTG GCCTGGTGGT GCATGCCTAG TCCTAGCTGA TCTGGAGGCT GACGTGGGAG GATTGCTTGA GCCTAGAGTG AGCTATTATC ATGCCACTGT ACAGCCTGGG TGTTACAGA TCITGTGTCT CAAAGGTAGG CAGAGGCAGG AAAAGCAAGG AGCCAGAATT AAGAGGTTGG GTCAGTCTGC AGTGAGTTCA TGCATTTAGA GGTGTTCTTC AAGATGACTA ATGTCAAAAA TTGAGACATC TGTTGCGGTT TTTTTTTTTT TTTTTTCCCC TGGAATGCAG TGGCGTGATC TCAGCTCACT GCAGCCTCCG CCTCCTGGGT TCAAGTGATT CTAGTGCCTC AGCCTCCTGA GTAGCTGGGA TAATGGGCGT GTGCCACCAT GCCCAGCTAA TTTTTGATTT TTTAGTATAG ATGGGGTTTC ATCATTTTGA CCAGGCTGGT CTCAAACCTC TGACCTCAGC TGATGCGCCT GCCTTGGCCT CCCAACTGC TGAGATTACA GATGTGAGCC ACCGCACCTT ACCTCATTTT CTGTAACAAA GCTAAGCTTG AACACTGTTG ATGTTCTTGA GGGGAAGCATA TTGGGCTTTA GGCTGTAGGT CAAGTTTATA CATCTTAATT ATGGTGGAAT TCCTATGTAG AGTCTAAAAA GCCAGGTACT TGGTGCTACA GTCAGTCTCC CTGCAGAGGG TTAAGGCGCA GACTACCTGC AGTGAGGAGG TACTGCTTGT AGCATATAGA GCCTCTCCCT AGCTTTGGTT ATGGAGGCTT TGAGGTTTTC CAAACCTGAC CAATTTAAGC CATAAGATCT GGTCAAAGGG ATACCCTTCC	50
------	-------------	---	----

[0171]

		CACTAAGGAC TTGGTTTCTC AGGAAATTAT ATGTACAGTG CTTGCTGGCA GTTAGATGTC AGGACAATCT AAGCTGAGAA AACCCCTTCT CTGCCACCT TAACAGACCT CTAGGGTTCT TAACCCAGCA ATCAAGTTTG CCTATCCTAG AGGTGGCGGA TTTGATCATT TGGTGTGTG GGCAATTTT GTTTTACTGT CTGGTTCCTT CTGCGTGAAT TACCACCACC ACCACTTGTG CATCTCAGTC TTGTGTGTG TCTGGTTACG TATTCCCTGG GTGATACCAT TCAATGTCTT AATGTACTTG TGGCTCAGAC CTGAGTGCAA GGTGGAAATA AACATCAAAC ATCTTTTCAT TATCCCTA	
PGKI	NM_0 00291. 3	GAGAGCAGCG GCCGGGAAGG GGCGGTGCGG GAGGCGGGGT GTGGGGCGGT AGTGTGGGCC CTGTTCTGTC CCGCGCGGTG TTCCGCATTC TGCAAGCCTC CGGAGCGCAC GTCGGCAGTC GGCTCCCTCG TTGACCGAAT CACCGACCTC TCTCCCCAGC TGATTTTCCA AAATGTGCTT TTCTAACAAG CTGACGCTGG ACAAGCTGGA CGTTAAAGGG AAGCGGGTCG TTATGAGAGT CGACTTCAAT GTTCCTATGA AGAACAACCA GATAACAAAC AACCAGAGGA TTAAGGCTGC TGTCCCAAGC ATCAAATTCT GCTTGGACAA TGGAGCCAAG TCGGTAGTCC TTATGAGCCA CCTAGGCCGG CCTGATGGTG TGCCCATGCC TGACAAGTAC TCCTTAGAGC CAGTTGCTGT AGAACTCAA TCTCTGCTGG GCAAGGATGT TCTGTTCTTG AAGGACTGTG TAGGCCCAGA AGTGGAGAAA GCCTGTGCCA ACCCAGCTGC TGGGTCTGTC ATCCTGCTGG AGAACCTCCG CTTTCATGTG GAGGAAGAAG GGAAGGGAAA AGATGCTTCT GGAACAAGG TTAAGCCGA GCCAGCCAAA ATAGAAGCTT TCCGAGCTTC ACTTTCCAAG CTAGGGGATG TCTATGTCAA TGATGCTTTT GGCACGTGTC ACAGAGCCCA CAGCTCCATG GTAGGAGTCA ATCTGCCACA GAAGGCTGGT GGGTTTTGA TGAAGAAGGA GCTGAACACT TTTGCAAAGG CCTTGAGAG CCCAGAGCGA CCCTTCCTGG CCATCCTGGG CGGAGCTAAA GTTGACAGACA AGATCCAGCT CATCAATAAT ATGCTGGACA AAGTCAATGA GATGATTATT GGTGGTGGAA TGGCTTTTAC CTTCTTAAG GTGCTCAACA ACATGGAGAT TGGCACTTCT CTGTTTGATG AAGAGGGAGC CAAGATTGTC AAAGACCTAA TGTCCAAAGC TGAGAAGAAT GGTGTGAAGA TTACCTTGCC TGTGACTTT GTCACGTGCTG ACAAGTTTGA TGAGAATGCC AAGACTGGCC AAGCCACTGT GGCTTCTGGC ATACCTGCTG GCTGGATGGG CTGGGACTGT GGTCTGAAA GCAGCAAGAA GTATGCTGAG GCTGTCACTC GGGCTAAGCA GATTGTGTGG AATGGTCCTG TGGGGGTATT TGAATGGGAA GCTTTTGCCC GGGGAACCAA AGCTCTCATG GATGAGGTGG TGAAAGCCAC TTCTAGGGGC TGCATCACCA TCATAGGTGG TGGAGACACT GCCACTTGCT GTGCCAAATG GAACACGGAG GATAAAGTCA GCCATGTGAG CACTGGGGGT GGTGCCAGTT TGGAGCTCCT GGAAGGTAAA GTCCTTCCTG GGGTGGATGC TCTCAGCAAT ATTTAGTACT TTCCTGCCTT	51

[0172]

		TTAGTTCTCTG TGCACAGCCC CTAAGTCAAC TTAGCATTTT CTGCATCTCC ACTTGGCATT AGCTAAAAACC TTCCATGTCA AGATTCAAGCT AGTGGCCAAG AGATGCAGTG CCAGGAACCC TTAAACAGTT GCACAGCATC TCAGCTCATC TTCACTGCAC CCTGGATTIG CATACTTCT TCAAGATCCC ATTTGAATTT TTTAGTGACT AAACCATTTG GCATTCTAGA GTGCATATAT TTATATTTTG CCTGTTAAAA AGAAAGTGAG CAGTGTTAGC TTAGTTCTCT TTTGATGTAG GTTATTATGA TTAGCTTTGT CACTGTTTCA CTAAGTCAAG TGGAAACAAG ATGAAATTCC ATTTGTAGGT AGTGAGACAA AATTGATGAT CCATTAAGTA AACAATAAAA GTGTCCATTG AAACCGTGAT TTTTTTTTTT TTCTGTTCAT ACTTTGTTAG GAAGGGTGAG AATAGAATCT TGAGGAACGG ATCAGATGTC TATATTGCTG AATGCAAGAA GTGGGGCAGC AGCAGTGGAG AGATGGGACA ATTAGATAAA TGTCATTCT TTATCAAGGG CCTACTTTAT GGCAGACATT GTGCTAGTG TTTTATTCTA ACTTTTATTT TTATCAGTTA CACATGATCA TAATTAAAA AGTCAAGGCT TATAACAAAA AAGCCCCAGC CCATTCTCTC CATTCAAGAT TCCCACTCCC CAGAGGTGAC CACTTCAAC TCTTGAGTTT TTCAGGTATA TACCTCCATG TTTCTAAGTA ATATGCTTAT ATTGTTCACT TCTTTTTTTT TTATTTTTTA AAGAAATCTA TTTCATACCA TGGAGGAAGG CTCTGTTCCA CATATATTTT CACTTCTTCA TTCTCTCGGT ATAGTTTTGT CACAATTATA GATTAGATCA AAAGTCTACA TAACTAATAC AGCTGAGCTA TGTAGTATGC TATGATTAAA TTTACTTATG TAAAAAAAAA AAAAAAAAAA	
RPL13A	NM_012423.3	CACCTTCTGCC GCCCTGTTT CAAGGGATAA GAAACCTGC GACAAAACCT CCTCCTTTTC CAAGCGGCTG CCGAAGATGG CGGAGGTGCA GGTCTGGTG CTIGATGGTC GAGGCCATCT CCTGGGCCGC CTGGCGGCCA TCGTGGCTAA ACAGGTACTG CTGGGCCGGA AGGTGGTGGT CGTACGCTGT GAAGGCATCA ACATTTCTGG CAATTTCTAC AGAAACAAGT TGAAGTACCT GGCTTTCTCT CGCAAGCGGA TGAACACCAA CCCTTCCCGA GGCCCCTACC ACTTCCGGGC CCCCAGCCGC ATCTTCTGGC GGACCGTGCG AGGTATGCTG CCCCACAAAA CCAAGCGAGG CCAGGCCGCT CTGGACCGTC TCAAGGTGTT TGACGGCATC CCACCGCCCT ACGACAAGAA AAAGCGGATG GTGGTTCTCTG CTGCCCTCAA GGTCTGCGT CTGAAGCCTA CAAGAAAATT TGCCTATCTG GGGCGCCTGG CTCACGAGGT TGGCTGGAAG TACCAGGCAG TGACAGCCAC CCTGGAGGAG AAGAGGAAAG AGAAAGCCAA GATCCACTAC CGGAAGAAGA AACAGCTCAT GAGGCTACGG AAACAGGCCG AGAAGAACGT GGAGAAGAAA ATTGACAAAT ACACAGAGGT CCTCAAGACC CACGGACTCC TGGTCTGAGC CCAATAAAGA CTGTTAATTC CTCATGCGTT GCCTGCCCTT CCTCCATTGT TGCCCTGGAA TGTACGGGAC CCAGGGGCAG CAGCAGTCCA GGTGCCACAG GCAGCCCTGG GACATAGGAA GCTGGGAGCA AGGAAAGGGT CTAGTCACT	52

[0173]

		GCCTCCCGAA GTTGCTTGAA AGCACTCGGA GAATTGTGCA GGTGTCAATTT ATCTATGACC AATAGGAAGA GCAACCAGTT ACTATGAGTG AAAGGGAGCC AGAAGACTGA TTGGAGGGCC CTATCTTGTC AGTGGGGCAT CTGTTGGACT TTCCACCTGG TCATATACTC TGCAGCTGTT AGAATGTGCA AGCACTTGGG GACAGCATGA GCTTGCTGTT GTACACAGGG TATTTCTAGA AGCAGAAAATA GACTGGGAAG ATGCACAACC AAGGGGTTAC AGGCATCGCC CATGCTCCTC ACCTGTATTT TGTAATCAGA AATAAATTGC TTTAAAGAA AAAAAAAAAA AAAAAA	
B2M	NM_0 04048. 2	AATATAAGTG GAGGCGTCGC GCTGGCGGGC ATTCTGAAG CTGACAGCAT TCGGGCCGAG ATGTCTCGCT CCGTGGCCTT AGCTGTGCTC GCGCTACTCT CTCTTCTGG CCTGGAGGCT ATCCAGCGTA CTCCAAAGAT TCAGGTTTAC TCACGTCATC CAGCAGAGAA TGGAAAGTCA AATTTCTCTGA ATTGCTATGT GTC TGGGTTT CATCCATCCG ACATTGAAGT TGACTTACTG AAGAATGGAG AGAGAATTGA AAAAGTGGAG CATTGAGACT TGTCTTTCAG CAAGGACTGG TCTTCTATC TCTGTACTA CACTGAATTC ACCCCCACTG AAAAAGATGA GTATGCCTGC CGTGTGAACC ATGTGACTTT GTCACAGCCC AAGATAGTTA AGTGGGATCG AGACATGTAA GCAGCATCAT GGAGGTTTGA AGATGCCGCA TTGGGATTGG ATGAATTCCA AATTCTGCTT GCTTGCTTTT TAATATTGAT ATGCTTATAC ACTTACACTT TATGCACAAA ATGTAGGGTT ATAATAATGT TAACATGGAC ATGATCTTCT TTATAATTCT ACTTTGAGTG CTGTCTCCAT GTTTGATGTA TCTGAGCAGG TTGCTCCACA GGTAGCTCTA GGAGGGCTGG CAACTTAGAG GTGGGGAGCA GAGAATTCTC TTATCCAACA TCAACATCTT GGTGAGATTT GAACTCTCA ATCTCTTGCA CTCAAAGCTT GTTAAGATAG TTAAGCGTGC ATAAGTTAAC TTCCAATTTA CATACTCTGC TTAGAATTG GGGGAATAAT TAGAAATATA ATTGACAGGA TTATTGGAAA TTTGTATATA TGAATGAAAC ATTTTGTGTCAT ATAAGATTCA TATTTACTTC TTATACATTT GATAAAGTAA GGCATGGTTG TGGTTAATCT GGTTTATTTT TGTCCACAA GTTAAATAAA TCATAAAACT TGATGTGTTA TCTCTTA	53
YWHAZ	NM_0 03406. 3	CTTCTCCTT CCCCTCTTC CGGGCTCCCG TCCCGGCTCA TCACCCGGCC TGTGGCCAC TCCACCGCC AGCTGGAACC CTGGGGACTA CGACGTCCCT CAAACCTTGC TTCTAGGAGA TAAAAAGAAC ATCCAGTCAT GGATAAAAAT GAGCTGGTTC AGAAGGCCAA ACTGGCCGAG CAGGCTGAGC GATATGATGA CATGGCAGCC TGCATGAAGT CTGTAACCTGA GCAAGGAGCT GAATTATCCA ATGAGGAGAG GAATCTTCTC TCAGTTGCTT ATAAAAATGT TGTAGGAGCC CGTAGGTCAT CTTGGAGGGT CGTCTCAAGT ATTGAACAAA AGACGGAAGG TGCTGAGAAA AAACAGCAGA TGGCTCGAGA ATACAGAGAG AAAATTGAGA CGGAGCTAAG AGATATCTGC AATGATGTAC TGTCTCTTTT GGAAAAGTTC TTGATCCCCA ATGCTTCACA AGCAGAGAGC	54

[0174]

	AAAGTCITCT ATTTGAAAAAT GAAAGGAGAT TACTACCGTT ACTTGGCTGA GGTTGCCGCT GGTGATGACA AGAAAGGGAT TGTCGATCAG TCACAACAAG CATACCAAGA AGCTTTTGAA ATCAGCAAAA AGGAAATGCA ACCAACACAT CCTATCAGAC TGGGTCTGGC CCTFAACTTC TCTGTGTTCT ATTATGAGAT TCTGAACTCC CCAGAGAAAAG CCTGCTCTCT TGCAAAGACA GCTTTTGATG AAGCCATTGC TGAACCTGAT ACATTAAGTG AAGAGTCATA CAAAGACAGC ACGCTAATAA TGCAATTACT GAGAGACAAC TTGACATTGT GGACATCGGA TACCCAAGGA GACGAAGCTG AAGCAGGAGA AGGAGGGGAA AATTAACCGG CCTTCCAAC TTTGTCTGCC TCATTCTAAA ATTTACACAG TAGACCATT GTCATCCATG CTGTCCCACA AATAGTTTTT TGTTTACGAT TTATGACAGG TTTATGTTAC TTCTATTTGA ATTTCTATAT TTCCCATGTG GTTTTATGT TTAATATTAG GGGAGTAGAG CCAGTTAACA TTTAGGGAGT TATCTGTTTT CATCTTGAGG TGGCCAATAT GGGGATGTGG AATTTTTATA CAAGTTATAA GTGTTTGGCA TAGTACTTTT GGTACATTGT GGCTTCAAAA GGGCCAGTGT AAAACTGCTT CCATGTCTAA GCAAAGAAAA CTGCCTACAT ACTGGTTTGT CTGGCGGGG AATAAAAGGG ATCATTGGTT CCAGTCACAG GTGTAGTAAT TGTGGGTACT TTAAGGTTTG GAGCACTTAC AAGGCTGTGG TAGAATCATA CCCCATGGAT ACCACATATT AAACCATGTA TATCTGTGGA ATACTCAATG TGTACACCTT TGA CTACAGC TGCAGAAGTG TTCTTTTGA CAAAGTTGTG ACCCATTTTA CTCTGGATAA GGGCAGAAAAC GGTTACATT CCATTATTTG TAAAGTTACC TGCTGTTAGC TTTCATTATT TTTGCTACAC TCATTTTATT TGTATTTAAA TGTTTTAGGC AACCTAAGAA CAAATGTAAG ATAAAGATG CAGGAAAAAT GAATTGCTTG GTATTCATTA CTCATGTAT ATCAAGCACA GCAGTAAAC AAAAACCCAT GTATTTAACT TTTTTTTAGG ATTTTGTCTT TTGTGATTTT TTTTTTTTG ATACTGCGCT AACATGCATG TGCTGTAAAA ATAGTTAACA GGGAAATAAC TTGAGATGAT GGCTAGCTTT GTTTAATGTC TTATGAAATT TTCATGAACA ATCCAAGCAT AATTGTAAAG AACACGTGTA TAAATTCAT GTAAGTGGAA TAAAAGTTTT ATGAATGGAC TTTTCAACTA CTTCTCTAC AGCTTTTCAT GTAAATTAGT CTGGTTCTG AACTTCTCT AAAAGGAAATT GTACATTTTT TGAAATTTAT TCCTATTCC CTCTTGGCAG CTAATGGGCT CTTACCAAGT TTAAACACAA AATTATCAT AACAAAAATA CTACTAATAT AACTACTGTT TCCATGTCCC ATGATCCCCT CTCTTCCTCC CCACCCTGAA AAAAATGAGT TCCTATTTTT TCTGGGAGAG GGGGGGATTG ATTAGAAAAA AATGTAGTGT GTTCCATTTA AAATTTTGGC ATATGGCATT TTCTAACTTA GGAAGCCACA ATGTTCTTGG CCCATCATGA CATTGGGTAG CATTAACTGT AAGTTTTGTG CTTCCAAATC ACTTTTTGGT TTTTAAGAAT TTCTTGATAC TCTTATAGCC TGCCTTCAAT TTGATCCTT TATTTCTTCT ATTTGTGAGG TGCACAAGAT TACCTTCCTG TTTTAGCCTT CTGTCTTGTG ACCAACCATT CTTACTTGGT	
--	--	--

[0175]

		GGCCATGTAC TTGGAAAAAG GCCGCATGAT' CTTTCTGGCT CCACTCAGTG TCTAAGGCAC CCTGCTTCCT TTGCTTGCA CCCACAGACT ATTTCCCTCA TCCTATTTAC TGCAGCAAAT CTCTCCTTAG TTGATGAGAC TGTGTTTATC TCCCTTTAAA ACCCACCTA TCCTGAATGG TCTGTCAITG TCTGCCTTTA AAATCCTTCC TCTTTCTTCC TCCTCTATT CTTAAATAAT GATGGGGCTA AGTTATACCC AAAGCTCACT TTACAAAATA TTTCCTCAGT ACTTTGCAGA AAACACCAAA CAAAAATGCC ATTTTAAAAA AGGTGTATTT TTTCTTTTAG AATGTAAGCT CCTCAAGAGC AGGGACAATG TTTTCTGTAT GTTCTATTGT GCCTAGTACA CTGTAAATGC TCAATAAATA TTGATGATGG GAGGCAGTGA GTCTTGATGA TAAGGGTGAG AAACTGAAAT CCCAAACACT GTTTTGTTGC TTGTTTATT ATGACCTCAG ATTAAATTGG GAAATATTGG CCCTTTTGAA TAATTGTCCT AAATATTACA TTCAAATAAA AGTGCAATGG AGAAAAAAA AAA	
SDHA	NM_0 04168. 3	ACTGCAGCCC CGCTCGACTC CGGCGTGGTG CGCAGGCGCG GTATCCCCC TCCCCGCCA GCTCGACCCC GGTGTGGTGC GCAGGCGCAG TCTGCGCAGG GACTGGCGGG ACTGCGCGGC GGCAACAGCA GACATGTCGG GGGTCCGGGG CCTGTCCGGG CTGCTGAGCG CTCGGCGCCT GGCGCTGGCC AAGGCGTGGC CAACAGTGTT GCAAACAGGA ACCCGAGGTT TTCACTTCAC TGTTGATGGG AACAAGAGGG CATCTGCTAA AGTTTCAGAT TCCATTTCTG CTCAGTATCC AGTAGTGGAT CATGAATTG ATGCAGTGGT GGTAGGCGCT GGAGGGGCGAG GCTTGCAGC TGCATTTGGC CTTTCTGAGG CAGGGTTTAA TACAGCATGT GTTACCAAGC TGTTTCTAC CAGGTCACAC ACTGTTGCAG CACAGGGAGG AATCAATGCT GCTCTGGGGA ACATGGAGGA GGACAACCTGG AGGTGGCATT TCTACGACAC CGTGAAGGGC TCCGACTGGC TGGGGGACCA GGATGCCATC CACTACATGA CGGAGCAGGC CCCC GCCGCC GTGGTGCAGC TAGAAAATTA TGGCATGCCG TTAGCAGAA CTGAAGATGG GAAGATTTAT CAGCGTGCAT TTGGTGGACA GAGCCTCAAG TTTGGAAAGG GCGGGCAGGC CCATCGGTGC TGCTGTGTGG CTGATCGGAC TGGCCACTCG CTATTGCACA CCTTATATGG AAGGTCTCTG CGATATGATA CCAGCTATTT TGTGGAGTAT TTTGCCTTGG ATCTCCTGAT GGAGAATGGG GAGTGCCGTG GTGTCATCGC ACTGTGCATA GAGGACGGGT CCATCCATCG CATAAGAGCA AAGAACACTG TTGTTGCCAC AGGAGGCTAC GGGCGCACCT ACTTCAGCTG CACGTCTGCC CACACCAGCA CTGGCGACGG CACGGCCATG ATCACCAGGG CAGGCCTTCC TTGCCAGGAC CTAGAGTTTG TTCAGTTCCA CCCTACAGGC ATATATGGTG CTGGTTGTCT CATTACGGAA GGATGTCTGT GAGAGGGAGG CATTCTCATT AACAGTCAAG GCGAAAAGGT TATGGAGCGA TACGCCCTG TCGCGAAGGA CCTGGCGTCT AGAGATGTGG TGTTCTGGTC CATGACTCTG GAGATCCGAG AAGGAAGAGG	55

[0176]

		CTGTGGCCCT GAGAAAGATC ACGTCTACCT GCAGCTGCAC CACCTACCTC CAGAGCAGCT GGCCACGCGC CTGCCCTGGCA TTTCAGAGAC AGCCATGATC TTCGCTGGCG TGGACGTCAC GAAGGAGCCG ATCCCTGTCC TCCCCACCGT GCATTATAAC ATGGGCGGCA TTCCACCAA CTACAAGGGG CAGGTCCTGA GGCAGTGAA TGGCCAGGAT CAGATTGTGC CCGGCTGTA CGCCTGTGGG GAGGCCGCT GTGCCCTCGT ACATGGTGCC AACCGCCTCG GGGCAAATC GCTCTTGGAC CTGGTTGTCT TTGGTCGGGC ATGTGCCCTG AGCATCGAAG AGTCATGCAG GCCTGGAGAT AAAGTCCCTC CAATTAAACC AAACGCTGGG GAAGAATCTG TCATGAATCT TGACAAATTG AGATTGCTG ATGGAAGCAT AAGAACATCG GAACCTGCGAC TCAGCATGCA GAAGTCAATG CAAAATCATG CTGCCGTGTT CCGTGTGGGA AGCGTGTTC AAGAAGGTTG TGGGAAAATC AGCAAGCTCT ATGGAGACCT AAAGCACCTG AAGACGTTTC ACCGGGGAAT GGTCTGGAAC ACGGACCTGG TGGAGACCTT GGAGCTGCAG AACCTGATGC TGTGTGCGCT GCAGACCATC TACGGAGCAG AGGCACGGAA GGAGTCACGG GCGCGCATG CCAGGGAAGA CTACAAGGTG CGGATTGATG AGTACGATTA CTCCAAGCCC ATCCAGGGGC AACAGAAGAA GCCCTTTGAG GAGCACTGGA GGAAGCACAC CCTGTCTTAT GTGGACGTTG GCACTGGGA GGTCACTCTG GAATATAGAC CCGTGATCGA CAAAACCTTG AACGAGGCTG ACTGTGCCAC CGTCCCGCCA GCCATTCTCT CCTACTGATG AGACAAGATG TGGTGATGAC AGAATCAGCT TTTGTAATTA TGTATAATAG CTCATGCATG TGTCCATGTC ATAACTGTCT TCATACGCTT CTGCACTCTG GGAAGAAGG AGTACATTGA AGGGAGATTG GCACCTAGTG GCTGGGAGCT TGCCAGGAAC CCAGTGGCCA GGGAGCGTGG CACTTACCTT TGTCCTTGC TTCATTCTTG TGAGATGATA AAACCTGGCA CAGCTCTTAA ATAAAATATA AATGAACAAA CTTTCTTTTA TTTCCAAATC CATTGAAAT ATTTTACTGT TGTGACTTTA GTCATATTTG TTGACCTAAA AATCAAATGT AATCTTTGTA TTGTGTTACA TCAAAATCCA GATATTTTGT ATAGTTTCTT TTTTCTTTT CTTTCTTTT TTTTTTTGA GACAGGATCG GTGCAGTAGT ACAATCACAG CTCACTGCAG CCTCAAATC CTGGGCAGCT CAGGTGATCT TCCTGACTCA GCCTTCTGAG TAGTTGGGGC TACAGGTGTG CACCACCATG CCCAGCTCAT TTATTTTGTA ATTGTAGGGA CAGGGTCTCA CTGTGTTGCC TAGGCTGGTC TCAAGTGATC CTCCTCCTT GGCCTCCCAA GGTGCTGGAA TTATAGGTGT GAACAAACCA AAAAAAAAAA AAA	
HPRT1	NM_00194.2	GGCGGGGCT GCTTCTCTC AGCTTCAGGC GGCTGCGACG AGCCCTCAGG CGAACCTCTC GGCTTTCCCG CGCGGCGCCG CCTCTTGCTG CGCTCCGCG TCCTCCTCTG CTCCGCCACC GGCTTCTCTC TCCTGAGCAG TCAGCCCGCG CGCCGGCCGG CTCCGTTATG GCGACCCGCA GCCCTGGCGT CGTGATTAGT GATGATGAAC CAGGTTATGA CCTTGATTGA TTTTGATAC	56

[0177]

	CTAATCATTATGCTGAGGATTTGGAAAGGGTGTTTATTCC TCATGGACTATTATGGACA GGACTGAACG TCTTGCTCGA GATGTGATGA AGGAGATGGG AGGCCATCAC ATTGTAGCCC TCTGTGTGCT CAAGGGGGGGC TATAAATTCT TTGCTGACCT GCTGGATTAC ATCAAAAGCAC TGAATAGAAA TAGTGATAGA TCCATTTCCTA TGAAGTGTAGA TTTTATCAGA CTGAAGAGCT ATTGTAATGA CCAGTCAACA GGGGACATAA AAGTAATTGG TGGAGATGAT CTCTCAACTT TAACTGGAAA GAATGTCTTG ATTGTGGAAAG ATATAATTGA CACTGGCAAA ACAATGCAGA CTTTGCTTTC CTTGGTCAGG CAGTATAATC CAAAGATGGT CAAGGTGCGA AGCTTGCTGG TGAAAAGGAC CCCACGAAGT GTTGGATATA AGCCAGACTT TGTTGGATT GAAATTCCAG ACAAGTTTGT TGTAGGATAT GCCCTTGACT ATAATGAATA CTTCAGGGAT TTGAATCATG TTTGTGTCAT TAGTGAACCT GGAAAAGCAA AATACAAAGC CTAAGATGAG AGTTCAAGTT GAGTTTGGAA ACATCTGGAG TCCTATTGAC ATGCCAGTA AAATTATCAA TGTCTAGTT CTGTGGCCAT CTGCTTAGTA GAGCTTTTTG CATGTATCTT CTAAGAATTT TATCTGTTTT GTACTTTAGA AATGTCAGTT GCTGCAATCC TAAACTGTTT ATTTGCACTA TGAGCCTATA GACTATCAGT TCCCTTTGGG CGGATTGTTG TTTAACTTGT AAATGAAAAA ATTCTCTTAA ACCACAGCAC TATTGAGTGA AACATTGAAC TCATATCTGT AAGAAATAAA GAGAAGATAT ATTAGTTTTT TAATTGGTAT TTTAATTTTT ATATATGCAG GAAAGAATAG AAGTGATTGA ATATTGTTAA TTATACCACC GTGTGTTAGA AAAGTAAGAA GCAGTCAATT TTCACATCAA AGACAGCATC TAAGAAGTTT TGTTCTGTCC TGGAAATTATT TTAGTAGTGT TTCAGTAATG TTGACTGTAT TTTCCAACCT GTTCAAATTA TTACCAGTGA ATCTTTGTCA GCAGTTCCCT TTTAAATGCA AATCAATAAA TTCCCAAAAA TTTAAAAAAA AAAAAAAAAA AAAAA	
--	--	--

[0178]

[0179]

정의

[0180]

관사 "한" 및 "하나"는 본 개시에서 관사의 문법적 대상 중 하나 이상(즉, 적어도 하나)을 지칭하기 위해 사용된다. 예로서, "요소"는 하나의 요소 또는 하나 초과의 요소를 의미한다.

[0181]

용어 "및/또는"은 달리 나타내지 않는 한 본 개시에서 "및" 또는 "또는"을 의미하는 것으로 사용된다.

[0182]

본원에 사용되는 용어 "폴리뉴클레오티드" 및 "핵산 분자"는 리보뉴클레오티드 또는 데옥시뉴클레오티드 중 적어도 10개의 염기 또는 염기쌍 길이의 뉴클레오티드의 폴리머 형태, 또는 어느 유형의 뉴클레오티드의 변형된 형태를 의미하도록 상호교환적으로 사용되고, 단일 가닥 및 이중 가닥 형태의 DNA를 포함하는 것으로 의도된다. 본원에서 사용시, 마이크로어레이 분석에서 프로브로서 작용하는 핵산 분자 또는 핵산 서열은 바람직하게는 뉴클레오티드, 더 바람직하게는 DNA 및/또는 RNA의 쇄를 포함한다. 다른 실시양태들에서, 핵산 분자 또는 핵산 서열은 다른 종류의 핵산 구조 예컨대 DNA/RNA 헬릭스, 펩티드 핵산(PNA), 잠금 핵산(LNA) 및/또는 리보자임을 포함한다. 본원에서 사용되는 용어 "핵산 분자"는 또한 천연 뉴클레오티드와 동일한 기능을 나타내는 비천연 뉴클레오티드, 변형된 뉴클레오티드 및/또는 비뉴클레오티드 빌딩 블록을 포함하는 쇄를 포함한다.

[0183]

본원에서 사용되는 용어 "혼성화하다", "혼성화하는", "혼성화한다" 등은, 폴리뉴클레오티드의 맥락에서 사용될 때, 통상적인 혼성화 조건, 예컨대 50% 포름아미드/6XSSC/0.1% SDS/100 μ g/ml ssDNA에서의 혼성화(여기서 혼성화를 위한 온도는 37 $^{\circ}$ C를 초과하고, 0.1 XSSC/0.1% SDS에서 세척을 위한 온도는 55 $^{\circ}$ C를 초과함), 바람직하게는 엄격한 혼성화 조건을 지칭하는 것으로 의도된다.

[0184]

본원에서 사용되는 용어 "정규화" 또는 "정규화군(normalizer)"는 샘플 중의 바이오마커 농도의 생물학적 변화보다는 샘플 취급, 샘플 준비 및 측정 방법으로 인한 기술적 변화에서 발생하는 영향을 조정하기 위해 표준 값에 대한 미분 값(differential value)의 표현을 지칭한다. 예를 들어, 차별적으로 발현된 단백질의 발현을 측정할 때, 단백질의 발현에 대한 절대 값은 발현에서 실질적으로 일정한 표준 단백질의 발현에 대한 절대 값으로 표현될 수 있다.

[0185]

용어 "진단" 및 "진단학"은 또한 각각 용어 "예후" 및 "예후학"뿐만 아니라 시간에 따른 진단 및/또는 예후를 모니터링하기 위해 2개 이상의 시점에 걸쳐 그러한 절차의 적용, 및 그에 기초한 통계 모델링을 포함한다. 또한, 진단이라는 용어는 a. 예측(환자가 공격적인 질환(과증식/침습)을 일으킬 가능성이 있는지 판단), b. 예후(향후에 미리 선택된 시간에 환자가 더 나은 결과를 보일지 또는 더 나쁜 결과를 보일지 예측), c. 치료 선택, d. 치료 약물 모니터링, 및 e. 재발 모니터링을 포함한다.

- [0186] 생물학적 샘플과 관련하여 본원에서 사용되는 용어 "제공(하는)"은 대상체로부터 생물학적 샘플을 직접 또는 간접적으로 얻는 것을 지칭한다. 예를 들어, "제공"은 (예를 들어, 혈액 채취, 조직 생검, 세척 등에 의해) 대상체로부터 생물학적 샘플을 직접적으로 얻는 행위를 지칭할 수 있다. 나아가, "제공"은 생물학적 샘플을 간접적으로 얻는 행위를 지칭할 수 있다. 예를 들어, 제공은 샘플을 직접 얻은 당사자로부터 샘플을 받는 실험실의 행위 또는 보관소에서 샘플을 얻는 행위를 지칭할 수 있다.
- [0187] "정확도"는 측정된 또는 계산된 양(시험 보고된 값)의, 실제의 (또는 참된) 값에 대한 적합성의 정도를 지칭한다. 임상적 정확도는 참된 결과(진양성(TP) 또는 진음성(TN) 대 오분류된 결과(위양성(FP) 또는 위음성(FN))의 비율과 관련이 있으며 감도, 특이성, 양의 예측값(PPV) 또는 음의 예측값(NPV)으로, 또는 다른 척도 중에서도, 가능성, 오즈비(odds ratio)로서 표시될 수 있다.
- [0188] 본원에서 사용되는 용어 "생물학적 샘플"은 잠재적으로 하나 이상의 바이오마커를 함유하는 생물학적 기원의 임의의 샘플을 지칭한다. 생물학적 샘플의 예는 조직, 장기, 또는 체액 예컨대 전혈, 혈장, 혈청, 조직, 세척액 또는 질환의 검출에 사용되는 임의의 다른 표본을 포함한다.
- [0189] 본원에서 사용되는 용어 "대상체"는 포유동물, 바람직하게는 인간을 지칭한다.
- [0190] 병태와 관련하여 본원에서 사용되는 "치료" 또는 "치료법"은 병태의 예방, 병태의 발병 또는 발병 속도의 둔화, 병태의 발생 위험 감소, 병태와 관련된 증상의 발현의 예방 또는 지연, 병태와 관련된 증상의 경감 또는 종결, 병태의 완전한 또는 부분적인 회귀의 발생, 또는 이들의 일부 조합을 지칭할 수 있다.
- [0191] 바이오마커 수준은 질환의 치료로 인해 달라질 수 있다. 바이오마커 수준의 변화는 본 개시에 의해 측정될 수 있다. 바이오마커 수준의 변화는 질환 또는 치료의 진행을 모니터링하는데 사용될 수 있다.
- [0192] "변경된", "변화된" 또는 "유의하게 다른"은 합리적으로 비교 가능한 상태, 프로파일, 측정 등으로부터의 검출 가능한 변화 또는 차이를 지칭한다. 이러한 변화는 모두 또는 없음일 수 있다. 이는 점진적일 수 있으며 선형일 필요는 없다. 이는 규모에 따라 다를 수 있다. 변화는 1%, 5%, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 95%, 99%, 100%, 또는 그 이상 증가 또는 감소일 수 있거나, 0%와 100% 사이의 임의의 값일 수 있다. 대안적으로, 변화는 1배, 1.5배, 2배, 3배, 4배, 5배 또는 그 이상일 수 있거나 또는 1배 내지 5배 사이의 임의의 값일 수 있다. p 값이 0.1, 0.05, 0.001 또는 0.0001이면 변화는 통계적으로 유의할 수 있다.
- [0193] 용어 "안정한 질환"은 흑색종의 존재에 대한 진단을 지칭하지만, 흑색종이 치료되고 안정된 상태, 즉 영상 데이터 및/또는 최상의 임상적 판단에 의해 결정된 바와 같이 진행성이 없는 상태로 유지되는 것을 지칭한다.
- [0194] 용어 "진행성 질환"은 흑색종의 고 활성 상태의 존재에 대한 진단, 즉, 영상 데이터 및/또는 최상의 임상적 판단에 의해 결정된 바와 같이, 치료된 적이 없고 안정하지 않거나, 또는 치료된 적이 있고 치료에 반응하지 않거나, 또는 치료된 적이 있고 활성 질환이 남아있음에 대한 진단을 지칭한다.
- [0195] **실시예**
- [0196] 본 개시는 하기 실시예에 의해 추가로 예시되며, 이는 본 개시 내용을 본원에 기재된 특정 절차로 범위 또는 취지에 있어 제한하는 것으로 해석되지 않아야 한다. 실시예는 특정 실시양태를 예시하기 위해 제공되며, 이에 의해 본 개시의 범위에 대한 제한이 의도되지 않는 것으로 이해되어야 한다. 추가로, 본 개시의 취지 및/또는 첨부된 청구범위의 범주를 벗어나지 않고 당업자에게 시사될 수 있는 다양한 다른 실시양태, 변형 및 그 등가물에 의지할 수 있음을 이해해야 한다.
- [0197] 실시예 1
- [0198] 28-마커 유전자 패널의 유도
- [0199] $n = 49$ 전혈 샘플로부터의 생(raw) 프로브 강도($n = 6,892,960$ 특징(features))를 사용하여 상이한 유형의 흑색종 샘플 사이에서, 예를 들어 치료된 것과 치료되지 않은 것을 동시에 가장 잘 구별되는 유전자를 동정하였다. 총 28개의 전사체가 편견없는 방식으로 흑색종 행동의 잠재적 마커로서 특정되었다(표 2).
- [0200] 흑색종 질환 역학의 인공 지능 모델은 컨트롤(Control)($n = 90$), 반응형/안정형(Responders/Stable)($n = 68$) 및 진행형(Progressive)($n = 66$) 샘플로부터 전혈 중 이들 28개 마커의 정규화된 유전자 발현을 사용하여 구축되었다. 데이터 세트는 모델 생성 및 검증을 위해 각각 훈련($n = 169$) 및 시험($n = 55$) 파티션으로 무작위로 분할되었다. 훈련 데이터를 가장 잘 예측하는 5가지 알고리즘(XGB, RF, TreeBag, SVM, NNET)이 특정되었다. 테스트 세트에서, 각 알고리즘은 샘플을 예측하는 확률 스코어를 생성했다. 각 확률 스코어는 미지의 샘플이

컨트롤, 반응형/안정형 또는 진행형 클래스에 속하는 알고리즘의 "확실성"을 반영한다. 예를 들어, 미지의 샘플 S1은 하기의 확률 벡터{컨트롤 = 20, 반응형 = 50, 진행형 = 30}를 가질 수 있다. 이 샘플은 스코어가 50인 경우 반응형으로 간주되지만 진행 가능성(확률 30)이 있을 수 있다(도 1).

표 2.

흑색종 바이오마커 또는 하우스키팅 유전자		염색체 위치 [염색대]	Uni Gene ID	RefSeq	정방향 및 역방향 프라이머를 사용하여 생성된 애플리곤	
심볼	명칭				길이 (bp)	엑손 위치
ATL1	아틀라스틴 GTPase 1	Chr.14: 50533082 - 50633068 [14q22.1]	Hs.58 4905	NM_001 127713.1	65	12 - 13
ATP6V0D	ATPase H+ 수송 V0 서브유닛 d1	Chr.16: 67438014 - 67481186 [16q22.1]	Hs.10 6876	NM_004 691.4	72	1 - 2
C1ORF21	염색체 1 개방 해독틀 21	Chr.1: 184387016 - 184629021 [1q25.3]	Hs.49 7159	NM_030 806.3	84	5-6
CFLAR	CASP8 및 FADD 유사 아폽토시스 조절인자	Chr.2: 201116015 - 201172688 [2q33.1]	Hs.39 0736	NM_001 127183.2	59	3-4
CFLAR-AS1	CFLAR 안티센스 RNA 1	Chr.2: 201140289 - 201157792 [2q33.1]	Hs.66 4613	NR_0400 30.1	103	6-7
CHP1	칼시뉴린 유사 EF-핸드 단백질 1	Chr.15: 41231149 - 41281887 [15q15.1]	Hs.40 6234	NM_007 236.4	120	1-2
DDX55	DEAD-박스 헬리카제 55	Chr.12: 123602077 - 123620943 [12q24.31]	Hs.28 6173	NM_020 936.2	74	1-2
DMD	디스트로핀	Chr.X: 31119219 - 33339609 [Xp21.1]	Hs.49 5912	NM_000 109.3	76	63-64
DNAJC9	DnaJ 열 쇼크 단백질 패밀리 (Hsp40) 멤버 C9	Chr.10: 73241954 - 73247331 [10q22.2]	Hs.40 8577	NM_015 190.4	102	1-1
ENOSF1	에놀라제 수퍼패밀리 멤버 1	Chr.18: 670012 - 712664 [18p11.32]	Hs.65 8550	NM_001 126123.3	110	13-14
FANCL	Fanconi 빈혈 상보군 L	Chr.2: 58159243 - 58241380 [2p16.1]	Hs.63 1890	NM_001 114636.1	138	6-7
HJURP	홀리데이 접합 인식 단백질	Chr.2: 233836701 - 233854566 [2q37.1]	Hs.53 2968	NM_018 410.4	52	399 4-5

[0201]

HLA-DOA	주조직적합 복합체, class II, DO 알파	Chr.6: 33004182 - 33009612 [6p21.32]	Hs.63 1991	NM_002 119.3	124	160	1-2
HLA-DRA	주조직적합 복합체, class II, DR 알파	Chr.6: 32439842 - 32445046 [6p21.32]	Hs.52 0048	NM_019 111.4	129	884	4-5
HNRNPA3P1	이중 핵 리보뉴클레오단백질 A3 슈도유전자 1	Chr.10: 43787412 - 43790417 [10q11.21]	Hs.63 2956	NR_0027 26.2	99	2455	1-1
IL23A	인터류킨 23 서브유닛 알파	Chr.12: 56334159 - 56340410 [12q13.3]	Hs.38 2212	NM_016 584.2	107	323	1-2
IQGAP1	IQ 모티프 함유 GTPase 활성화 단백질 1	Chr.15: 90388241 - 90502243 [15q26.1]	Hs.43 0551	NM_003 870.3	69	4562	34-35
LOC494127	NFYC 슈도유전자	Chr.9: 87083886 - 87085225 [9q21.33]	Hs.62 6316	NR_0366 91.1	86	150	1-1
LOC646471	특징규명되지 않은 LOC646471	Chr.1: 25819954 - 25823606 [1p36.11]	Hs.72 7271	NR_0244 98.1	80	2858	1-1
LOH12CR	이종접합성의 상실, 12, 염색체 영역 2 (비-단백질 코딩)	Chr.12: 12355408 - 12357067 [12p13.2]	Hs.67 553	NR_0240 61.1	69	140	1-2
MTRNR2L2_M TO1	CUSTOM PRIMER						
PBXIP1	PBX 호메오박스 상호작용 단백질 1	Chr.1: 154944080 - 154956163 [1q21.3]	Hs.50 5806	NM_020 524.3	60	189	2-3
RNF5	링 핑거 단백질 5	Chr.6: 32178385 - 32180793 [6p21.32]	Hs.73 1774	NM_006 913.3	67	273	1-2
SERTAD2	SERTA 도메인 함유 2	Chr.2: 64631621 - 64751091 [2p14]	Hs.59 1569	NM_014 755.2	91	288	1-2
SLC35G5	용질 캐리어 패밀리 35 멤버 G5	Chr.8: 11330986 - 11332186 [8p23.1]	Hs.45 8397	NM_054 028.1	144	541	1-1
SPATS2L	정자형성과 관련된 세린 리치 2 유사	Chr.2: 200305881 - 200482263 [2q33.1]	Hs.12 0323	NM_001 100422.1	89	1364	10-11
TDRD7	튜더 도메인 함유 7	Chr.9: 97412020 - 97496125 [9q22.33]	Hs.19 3842	NM_001 302884.1	59	3084	15-16
TOX4 (하우스키핑 유전자)	TOX 고 이동 그룹 박스 패밀리 멤버 4	Chr.14: 21477176 - 21499177 [14q11.2]	Hs.55 5910	NM_001 303523.1	145	447	3-3
TPT1 (하우스키핑 유전자)	종양 단백질, 번역-제어 1	Chr.13: 45333471 - 45341284 [13q14.13]	Hs.37 4596	NM_001 286272.1	131	377	3-3
TXK	TXK 티로신 키나제	Chr.4: 48066393 - 48135322 [4p12]	Hs.47 9669	NM_003 328.2	113	1265	11-12
YY2	YY2 전사 인자	Chr.X: 21855987 - 21858727 [Xp22.12]	Hs.67 3601	NM_206 923.3	110	552	1-1

[0202]

[0203]

[0204]

진단: 흑색종으로서 샘플의 확인

테스트 세트 1에서, 흑색종을 컨트롤과 구별하기 위한 테스트의 유용성에 대한 데이터가 표 3에 포함되어 있다. 측정기준이 도 2에 포함된다. 이들은 하기와 같다: 감도 >90%, 특이성 100%, PPV 100%, NPV 87%. 전체 정확도는 94%이다. 따라서 이 틀은 컨트롤과 공격형 및 안정형 흑색종 질환을 구별할 수 있다.

표 3. 샘플이 흑색종인지 혈액 샘플 중의 컨트롤인지 결정하는 5-모델 알고리즘의

분류 정확도를 보여주는 혼동 매트릭스

예측/기준	흑색종	컨트롤
컨트롤	3	20
흑색종	30	0
감도	91%	
특이성	100%	
양의 예측값	100%	
음의 예측값	87%	
정확도	94%	

[0205]

[0206]

74명의 컨트롤 및 92명의 흑색종 환자를 포함하는 제2 테스트 세트(테스트 세트 2)에서 테스트를 평가하였다. 흑색종 그룹에서의 평균 Melanomx 스코어는 73 ± 31 인 반면 컨트롤 그룹에서의 것은 10 ± 8 이었다 (도 3a). 수신자 오퍼레이터 곡선 분석은 스코어가 0.96의 곡선하 면적(AUC)을 나타내고(도 3b) 측정기준이 88-100%임(도 3c)을 입증했다.

[0207]

흑색종의 외과적 절제와의 상관관계.

[0208]

외과 수술 시리즈($n = 46$)에서, 흑색종의 제거는 스코어를 74 ± 16 에서 20 ± 12 로 감소시켰다(도 4a). 수술 후 그룹의 평가는 질환의 증거가 없는 환자 13 ± 6 (컨트롤과 다르지 않음)과 잔류 질환이 있는 환자(33 ± 9) 간에 스코어가 유의하게 다르다는 것을 확인하였다 (도 4b). 따라서 Melanomx 스코어는 수술 범위를 정의하고 외과 치료를 받을 대상을 특정할 수 있다.

[0209]

면역 요법 및 표적 (BRAF 저해제) 요법의 평가.

[0210]

치료 시리즈($n = 30$)에서, 이필리무맙(CTLA-4를 표적으로 하는 면역 요법), 니볼루맙(PD-1을 표적으로 하는 면역 요법) 또는 BRAF 저해제(베무라페닙)를 이용한 5개월간의 치료는 Melanomx 스코어를 각각 88 ± 12 에서 15 ± 5 ($p < 0.0001$), 35 ± 14 ($p < 0.001$) 및 38 ± 21 ($p < 0.0001$)로 유의하게 감소시켰다 (도 5). 치료 그룹의 모든 환자는 안정적이었다. 이는 Melanomx 스코어가 흑색종에서 면역 및 표적 요법 둘 다의 효능을 측정하기 위해 사용될 수 있고, 스코어의 감소는 치료적 개입에 대한 반응과 상관관계가 있음을 나타낸다.

[0211]

유전자 발현이 흑색종 유래임을 확인.

[0212]

본 발명자들은 상이한 흑색종 세포주, 종양 조직에서의 발현을 평가하고, 혈액에서의 발현을 수술 중 동일한 시점에 수집된 종양 조직과 비교함으로써 흑색종이 혈액-기반 유전자 발현 어세이의 소스임을 확인하였다.

[0213]

28개의 유전자 모두가 3종의 흑색종 세포주 모두에서 고도로 발현되었다. 스코어는 94 ± 6 (Hs294T) 내지 82 ± 5 (CHL) 내지 42 ± 9 (A375) 범위였다 (도 6a).

[0214]

이들 3종의 세포주 및 정상 전혈을 사용한 스파이크-인 실험은 단 1개의 세포가 1 ml의 혈액에 스파이크될 때 유전자 발현 스코어가 검출되었음을 입증하였다. 단일 흑색종 세포가 검출가능하였다. 스코어는 21 ± 4 (A375) 내지 30 ± 5 (CHL) 내지 34 ± 2 (H2294) 범위였다 (도 6b). 스코어는 컨트롤 혈액(스파이크-인 없음; $p < 0.0001$)과 비교하여 유의하게 상승했다.

[0215]

본 발명자들은 이후 종양 조직에서 유전자 발현을 평가했다. 28개의 유전자 모두 매칭된 정상 조직과 비교하여 흑색종에서 고도로 발현되었으며 스코어는 70 ± 20 대 4 ± 3 으로 유의하게 증가되었다 ($p < 0.0001$) (도 7a).

[0216]

본 발명자들은 또한 동일한 시점에 수집된 종양 조직 및 혈액에서 유전자 발현을 비교했다. 유전자 발현은 고도로 일치했으며 (피어슨 r : 0.74 - 0.83, 중앙값: 0.819) 종양 조직 및 혈액에서의 유전자 발현이 일치했음을 보

여준다 (도 7b).

참고문헌:

1. Schadendorf D, Fisher DE, Garbe C, et al. Melanoma. Nat Rev Dis Primers. 2015;1:15003.: 10.1038/nrdp.2015.1033.
2. Mar VJ, Wong SQ, Li J, et al. BRAF/NRAS wild-type melanomas have a high mutation load correlating with histologic and molecular signatures of UV damage. Clin Cancer Res. 2013;19: 4589-4598. doi: 4510.1158/1078-0432.CCR-4513-0398. Epub 2013 Jul 4585.
3. Genomic Classification of Cutaneous Melanoma. Cell. 2015;161: 1681-1696. doi: 1610.1016/j.cell.2015.1605.1044.
4. Wan PT, Garnett MJ, Roe SM, et al. Mechanism of activation of the RAF-ERK signaling pathway by oncogenic mutations of B-RAF. Cell. 2004;116: 855-867.
5. Krauthammer M, Kong Y, Bacchiocchi A, et al. Exome sequencing identifies recurrent mutations in NF1 and RASopathy genes in sun-exposed melanomas. Nat Genet. 2015;47: 996-1002. doi: 1010.1038/ng.3361. Epub 2015 Jul 1027.
6. Svedman FC, Pillas D, Taylor A, Kaur M, Linder R, Hansson J. Stage-specific survival and recurrence in patients with cutaneous malignant melanoma in Europe - a systematic review of the literature. Clin Epidemiol. 2016;8:109-22.: 10.2147/CLEP.S99021. eCollection 92016.
7. Gershenwald JE, Thompson W, Mansfield PF, et al. Multi-institutional melanoma lymphatic mapping experience: the prognostic value of sentinel lymph node status in 612 stage I or II melanoma patients. J Clin Oncol. 1999;17: 976-983.
8. Minor DR, Moore D, Kim C, et al. Prognostic factors in metastatic melanoma patients treated with biochemotherapy and maintenance immunotherapy. Oncologist. 2009;14: 995-1002. doi: 1010.1634/theoncologist.2009-0083. Epub 2009 Sep 1023.

[0217]

9. Kaisaki PJ, Cutts A, Popitsch N, et al. Targeted Next-Generation Sequencing of Plasma DNA from Cancer Patients: Factors Influencing Consistency with Tumour DNA and Prospective Investigation of Its Utility for Diagnosis. *PLoS One*. 2016;11: e0162809. doi: 0162810.0161371/journal.pone.0162809. eCollection 0162016.
10. Knol AC, Vallee A, Herbreteau G, et al. Clinical significance of BRAF mutation status in circulating tumor DNA of metastatic melanoma patients at baseline. *Exp Dermatol*. 2016;25: 783-788. doi: 710.1111/exd.13065.
11. Khoja L, Lorigan P, Dive C, Keilholz U, Fusi A. Circulating tumour cells as tumour biomarkers in melanoma: detection methods and clinical relevance. *Ann Oncol*. 2015;26: 33-39. doi: 10.1093/annonc/mdu1207. Epub 2014 Jun 1096.
12. Stark MS, Klein K, Weide B, et al. The Prognostic and Predictive Value of Melanoma-related MicroRNAs Using Tissue and Serum: A MicroRNA Expression Analysis. *EBioMedicine*. 2015;2: 671-680. doi: 610.1016/j.ebiom.2015.1005.1011. eCollection 2015 Jul.
13. Gerami P, Cook RW, Wilkinson J, et al. Development of a prognostic genetic signature to predict the metastatic risk associated with cutaneous melanoma. *Clin Cancer Res*. 2015;21: 175-183. doi: 110.1158/1078-0432.CCR-1113-3316.
14. Berger AC, Davidson RS, Poitras JK, et al. Clinical impact of a 31-gene expression profile test for cutaneous melanoma in 156 prospectively and consecutively tested patients. *Curr Med Res Opin*. 2016;32: 1599-1604. doi: 1510.1080/03007995.03002016.01192997. Epub 03002016 Jun 03007993.
15. Hanahan D, Weinberg RA. The hallmarks of cancer. *Cell*. 2000;100: 57-70.
16. Hanahan D, Weinberg RA. Hallmarks of cancer: the next generation. *Cell*. 2011;144: 646-674. doi: 610.1016/j.cell.2011.1002.1013.
17. Kidd M, Drozdov I, Modlin I. Blood and tissue neuroendocrine tumor gene cluster analysis correlate, define hallmarks and predict disease status. *Endocr Relat Cancer*. 2015;22: 561-575. doi: 510.1530/ERC-1515-0092. Epub 2015 Jun 1532.
18. Modlin I, Drozdov I, Kidd M. The Identification of gut neuroendocrine tumor disease by multiple synchronous transcript analysis in blood. *Plos One*. 2013;e63364.

[0218]

19. Li SC, Essaghir A, Martijn C, et al. Global microRNA profiling of well-differentiated small intestinal neuroendocrine tumors. Mod Pathol. 2013;26: 685-696. doi: 610.1038/modpathol.2012.1216. Epub 2013 Jan 1018.
20. Modlin I, Drozdov I, Alaimo D, et al. A multianalyte PCR blood test outperforms single analyte ELISAs for neuroendocrine tumor detection Endocr Relat Cancer. 2014;21: 615-628.
21. Modlin IM, Frilling A, Salem RR, et al. Blood measurement of neuroendocrine gene transcripts defines the effectiveness of operative resection and ablation strategies. Surgery. 2016;159: 336-347. doi: 310.1016/j.surg.2015.1006.1056. Epub 2015 Oct 1019.
22. Cwikla JB, Bodei L, Kolasinska-Cwikla A, Sankowski A, Modlin IM, Kidd M. Circulating transcript analysis (NETest) in GEP-NETs treated with Somatostatin Analogs defines Therapy. J Clin Endocrinol Metab. 2015;100: E1437-1445.
23. Bodei L, Kidd M, Modlin IM, et al. Measurement of circulating transcripts and gene cluster analysis predicts and defines therapeutic efficacy of peptide receptor radionuclide therapy (PRRT) in neuroendocrine tumors. Eur J Nucl Med Mol Imaging. 2015;23: 23.
24. Pavel M, Jann H, Prasad V, Drozdov I, Modlin IM, Kidd M. NET Blood Transcript Analysis defines the Crossing of the Clinical Rubicon: When Stable Disease becomes Progressive. Neuroendocrinology. 2017;104: 170-182.
25. Merlino G, Herlyn M, Fisher DE, et al. The state of melanoma: challenges and opportunities. Pigment Cell Melanoma Res. 2016;29: 404-416. doi: 410.1111/pcmr.12475. Epub 12016 Apr 12417.
26. Diaz-Uriarte R, Alvarez de Andres S. Gene selection and classification of microarray data using random forest. BMC Bioinformatics. 2006;7: 3.

[0219]

[0220]

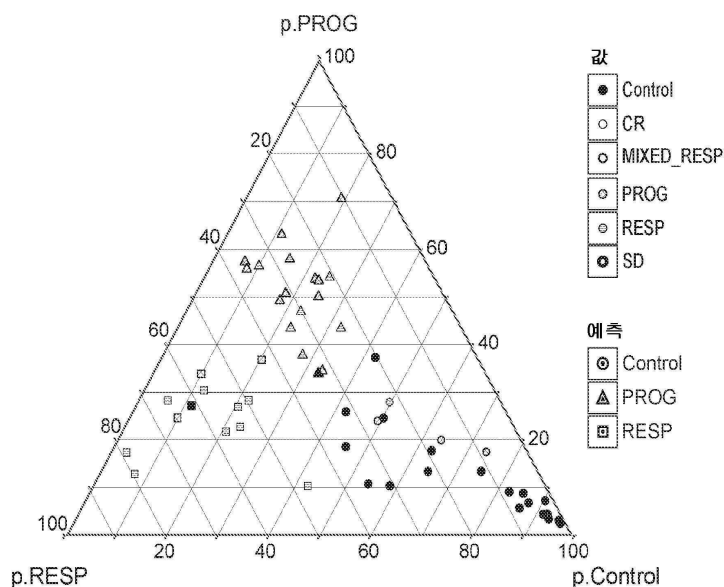
[0221]

균등물

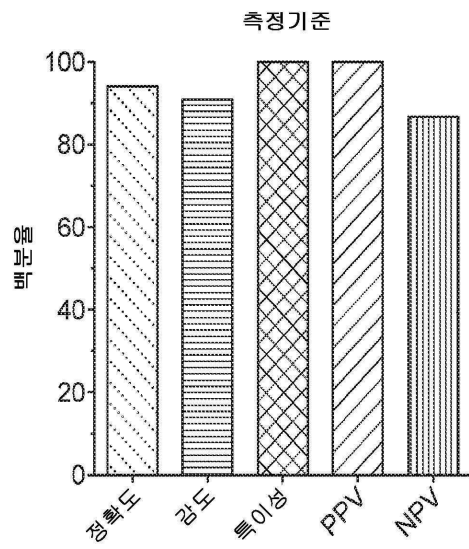
본 발명은 상술한 특정 실시양태와 관련하여 설명되었지만, 이의 많은 대안, 수정 및 다른 변형이 당업자에게 명백할 것이다. 이러한 모든 대안, 수정 및 변형은 본 발명의 취지 및 범위 내에 포함되는 것으로 의도된다.

도면

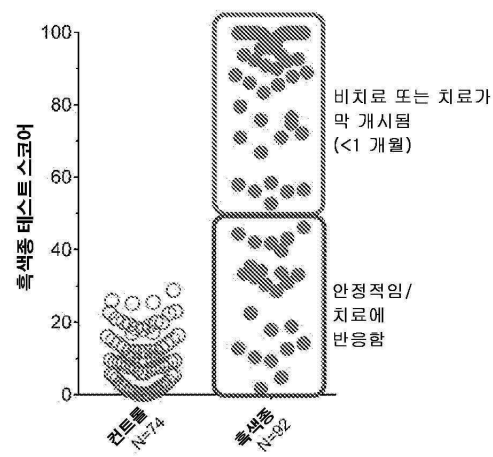
도면1



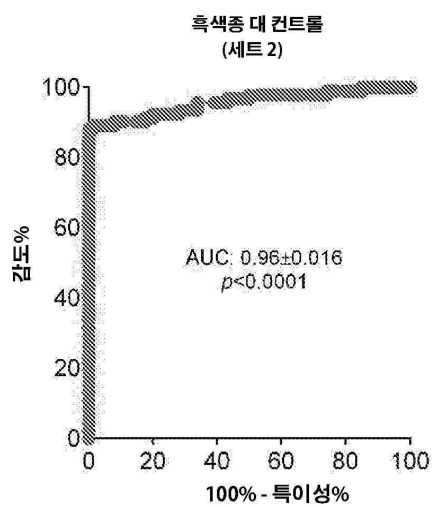
도면2



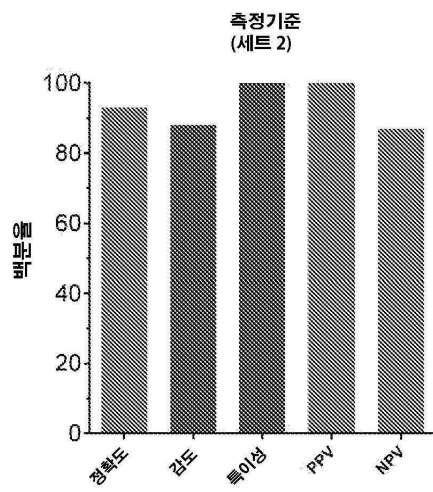
도면3a



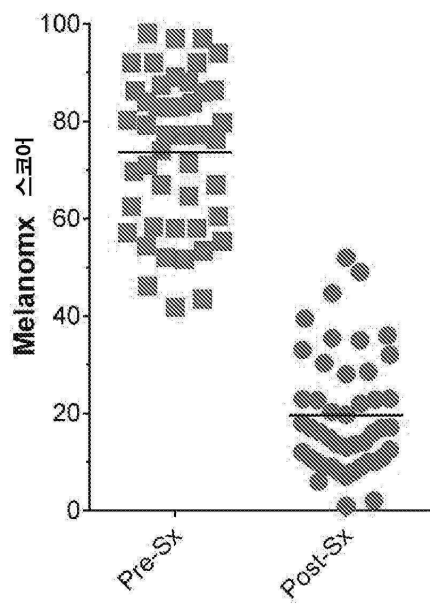
도면3b



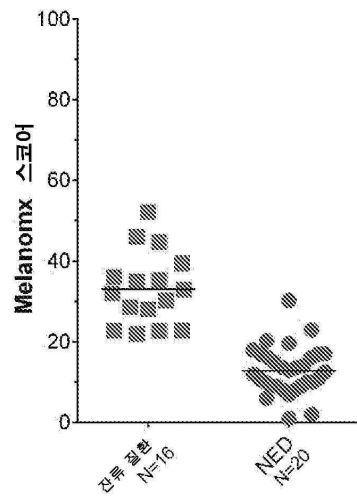
도면3c



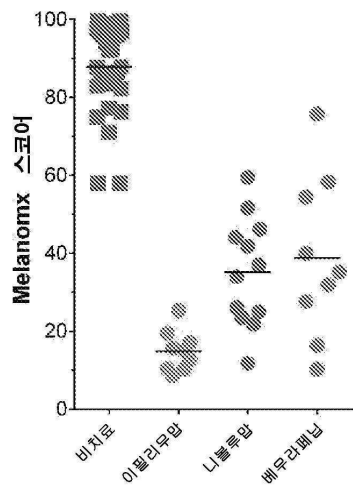
도면4a



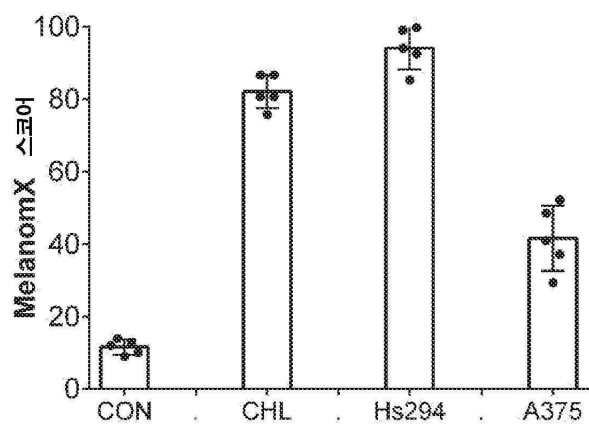
도면4b



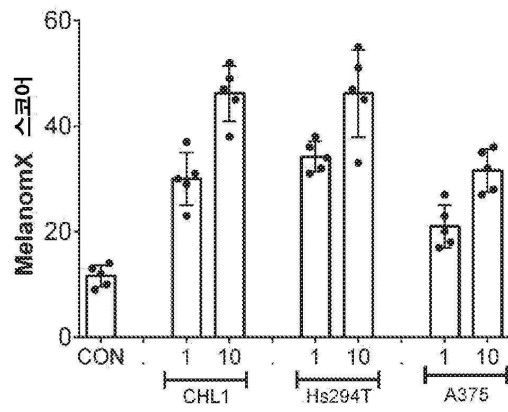
도면5



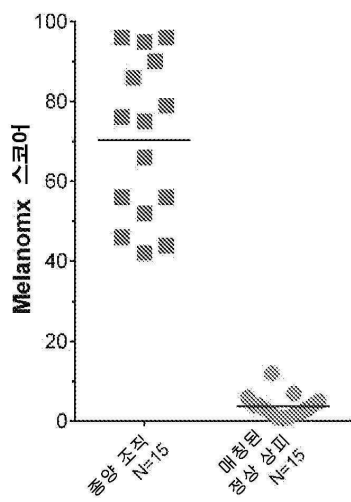
도면6a



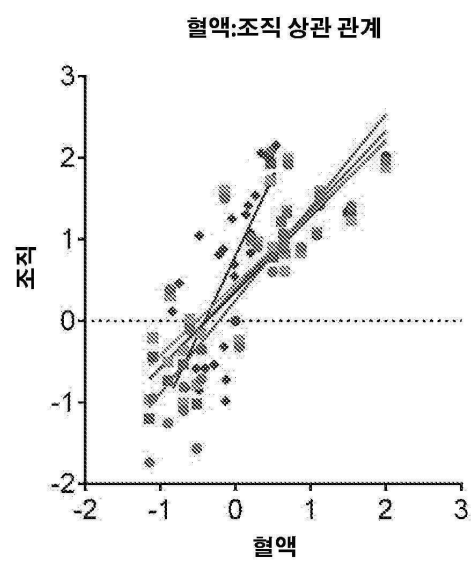
도면6b



도면7a



도면7b



서열 목록

SEQUENCE LISTING

<110> Liquid Biopsy Research LLC

<120> METHODS FOR MELANOMA DETECTION

<130> LBIO-001/001WO 331068-2007

<150> US 62/511,058

<151> 2017-05-25

<160> 56

<170> PatentIn version 3.5

<210> 1

<211> 2821

<212> DNA

<213> Homo sapiens

<400> 1

```

agtttgaggc tgcactgcac acctgcacaa cctgccttct acttagttct tctgagacat      60
ttctgaaagt ctgaattcct aggactgctc aatgaccttt gtcctgttg ggcacacgca      120
gtgtctcatc gctggtattg cacctttaat gagaccagga gttccgcaa agtaaaacaa      180

agggtgcaca gactggttct ggttctacca cttcctcagt atgtgctctg ggacaaaaca      240
gcatatttgg caacatctcg gtgtccttat ctgcagcttg aagaggcgcc acagcaacat      300
cttcagagtc tgagcgaact gcgcccagcg cgggcacgga gcctcccacc gccagcaacc      360
tgcggccccc gagaaggcag cgagcgcagt gacagcgctt caccgccacc agtccttgga      420
ccaccatggc caagaaccgc agggacagaa acagttgggg tggattttcg gaaaagacat      480
atgaatggag ctcagaagag gaggagccag tgaaaaaggc aggaccagtc caagtcctca      540
ttgtcaaaga tgaccattcc tttgagttag atgaaactgc attaaatcgg atccttctct      600

cggaggctgt cagagacaag gaggttggtg ctgtatctgt tgctggagca ttagaaaag      660
gaaaatcatt cctgatggac ttcatgttga gatacatgta caaccaggaa tcagttgatt      720
gggttggaga ctacaatgaa ccattgactg gtttttcatg gagaggtgga tctgagcgag      780
agaccacagg aattcagata tggagtgaat tcttccttat caataaacct gatggtaaaa      840
aggttgcagt gttattgatg gatactcagg gaacctttga tagtcagtca actttgagag      900
attcagccac agtatttgcc cttagcacia tgatcagctc aatacaggta tataacttat      960
cccaaatgt ccaggaggat gatcttcagc acctccagct tttactgag tatggcagac      1020

tggcaatgga ggaacattc ctgaagccat ttcagagtct gatatttctt gttcagagact      1080

```

ggagtttccc atacgaattt tcatatggag ccgatggtgg tgccaaattc ttggaaaaac 1140
 gcctcaaggt ctcaaggaa cagcatgaag aactacagaa cgtcagaaaa cacatccatt 1200
 cctgtttcac caacatttcc tgttttctgc tacctcatcc tggcttaaaa gtagctacca 1260
 atccaaactt tgatggaaaa ttgaaagaaa tagatgatga attcatcaaa aacttgaaaa 1320
 tactgattcc ttggctactt agtcccgaga gcctagatat taaagagatc aatgggaata 1380
 aaatcacctg ccggggtctg gtggagtact tcaaggctta tataaagatc tatcaaggtg 1440

 aagaattacc acatcccaaa tccatgttac aggccacagc agaagctaac aatttagcag 1500
 ccgtggcaac tgccaaggac acatacaaca aaaaaatgga agagatttgt ggtggtgaca 1560
 aaccatttct ggccccaat gacttgcaga ccaaacacct gcaacttaag gaagaatctg 1620
 tgaagctatt ccgaggggtg aagaagatgg gtggggaaga atttagccgg cgttacctgc 1680
 agcagttgga gagtgaata gatgaacttt acatccaata tatcaagcac aatgatagca 1740
 aaaatatctt ccatgcagct cgtaccccag ccacactgtt tgtagtcac tttatcacat 1800
 atgtgattgc tgggtgtgact ggattcattg gtttggacat catagctagc ctatgcaata 1860

 tgataatggg actgaccctt atcacctgt gcacttgggc atatatccgg tactctggag 1920
 aataccgaga gctgggagct gtaatagacc aggtggctgc agctctgtgg gaccaggctt 1980
 tgtacaagct ttacagtga gcagcaacc acagacatct gtatcatcaa gttttcccta 2040
 caccaaaagc ggaatctact gaacaatcag aaaagaaaaa aatgtaatgc aaattttaag 2100
 aaatacaggt gcatgaccaa ttgtcaatta aatattcagt tttatgtctc catgcaaaca 2160
 ttcaaagtgc ttccatcaga acggagtaaa atactaaaca cctctgaaga ctgcaaactg 2220
 gattagtctt tttacttcag tgtttaataa gcagatgtat gtatgcatgg ttatactatt 2280

 ttgttaacat gtacaatttc ctgatttttc ttcaaaaatg ctgttataaa gtatttgtct 2340
 atttatgata acagtacagc tgttctgctt gaatttacta aattctacta ctgggttata 2400
 attaaatcat gtgatatcc acgtttggat atgctcattt aatttctaca gaaaaaattt 2460
 taaattattt cacattagcc atttgttaaa acacagcatc ataactcagc aggctggatt 2520
 taatctgtat catcttatat atatcacaat cttattttta agcacatttt agagttcctt 2580
 agttgcttta tcaaaaacca gatattgctt ttacatgggt taatagaata taaacctctt 2640
 gataaaaaat gcacaaaaaa tcactttgta tatgtgagtt tcactgcatt gtatattttt 2700

 tcatttggta cacaaagaat gtattcttca taggtttatt cttttaatat gtgaactatt 2760
 attaaagttt actctgggtc ctaagattaa aaacaaatgc ttactgaatt tgaaaaaaa 2820
 a 2821

<211> 1688

<212> DNA

<213> Homo sapiens

<400> 2

```

acttgacagc ccgtgagga cgcagcgtca gctgacctgg ggagtcgcga ttcgtgccgg      60
ccggtcctgg ttctccggtc ccgccgtcc cgcagcagcc atgtcgttct tcccggagct      120
ttactttaac gtggacaatg gctacttgga gggactgggtg cgcggcctga aggccggggt      180

gctcagccag gccgactacc tcaacctggt gcagtgcgag acgctagagg acttgaaact      240
gcatctgcag agcactgatt atggtaactt cctggccaac gaggcacac cctgcacggt      300
gtcagtcacg gatgaccggc tcaaggagaa gatggtgggtg gagttccgcc acatgaggaa      360
ccatgcctat gagccactcg ccagcttctt agacttcatt acttacagtt acatgatcga      420
caacgtgacg ctgctcatca caggcacgct gcaccagcgc tccatcgctg agctcgtgcc      480
caagtgccac ccactaggca gcttcgagca gatggaggcc gtgaacattg ctcagacacc      540
tgctgagctc tacaatgcc a ttctggtgga cagcctctt gcggcttttt tccaggactg      600

catttcagag caggaccttg acgagatgaa catcgagatc atccgcaaca ccctctacaa      660
ggcctacctg gagtccttct acaagtcttg caccctactg ggccgggacta cggctgatgc      720
catgtgcccc atcctggagt ttgaagcaga ccgccgcgcc ttcacatca ccatcaattc      780
tttcggcaca gagctgtcca aagaggaccg tgccaagctc tttccacact gtgggcgggt      840
ctacctgag ggcttggcgc agctggctcg ggctgacgac tatgaacagg tcaagaacgt      900
ggccgattac taccgggagt acaagctgct cttcgagggt gcaggtagca accctggaga      960
caagacgctg gaggaccgat tctttgagca cgaggtaaag ctgaacaagt tggccttctt      1020

gaaccagttc cactttggtg tcttctatgc ctctgtgaag ctcaaggagc aggagtgtcg      1080
caacatcgtg tggatcgctg aatgtatcgc ccagcgccac cgcgccaaaa tcgacaacta      1140
catcctatc ttctagcgtc ctggcccaag gctctcaatt gcactctttg tgtgtgtgtg      1200
tgtgtgtgtg cgcgtgtgtg tgcgtgtgtg tgtatgtggt ctgtgacaag cctgtggctc      1260
acctgcctgt ccgggggtga gtacgtgtc ctacgggctg cccagttctc ctgacctctt      1320
tagagactgt tcttaggcct gaaaaggggc tgggcacccc ccccccacaa ggatggacga      1380
agacccctc cagagcaagg aggccctc agccctgtgg ttacagccgc tgatgtatct      1440

aagaagcatg tcactttcat gttcctcctt aactccctga cctgagaacc ctggggcctg      1500
ggggcagttt gagcctcctc tcccttctgt gggtcgctcc cagagccatg gcccatggga      1560
aggacagagt gtgtgtgtcc ttggggcctg gggggatgtt gctcctcagc tccctcctc      1620

```

agccctgccc ctctgagaca ataaaactgc cctctctaag gccaaactgtc aaaaaaaaaa 1680
 aaaaaaaaaa 1688
 <210> 3
 <211> 10308
 <212> DNA
 <213> Homo sapiens
 <400> 3
 ccctccctcg ctctgctctc gcaagctccc gctcgtctcc tgcccactcc cgggggggacg 60

 ttccgtgccg cggccgcgcg ggccgctgct tctttcacac tttagttagg agctgcgcgc 120
 cgcgctcagt tactggagag ctggccgcgc gccgccgcct cccgcacgct tgcacgcggg 180
 cccggtctcg gggtttttggg ttcttactcc aagcggcggg gaggaggggg agccccggac 240
 acactgtggg gaggaggagg aagaagagga ggaggaggga agaaaaaaga cgaggaggac 300
 aggggcgggg ggcgggaggg ttgccacctt cagccccccc gcgaacgccc aaggtgcaca 360
 catcttgacc aactcagcag caaggtggat tttctttgtg tttaaagaaa aaaaatgtcc 420
 ctgtgtctgt agagatgatt tgcagttcag cccggctgaa gctgaccgaa tgagactatg 480

 ggctgtgcct ccgccaagca tgttgccact gttcaaaatg aagaggaagc ccagaaaggg 540
 aaaaactacc agaacggaga tgtgtttggc gatgagtata ggatcaaacc agtgggaagag 600
 gtcaaataca tgaaaaatgg ggcagaagaa gagcagaaaa tagcagccag gaaccaagaa 660
 aacttgaaaa aaagtgccag ctcaaatgta agacttaaaa ctaataaaga ggttccggga 720
 ttagttcatc aaccagagc aaacatgcac atctctgaaa gccacaaga attcttcaga 780
 atgtgtgatg aaaaaattga aaagggtcgg gattactgtt cggaagaaga ggatatcaca 840
 tagcaccaat ttaccactc aaaccaggag ctactactgt gtaaataggt tacaccccag 900

 ttgaaatctt tgcaaaggtc ggttctattc agcgaacagc actatagcaa aagaagatcg 960
 ttccatattg tacgcccata taaattacag tgtttcttaa tgaacttgca aaggaatatt 1020
 gctaaaaaca acaaaaaaaaa actgttatcg aactttcttt gttgtctgta gttaaaactt 1080
 gttgcaactt ttacttctc ttgtgtccag gtatgcagca aaattctgca atttcacctt 1140
 aaagatactg ttggttttac agatgctctc caacctatct tctataagat gaggtagtgg 1200
 tgaactcaga taacaaactt ctcttctaaa ctggttctgc ttctaagaca agcatctcct 1260
 gccctctctc ctctctcccc atctctcgca cgcagtctag agatggactg agccttgctt 1320

 ctactggca gtgttgagct ttggagatgg gatggttgct atgccaagcc ttgtttctct 1380
 gctcagaaga agtagagaag ctattatcaa ttaaaagcat gctgtgatgt gactcctgga 1440

agtgacgtag gagtgagtg caggttggtt gatattaatag gtatcttaat caagaattaa	1500
gcttgcaaca ttggctttgc tcagatgcag atggaagtgt gatcacaatc attttgaatc	1560
cctcttcttc actttttttt ctaagaaaat aaacatttta ctgtttttat ggatccttgt	1620
cttctcccat tcatccagct cagtgtttta agatgatcct gggtgcagaa gttgagccct	1680
cctttgcatt gacactgata attagcctat agggctccct acccttccat taagaatcta	1740
ccaagcatta gcaaggctga aagtgggtcta agaggtgagg ggacatccta tgacttttta	1800
ggaaggcctg aaaccacctt gttacctttc attttgtag caaataaacc atcctatttt	1860
gtaactctcc cctttcaaaa tgetacatga gccttgccac ttcctttttc tcttacttcc	1920
agcacactag acatagcaaa agtgtttgcc tactcaaaaa cataatactt ttatgctgat	1980
gatggtatth ggagatgtga aagccaaaag ccctggcag tgggtgggaa gtttgactga	2040
gtgttcagca gagttttttt ttccatacta tatgaagaga atgatctctt ctcaaagaca	2100
gaagtgatat ttttaacaaa tattgtcaca agtaaatagc aatcaaaagg agaaaataac	2160
ttttgtatth ttttaatgtg tttgatagct ttgacgaggg ttctctttgt tactttcagg	2220
ggagggcac cttttaaatg ccacgccagc agtccgggtc tgggtttgtc ccacaaaatc	2280
acaggagcac tgtatgttcc tctcttttgg agttgtgact ttgaagggcc tcaatattag	2340
ccacactgcc gctgcagaa ggtggagagt taagatgttc tatgtcaatt tgctcttgcc	2400
gaaaagatga gctcgattt taaaatctat ccacatccaa ctgatggcac cattgatgtg	2460
caaataatga gattccctat ctctttttag acctgggacg gcaaaaggga agggaaggaa	2520
acttagcaga gtgctattga ctatagattc acatattagc aacaaaatcc cgtaatctt	2580
ttggccaaca gcagctatth tggggagcag ctgtggctgt tacataaata gagatgcagc	2640
caaaatttta ggccttttat cctgcttcta gcagaaaaat gcagggagag tcaagtagtc	2700
tagggtttca ggttgccctc cctcatatgg tttttggcca agtgactaaa acagtthtcc	2760
acaactgtaa acaaactgct aagccccacc tcaaacttgt tcaactggga ctttgcttac	2820
cgttctgtgg gtgacctttt ccgggatttc ttgttcttat caagcaagaa ttaagcacat	2880
gctaaacgtc ttccatttga cttctctact cgggtgtctca gacagtgtct tcccagaaaa	2940
ccaccacct ctacccaaag atgaacatg ctcatgtcat ttttctcatg gtcacattta	3000
acagtthtga catgttaaac ttgcgcatag atccaagcgt ttcttgggaa cctgacttht	3060
gagtgtthaa taaagccgga agtggtgttg ccctgaacca gcagattthc acctgggttc	3120
tggctccgtt gtttaacact ggatacatct ttgatgtgcg aaagtgagtt catcttcaga	3180
cacatttggt acatccagaa atagatccaa gaaatggggt ggttgagtgg gtccgcacga	3240
aatgcttgat tatgtcagca acaccaaca ctgtctgttt tccatttgtt ggtthtaatc	3300

ataaaattgt caagtgttc gtgtttgtac tttatTTTT tgtgccttct gaaaggatct	3360
aaaacaaaaa tattttgcct ttttttcccc acgtgtatct gaacattaag cagattggct	3420
cagacacaat gaaaaggata atccaatgta cgtgctgggt cactctgcta gttgttatct	3480
ctgtagggtc caggaagctg gaaggaggaa gggagggtaa gtggcctggt gaggagggt	3540
agaaaaatga tgagaaatga actgagagca ttaagcagag agggttgata ggctggccgt	3600
gtccgggggtg aaattggaaa tccagctgcc tagtggccag tgggtggggc aagactgtca	3660
acgagattta cagctggctt acacatgcct tatgtcctct gaggttgtaga gttgtaaaag	3720
ttcagcagtg tgtgcacagc tttcttttgg ttggcagaga ttcaggatca tggagtactg	3780
ctctcataat tgaagacgtg tttgttattg gcagagaacc ttaaaaaagg cctttacctc	3840
agcgaatgctt cctagcccca ggcttgcaga gaacacagag tgggtttgtg gtctatttag	3900
ggacaaagaa ggtataaagt ccagagatga gaaaactggg tcagccctca gaaactgcag	3960
cagccacgca cacagaagcc tgcctggaaga caggctcttc tccgtccaca gtgcccatca	4020
tctgagcctg ggctgggatg actcaactta gcaaagacgg acccaggagg agtgctggtt	4080
cttcagtctt tgtactggcc ccatcctctc ctactgtaa tgtgaggaag cacctctgtg	4140
tcagggtcga ccggggcgc caaagcggcc acgcccacaa tccgacagcc cccaggagca	4200
ggtcaggga tgatgcagcc ccttcttgg tcccatgtga tgtcactctg ctttgttacc	4260
ttcttataac ttatcctgc tataacttta tctcttccc agcctcatcc ctgttttct	4320
gttagggcaa gactcttcca taagcctgct aaaaaacaga gatgatacct cttacaaact	4380
ttacctcata gcctgtgaag caggttggca tgtggattac aagtcctgct ttgacactgg	4440
gcaagaattt aagattgttc tatctctact agtcatagaa aagaaacatt gttaaacatg	4500
ttgagtttta aaggaagaaa tattttcaaa ttcttaatcc aagaaaatac tgagtggaa	4560
tttagactt cgggactctg acacgttctt tatgaaaggc aaaataattg gtatctaaag	4620
ttctctctt cctgcctccc ctaaagaaaa aggatattag attgcacact ataattttac	4680
ataagatctg cctccacac ttcctgctg gaaggcattc tcagagcttt atgtcttctg	4740
acctctcaga gattggactt tttcttggtt aaaaccccaa ccaaaaaaaaa taataaggca	4800
tgattggtgg ggagggaatg tgtatttagg ggcataataa aaagggtggt cgaagcagga	4860
actttggcct catggtgtca tgggtggatg cctggactcc agtgtgcctg tgaggggctg	4920
ggttaggcag tcggctgtca cactcacatg tgctgcaat aaaccttttg gaatttcacg	4980
aacgaggtct atgaattgcc ttttgccaat gaatggatgt atttttcaa ggggggaata	5040

gtatccttga ctttggcagt cacctttttg tatgtctcta gaaaggggtc aaaaaactat 5100

 ggtaaagatg aggccttatga gtgaatacct ctgggacaaa ccttaggact cacaagctat 5160
 gccatgtttt tcaggagact cttgtacctt atctggaatc taatcttggg agaagaggaa 5220
 aaaggagcta atatttgta tttatactca ctctgtgcca gatactgtgc taggcatttt 5280
 ataattgttt tgtgtcatcc tcatgataat cctgtgaagt agatctatta cccccgtgtt 5340
 ctaaataata gatcttaagt gtggaatgca tctatccaac ataaatgccc atgttgaaag 5400
 aaggaaagat gtcattcaag tatttttcaa attcttttta ttatgactat gcccttcgca 5460
 acactgtgaa aacaaccctt gggggcatct gccttcaga atctctctct ggcttctcac 5520

 cagcttggtt tcctcatggg gagtgtttta tttggcctcc cctatctgag ctgcacacac 5580
 accaggggag gccactggct aacagtagga cttcagtgcc ctgaggaaaa ggctttggga 5640
 atttaggcac acgtttctct ccttggatc cttctagcat ctggaaaagg aacctggtat 5700
 ttctgcagtt agataccaga tgcaaccaga acaggctttc gagtgcctgtg atttctttcc 5760
 tgggttccca agtcttgttg ttcatcaca aactgtatct ttttaagggtt aaaagtcttg 5820
 accttcatgg gggcttggga caatccgac tccaagcatg gaggaaaggc aatgcctgga 5880
 ccactgactt gcattgaaat cttttcttgi gggctagggt ttgatgtctc tttttcatct 5940

 ttggactggg gatctgcac ttcagggtcc atttaagcac tgaaactaga tgcaaatctc 6000
 ttctgagacc ttacatgttt tagatagtca tgaatgact tggatagaca tttaaataac 6060
 ttgttccaag gtcggaagag cccaagaact cctcagagtt cctcttcttg cttcttgaat 6120
 cacatcctct aaagatgact catgtctcca tagcaactgt taaagggtgt gcctagacgg 6180
 gaccgcctcc cacctttact tactttgtc gaaggaacca aaacaatgtc cttgtgtaaa 6240
 ggggtctgca tatccagttt tcttttgaat tctggccccc aagatcctgc ttctttctaa 6300
 cctggcagct gtcatgtccc ttcaagatga tgtgggaaat ggcccttaca acttgggaac 6360

 cacagaaatt gctgtatttc gggaagattc acctctaaac tgaaggcttc attctgatag 6420
 tgtctgccct ctctaccctg atttcgccct tctttgtctt catttttagc ccaagctttt 6480
 gaatttgatt gagtaagact tagaggcagt ataaagaaca cataaaactt aggcagaggt 6540
 cccttagggt ctctagagtt gaaaataatt ctacagcctt agggggacct cttggcattg 6600
 actctaaagg gagagaatag cccctgtgtc ctggcatttc agtctagacc ttcaaggact 6660
 gttctctctt gacaggcaag caagcaaaga aagttttgca atagatttca agccagtttt 6720
 tccattcaaa ccaagatgca aattcataaa attactcttt tcctggaata gatccaggca 6780

gctgccttat tagaacttta gattcggatc tattttctta acacacatac acatacacgc 6840
 gcatacatac atatacagag agatacgtgg agaaaggaaa ttactctat cattgcaata 6900
 cttaagaaa gagctgtatt ttgcctttct gtaatctcca agatagtgtc taggaaagta 6960
 atagtataac tatagggata ccgaaacagg aaaaaccagc catcactctt gagaaagttt 7020
 gaggctgact cacatgggag aatcgaggtc tgctactcgt cttgctttgt gcccacatcg 7080
 tgcttgatg cctactaca tctgcttgac tcgtctgggc tgctagccgg ggtgttgtgg 7140
 ctgacatcct ttcttgccct tacacacata atagacacat ccctaacggc gtgtgcctgg 7200

 tccagccaca tacagccacc acatgtgtca cacactgtcc cctcatcca tgtggacttg 7260
 actggcattt cagcagctcc actgggatgc tctaacccca gtgtgtggag ttggggctcc 7320
 ttcatctagg ttgaccagg tatagcattt ttagcattgc cttccagtc ttgatgattc 7380
 attcattgaa ctcatattt tctggagccc ctggtacact ccaggcactg cgctaattgc 7440
 cagcaagca caactgaact aaatccacct tcaaggaacc tagccataac gagggaggca 7500
 gcatggaagt accctacagg ggaaagtcct gagtgtgtg ggagcatctc accgtggcag 7560
 ccagcccagt ttggcaatc aggggcttcc tgaaagaggt gacatcaaag cccggatgtg 7620

 tcagaggact gagggagagt gttactaaag gactttcagg ctgagaggat agcacaggac 7680
 tcagcccaaa ggagggccag tgtggactgt ccagggccag cctgcagtac agaggctgga 7740
 gcttggaactt gtagaggag agagaagagc aagggacgtg gacggggcag tgagccaggc 7800
 tagccacaga gggttcccg ggctttgctg gggattcagg gagcataaat aagagcttta 7860
 ggtggtgctg tgtcctctgc agcccactgc ttaggtcctc cagacaggtg aggtgtggtc 7920
 acaatcaggg ccggggtttc cctgtcact gcggcagtgc aggggtgctt gctgagatga 7980
 ttcatcccag ggtgtcctct gtcccttacc cagcccaac tcctcttct ctgcaaaaag 8040

 ctatttgaat tcaaggactt taacctgggc cggatctggt ttggagacaa aggggacagc 8100
 tctgggtcag catgaccttc tttagagcca ctaaggcga aaataccgtt tgggaccagg 8160
 ctggcctaga ccagggatg agaatgcacc ctaaaataaa tatacgggaa gcagcagagg 8220
 gcttccctgt ctagtgtgtg atcctaacta aaggcagctc tcttgacag ctttccctg 8280
 gattaggtca catcacctg gtggccaagc ctctgctggg tcccaaatc acaccgagt 8340
 cctgccaaag aaaggagatt tttaaaaagc acagacaaat tgtatgcaag tggaaaatac 8400
 ccataggcct agacagctgt ggagggaaga cctcgtgggt acctggaggc tgccagagct 8460

 gggagctctg caggtatgag tcagggaagg ctgagagaca agcagaatct ctctatggag 8520
 acaacttgca gtgcctttta gggttttcaa ataacctcg agttcagagc attgggtttt 8580
 tttctccct cccaccccc agaaaaataa ttagaaaaat gtttaggaga aaggaaaaga 8640

attagatgca tcagaatacc agctataagc caacactgtt tccagaaact caagaaaaag 8700
 ctcaaacaga agacagtacc cctgagaggc tggaggcggt ggtgctgaag gcaattttcc 8760
 tagctaaggg gcaactgggc ttgctgcacc ttggggctga ccttttttgc aaaacaccca 8820
 cccctgccct cctggcatac tcaacagcaa cgccagcttt ctggaccctt ggaaagatgt 8880

 tagctcaaac acccaacttt tccagatctt cctcttgctc ttactgagg aatttgtaat 8940
 tctgaggcta gcgatgcccc ctggatatt cgcaggccc aggtgtttag attagaattt 9000
 gtccagcggc aatcctgatg ctggaaacca acaaacattt ggccctatat tcaccattt 9060
 aaaaactaga gccctggca ggtccctta gggccatgtg ttcattggaat ataagccaag 9120
 ttgacctag gctgttcat ggaatataag ccaagtttac ctctcccat ttctgccct 9180
 ggccacttc ccactacct ccacctcatt gccaggaagg gatcaaatg cctccatgcc 9240
 agttgttaat ggctacatat ttgcccttcc caagggtatt tgcattttat ttaggaacat 9300

 ggccctatat tcaaggaaaa tctagcatca agattacgag gcatcacctc tcaatcaggc 9360
 ctgggaggta tcttggggca ttgctcttct gaacacctgc agaggcttcc tcaggtagt 9420
 gtgggagccc ggaagggtgg cctccctaac cactctgcct gcacatgaat tctccaaagc 9480
 agtgggcccc catctgttcc aattacacat gcctgtcagc aaaaacttcg tgagatgcac 9540
 tctctctgtg tgtttattaa ttattttaaa gcataatcc ctttactttt gtactactat 9600
 attaggcaca ttataaaaag tatacagcat agaaacttta aatgaataag acacaaaata 9660
 ttataaacag aggttctggc attttctctc tgaactcctg agggggacct tgggcacctc 9720

 ctggtatgtg cacacccac tttgaacacc cttgctttag tgcaaatcag cacgcctaaa 9780
 tagcatccca aaccactgtg cgacatttgg cctgcagaat aagaaagtcc taaggcagaa 9840
 tccccaggaa cttcaaatct gggagatgag gaaagaaaac tcactcaca acaacataaa 9900
 tgtaataat tcaaaacct aaaggagagc tgtccctaga cagtagtggc tacaggtgct 9960
 aagcaaaagt caggtaacct ggacagagcc atgcgattga ttgttcattc tccctctctg 10020
 ggtctccaga aaaggacct ggcaatatcc ccagctctct cctgattgga attctttgaa 10080
 ccctcgaagt gctccagcag tactaccccc cagtagcag tgggcccattg tgccttgaat 10140

 attatttttg attgaccac caagatgtaa tgatgattct attccatttt gaaaagggtc 10200
 tgagaaagt tacaggtcta attatatata catatttata catgtgtatt ttgtttatt 10260
 gttacatttt gacattggac ttctattaa ataattttta agagtggg 10308

<210> 4

<211> 10668

<212> DNA

<213> Homo sapiens

<400> 4

gaccacgcat ggagaatttt accacccaga gacacgcgag tggccctgtg caagtttcaa	60
ctgcgcgggg ggcggggaat tccgcagaca ggattctaga atttatgtct tgtgtggtaa	120
catttcagcc ggtgggtggc ggggattagg cgtgaagcgg ttcagcaggc agaggttctc	180
ggacgccctc cggcgaagcc acctgttgat gcttttgact ttctgtcctt gttcctcgtc	240
ccatctggag catttccaat tctggttttg cggagcagca ggtctgagct tgtccggcga	300
gggtgggagt tggccccgc ggagatccag tgggaagagc cggcggctgc cggggcaact	360
ccccactgg aaaggattct gaaagaaatg aagtcagccc tcagaaatga agttgactgc	420
ctgctggctt tctgttgact ggcccggagc tgtactgcaa gacccttgtg agcttccta	480
gtctaagagt aggatgtctg ctgaagtcac ccatcaggtt gaagaagcac ttgatacaga	540
tgagaaggag atgctgtctt ttttgtccg ggatgttgct atagatgtgg ttccacctaa	600
tgtcagggac ctcttgata ttttacggga aagaggttaag ctgtctgtcg gggacttggc	660
tgaactgctc tacagagtga ggcgatttga cctgtcaaaa cgtatcttga agatggacag	720
aaaagctgtg gagaccacc tgcctcaggaa cctcacctt gtttcggact atagagtgt	780
gatggcagag attggtgagg atttgataa atctgatgtg tctcattaa ttttctcat	840
gaaggattac atgggcccag gcaagataag caaggagaag agtttcttgg accttgtgt	900
tgagttggag aaactaaatc tggttgcccc agatcaactg gatttattag aaaaatgcct	960
aaagaacatc cacagaatag acctgaagac aaaaatccag aagtacaagc agtctgttca	1020
aggagcaggg acaagttaca ggaatgttct ccaagcagca atccaaaaga gtctcaagga	1080
tccttcaaat aacttcagc tccataatgg gagaagtaaa gaacaaagac ttaaggaaca	1140
gcttggcgct caacaagaac cagtgaagaa atccattcag gaatcagaag cttttttgcc	1200
tcagagcata ccigaagaga gatacaagat gaagagcaag cccctaggaa tctgcctgat	1260
aatcgattgc attggcaatg agacagagct tcttcgagac accttcactt ccctgggcta	1320
tgaagtccag aaattcttgc atctcagtat gcatggtata tcccagattc ttggccaatt	1380
tgctgtatg cccgagcacc gagactacga cagctttgtg tgtgtcctgg tgagccgagg	1440
aggctcccag agtgtgtatg gtgtggatca gactcactca gggctcccc tgcatacat	1500
caggaggatg ttcatgggag attcatgccc ttatctagca gggagccaa agatgttttt	1560
tattcagaac tatgtggigt cagagggcca gctggaggac agcagcctct tggaggtgga	1620
tgggccagcg atgaagaatg tggaattcaa ggctcagaag cgagggtgt gcacagtcca	1680
ccgagaagct gacttcttct ggagcctgtg tactgcggac atgtccctgc tggagcagtc	1740

tcacagctca ccatccctgt acctgcagtg cctctcccag aaactgagac aagaaagaaa	1800
acgcccactc ctggatcttc acattgaact caatggctac atgtatgatt ggaacagcag	1860
agttttctgcc aaggagaaaat attatgtctg gctgcagcac actctgagaa agaaacttat	1920
cctctcctac acataagaaa ccaaaaggct gggcgtagtg gctcacacct gtaatcccag	1980
cactttggga ggccaaggag ggcagatcac ttcaggtcag gagttcgaga ccagcctggc	2040
caacatggta aacgctgtcc ctagtaaaaa taaaaaatt agctgggtgt ggggtgtgggt	2100
acctgtattc ccagttactt gggaggctga ggtgggagga tcttttgaac ccaggagttc	2160
agggtcatag catgctgtga ttgtgcctac gaatagccac tgcataccaa cctgggcaat	2220
atagcaagat cccatctctt taaaaaaaa aaaaaaggac aggaactatc ttactcaatg	2280
tattagtcat gtttctctag agggacagaa ctaataggat acatgtatat aaaaagggga	2340
gtttattaag gagtattgac tcacatgac acagggttag gteccacaat aggtcatctg	2400
caagcaagga agccaattca agtcccaaag ctgaagaact tggagtccaa tgtttgaggg	2460
caggaagcat tcagcatgag agaaagatgg aggccagaag actacaccag tctagtcttt	2520
ccatgttttg cctgctttta ttctggcagt gctggcagct gattagatgg tgcccaccca	2580
gattgaggat ggctgcctt tccagttcca ctgactcaaa tgttaaatct cttttggcag	2640
cacctcaca gatgtaccg ggaacacttt gcatecttct attcaatcaa gttgatactc	2700
agtattaacc atcacagtcc atttgggcaa ctataccaaa ttacataga ccaggtgact	2760
taaacagcag ttattttctc cagtccgga ggctgggaaa tccaacatct aagtggtagc	2820
atatctggtg tctggtaagg catgcttcca gatcttacca gatgtcagtc ttttgatgtt	2880
ctcacatggc agaaaaagag gatgcaaaact ctcaagtata tctttaaggg cacaaattcc	2940
attcatgagg gctctaccct catcacctaa ttacctcca aaggccccac cttctgatac	3000
tgtcactttg gggatactgt ctcccccttg aattctgggg ggaatacaaa cattcagttt	3060
gtaacaatag ccttatgatt tagaggttac ttgttcattc acctagacct caaattgcat	3120
tttacagcta gtcaagtata tctttctctg atttgatagt gtgacctaaa aggggaccat	3180
tgtttgaaat atcattagag ttgcttatta ttattattat tattattatt attattatta	3240
ttattattat tgagacagag tttcattctg ctgccaggc tggagtgcag tggcatcatc	3300
ttggctcatt gcaacctctg ccttctgggt tcaagcgatt ctctgcctc agcctcccga	3360
gtagctggga ttacaggctc ctgccaccac acccgctaa tttttgtatt tttagtggag	3420
acagggtttc caccatgttg gccagcgtgg tcttgaactc ctgacctcag gtgattcacc	3480

agcctcgcc tcccaaagtg ctgggattac aggtgtgagc cactgcacct ggcctattat 3540

 tatttttaaa tttttttttt ttaattgata attcttgggt gtttctcaca gaggtgatt 3600
 tggcagggtc acaggacaat agtggaggga aggtcagcag ataaacaagt gaacaaaggt 3660
 ctctggtttt cctaggcaga ggacctgcg gccttcgca gtgtttgtgt ccttgggtac 3720
 ttgagattag ggagtgtga tgactcttaa ggagcatgct gccttcaagc atctgtttaa 3780
 caaagcacat cttgactgc ctttaateca ttaaccctg agtggacaca gcacatgttt 3840
 cagagagcac agggttgggg gtaaggatcat agatcaacag catcctaagg cagaagaatt 3900
 tttcttagta cagaacaaaa tgaagtctcc catgtctact tctttctaca cagacacagc 3960

 aacaatctga ttctctatc ttttccccac ctttccccct tttctattcc acaaaaccgc 4020
 catctcacc atggcctgtt ctcaatgagc tgttgggtac acctcccaga cggggtggcg 4080
 gctgggcaga ggggtctctc acttcccaga tggggcggcc aggcggacgc gccccccacc 4140
 tccctcccgg acgggatagc tggccgggcg ggggtgacc cccacctcc ctcccgcagc 4200
 gggcggctgg ccgggcgggg gctgaccccc acgctccct cccggacggg gcggctgcca 4260
 ggccggagggg ctctcactt ctacagcggg gtggctgctg ggccgagacg ctctcactt 4320
 ccagacagg gtggctgtcg ggcggagggg ctctcactt ctacagcggg gcagctgcgg 4380

 gcggaggggc tctcacttc tcagacgggg tggccgggca gagaagctcc tcacatccca 4440
 gacggggggg cggggcagag gcgctccca catctcagac gatgggcggc cgggcagaga 4500
 cgctcctac ttatcccag acggggtggc ggccgggcag aagctgtaat ctccgcaccc 4560
 tggggggcca aggcaggcgg ctgggaggcg gaggccgtag ccagctgaga tcacaccact 4620
 gcactccagc ctgggaaca ttgagcactg agtggacgag actctgccg caatcccggc 4680
 acctcgggag gccgaggctg gcagatcact cgcagtcagg agctggagac cagcccggcc 4740
 aacacagtga aacctgtct ccaccaaaaa aatacgaata ccagtcaggc gtggcggcgc 4800

 ccgcaatggc aggcacgcgg caggccgagg cgggagaatc aggcaggag gctgcagtga 4860
 gccgagatgg cagcagtaca gtccagcttc ggctcgcat cagagggaga ccgtggggag 4920
 agggagaaga gagggagggg gagagggtta tttttaaat tttttaaat tgctgaacag 4980
 gggtagctct gggcagtggt tcagaatacc actttttaaa tattttatga tttatttatt 5040
 tttctatttc ttgaggtttt aactgatgtg tatctgtatg tctatttgtg tatatttgt 5100
 catgatcatg taacagagtc tgaagaggtg cgaagagaca gtttcagga acaacaagca 5160
 attattccta cttccaagt tattttgatg ccatggtggc tcatacctat aatctgagta 5220

ctttgggagg ctgaggtgga ctgatcactt gagcccagga gtttgagacc agcctgggca 5280
 acatagcaag actccatctc tacaaaaaaa gacaaaattt agctgagcgt ggtggcgtgt 5340
 tcctgtagtc ccagctactt gggaggctga agtgagtgga tcccctgagc ccagagaggt 5400
 caaggttgtg atgagctgtg atcacaccac tgcacttcag catgggagac agagtgagac 5460
 cctgtttcag aaaaaataaa taaataaaac caccagcacc acaacaaca aaaaaagtt 5520
 attttgtact tgttttgagc acaggactcc tgagggtatc tttgcattta atattacata 5580
 ggggtgccag tgggaagtaa tgtgtatgct tggcctcatg agctaaaacc ctgtgttaat 5640

tatgacagaa ggaaagtgtg tgagagagat cttaactacc tagcagctct agctgccatc 5700
 ttgaacctatg aagatacggg ccacacgtag gggtagctgg gtagtgagca gcaagaagcc 5760
 ttgttggatg agggcacgaa ggagcagaat cactggaatc actgtgtcag ccctaattac 5820
 ctacctctgg actttttatg taggggaaaa aaaattgaca gtttataatt atctcaacct 5880
 agttaacca agtgatgcat tgttatgaga ttaaaatgtt tggaggccgg gtgcggtggc 5940
 tcacgcctat aatcccagcc ctttgggagg ccaaggcggg cggatcacga ggtcaggaga 6000
 tcaagacat cctggctaac atgtaaaacc ccgtctctac taaaaataca aaaaattagc 6060

caggcgttgt ggcggtgcc tgtagtcctt gctatttggg aggccgaggc aagagaacgg 6120
 catgaacctg ggaggtggag cttgcagcga gctgagatct tgccactgca ctccagcctg 6180
 ggcgacagtg cgagactctg tctcaaaaat aaataaataa ataaataata aataaaatgt 6240
 ttggaatgtt ggcttcaccc ctgggatgca aggcctggtc aacatacgca aatcaagaaa 6300
 cataattcat cacataaaca gaactaaaga caaaaaccac atgattatct caatagatac 6360
 agaaaaggcc ttcaataaaa ttcaacgttg ctcatgtta aaaactctca ataaactagg 6420
 tattgatgga aaatatctca aaataataac catttatgac aaaccacag ccattatcat 6480

actgaatggg caaaagctgg aagcattccc cttgaaaact ggcacaagac agggatgccg 6540
 tctcaccact cctatttaac atagtattgg aagtctctgc caagaaaatc aggcaagaga 6600
 aacaaataag gggatttcaa ataggaaaag aggaagtaaa actgtgtttg cagatgacat 6660
 gatactatat ctagaaaacc ccattatctc caccctaaag ttccttaagc tgataagcaa 6720
 cttcagcaaa gtctcaggat acaaaatcaa tgtgcagaaa tcacaagcat tctatacacc 6780
 aacaatacac aagcagagag ccaaatcatg aatgaactcc cattcacagt tgctagaaag 6840
 agaataaaat acctaggaat acagctaata agatgtgaag gatctcttca aggagaacta 6900

caaaccactg ctcaaggaaa taagagagga cacaaatgaa aaaacattcc attctcgtgg 6960
 ataggaagaa tcaatatcat gaaaatggcc atactacca aagtaattta taggttcatt 7020
 gctattccca ttaaactact attgacattc ttcacagaat tagaaaaaaa ctactttaa 7080

attcaaatgg aaccaaaaaa gagcccgtat aaccaagaca acaataagca aaaagaacaa 7140
agctggaagc atcacactac ccaacttcaa agtatactgc aaggctacag tagccaaaat 7200
ggcatggtagc tggtagaaaa acagacacat agaccaatgg aacagaatag agaccagaga 7260
aagaagacca cacatctaca gccatctgat catcgacaaa cctgacaaaa acaagcaatg 7320

gggaaaagat tccctattta ataatggtg ctgggaaaac tggctagcca tatgcagaaa 7380
attgaaactg accccttctt tacaccttat acaaaaatta actcaagatt aaagacttaa 7440
tgtaaaacct aaaactataa aaaccctaga agaaaatcta ttttaatacca ttcaagacat 7500
aggcacaagc aaaggtttca tgacaaaaac atcaaaagca attgcaacaa aagcaaaaat 7560
tacaatggg atctaattaa actaaagagc tctgacacag caaaagaaac tatcattaga 7620
gtgaacaggc aacctacaga atgggagAAC atttttgcaa tctatccatc tgacaaaggt 7680
ctaatatcca gaacctacaa ggaacttaaa acaaatttac aaggaaaaaa acaaccccat 7740

caaaaagtgg acaaaggaca tgaacagaca ctctcAAAA gaagacattt atgtggccaa 7800
caaacatata aaaaaaagct caaccttact gatcattaga gaaatgcaaa ggagaaccac 7860
aatgagatac catctcatgc cggtcagaat ggtgattatt aaaaagtcaa aaacaacag 7920
atgctggcga ggctgtggag aagtaggaac acttttcat tgttgggtggg aatgtaaatt 7980
agttcaaccg ttgtggaagt gtgtgtggct attctcaaa gatctagaac tagaaatact 8040
atttgcCCA gcaatcccat tactgggtat ataccAAAG gaataataac cattttatta 8100
taaagataca tgcacatttt tgttcattgc agcactcttc acaatagcaa agacacaata 8160

gcaaatgccc atcaaagata gactggataa agaaaatgtg gtacatatat accatggaat 8220
actgtgcagt gcagccatta cagcttttgg tgatacagtg aatcagattt ttcattaaatt 8280
cttttaattg gttattactg aacgtgaaaa agtaatgttt gtattgaaat cttgagctcg 8340
gccatgtttc tattttaaat tcataaagaa ttctaacaag aggaattcca agaattgcat 8400
aaatggatgt ttctccatgg atgaaggaac tgttttattc acttgctgat aattcagcct 8460
aatccagttt gacatcatat agataagtag ttgaattatg gatttAAaA acatatcatt 8520
ttctaactcc aaagtaata cttatttAAA tggttttgaa aatatagaaa ggcacaattt 8580

ctttttaaA ctgttattct ccaccaccac tcaatctgtc tatcatctat ctctccattc 8640
attcttccat ttgtttatat ctgttaatct ttgtatgtgt tcatgtatag cttttacatg 8700
attggaatca taatgcatat tccattttga agtctgcttt tttttacaca aaaatatgtt 8760
gigaatattt tcctatatta tgaaatatca ttagctgagc ttttagaatt gactgcatgt 8820
tttggtagca tttagatata gtttaagata cttagaagtt atgtggcttt gccactatgg 8880
atgaatctta ttactcaat attaatctac tacaataaac ctacctaAa cactactcag 8940

ccataaaaag gaatgaatta atgacattca cagcaacctg gagactatta ctctaaagga	9000
agtaactgag gaatggaaaa ccaaacattg tatgtttctca ctcataagtg ggagataagc	9060
tatgaggatg caaaggcata agaaggatac aatggacttt ggggacttag gggaaagggt	9120
gggagggggg tgaaggataa aagaatacaa attgggttca gtgtatactg ctcaggtgat	9180
gggtgcacca gaatctcaca agtaaccact taattactta cgcatgtaac cagataccac	9240
ctgttcccca aacacctatg gaaataattt tgtttttttt tttaaaaaag gaatgagatc	9300
atgtcctttg caggacatg gatgaagctg gaagccatta tcctcagcaa actaacagag	9360
gagcaggaaa ccaaacacca catgtttctca ctgtgaagcg gaagctgaac aatgagaaca	9420
cacggacaca gggatgagat caacacacac tggggcctga tgcaggggcc gtagcgggga	9480
gagcatcagg ataactagct aatgcatgtg gggttaata cctaggtgat aggttgatag	9540
gtgcagcaaa ccacatggg acacgtttac ctatgtaaca aaccgcaca tcctgcactt	9600
glatccagaa cttaaaatat tttaaaaatc tttagagaat acaaaaaaaa aaaaaagat	9660
tcttcaatgc atacacaata aaattgcagt tcagtcaaac attggaagtc tttctctgac	9720
tgtctagttg gtatcttcac ttctagcttc ttcaagatcc cactccaaac actgttagct	9780
cagccaaatt gaacagctca tatctctac ctctggatct ttggttctgg tgattgtata	9840
tttctggacc atctggaacc ccagcatatc acctacccc acatctccac atccccaaaa	9900
tataaccata cticaagggc agttcaaata ccatctcctt ctatctcca tgaagtcagt	9960
tatctcttcc attggaatta tcgccccctc tcctgaacag tactatttcg tgtgaatctc	10020
ctccaagcct tcttttcatt ttatatctca tctgttaatt cttggaaagt atgctgtagc	10080
tcaagtgcag aattctcatc agttttatct ttatatctct cctaaacact ttacctgatg	10140
aagagcctgg catacacata aatatatatt gaatgaatca gtgatggatt gaaaagagaa	10200
atgatggatc tcctaaattt taacttttat aaaatatatt gatacattca tgaccttact	10260
ttagcaagca atgaacgtga tgtaactat tgttgatata gttttatat tggaagtgt	10320
agtagtttgt ggcatgggat tgtgacatat cctaggttcc ctcatcttct ttttattgaa	10380
atgtaattca caagccataa aatttgcccc tttaaagtaa atgatgcagt ggattttagt	10440
atatttacag agttgtgcaa tcataccac tatctaattc cagaacattt ccatctacct	10500
agaaactcca taccagttag ctgccactct aatctctctc ttccccagc ctctagaaac	10560
aataatccat ttctgtctc tatgatttgc ctgttctaga tattttataa aaataaacat	10620
gtggcctttc gtgtctgact tccttcactt aaaaaaaaaa aaaaaaaaaa	10668

<210> 5

<211> 1041

<212> DNA

<213> Homo sapiens

<400> 5

catgcataca gccacgtcta acgtacagga tcaaaaagag accttatttc ggctggcaat	60
taccttaccg gcttggtcat tatctgactc ctgcactcct cccaagtgtt caatgttaac	120
cagatggcaa agttaaccag acagaggaaa tccacataat tactctagat gaagccccct	180
aactgcggat tagaaggaaa agagatgaag ggtgctgcac taataataac aaccattttc	240
aaccaaggca ggattctggg cctagaatct tcagtgacaa attaccagga gaggaggagg	300
gaaatgaaga gctggaggcc tagggagatg gtgtgaggag aggagactgt gcctttccac	360
ttcttaataa ttaatgttct cctgctgctc tgagtctgca tcaccagtga ttcagtttga	420
gtcagacatc caacaacaac tgagcaaaag aatcatctca gatccaagca atggtgacgc	480
gcagatagaa gagactgagg ccaacgacca aagcaaagga cagcagaact gactgacaca	540
gtcagaaaa tatccaaagc tctgtatgct ctggaaagga agacaagaaa tgctaaagac	600
tctggatatt gctctgtttc tataaggtcc cacccatata ccatctcttc ttttggattt	660
cctttggcag gggtcccttg tatggaagtt ctgaggagaa caacactctc agagtccac	720
tgtctcaaag aattcttaat ggacagctat acttggcccc aaggtttcaa cctcacactg	780
aagaaagtga cataagaaaa cacaagtccc agtgcctatca ggggctatct ggaaaagctg	840
cttaaacagc aagtgaagaa aggctctccc ctaccccggt ctagactcac cctgaagtta	900
tttgaaggat ccttgagact cttttggatt gctgcttggga gaacattcct gtaacttgct	960
cctgctcctt gaactataaa agcagaaggg aggtactgag ttaaaactta caaattatta	1020
tcaaataaat cttaaatagt g	1041

<210> 6

<211> 3230

<212> DNA

<213> Homo sapiens

<400> 6

accaccctg gggtccctcc cgggtccgca gtggaaacac tgcctctcc cttcttgacc	60
cctagccctt ccttccctcc ctcttccct cctgtcgcg tctcttctgg cgccgtgct	120
cccggaggag ctcccgacac ggcgatgggt tctcggcct ccacgttact gcgggacgaa	180
gagctcgagg agatcaagaa ggagaccggc ttttccaca gtcaaatcac tcgctctac	240

agccggttca ccagcctgga caaaggagag aatgggactc tcagccggga agatttccag 300
aggattccag aacttgccat caaccactg ggggaccgga tcatcaatgc cttctttcca 360
gagggagagg accaggtaaa cttccgtgga ttcattgcga ctttggctca tttccgcccc 420
attgaggata atgaaaagag caaagatgtg aatggacccg aaccactcaa cagccgaagc 480

aacaaactgc actttgcttt tcgactatat gatttggata aagatgaaaa gatctcccgt 540
gatgagctgt tacaggtgct acgcatgatg gtcggagtaa atatctcaga tgagcagctg 600
ggcagcatcg cagacaggac cattcaggag gctgatcagg atggggacag tgccatatct 660
ttcacagaat ttgttaaggt tttggagaag gtggatgtag aacagaaaaat gagcatccga 720
tttcttcaact aaaggagacc aaactgttcc ttgcggctca gtatttaaga actggaactt 780
gaaagtcctc cttctaccaa ctccacctcc accccctcat tccccttctc ccaaagtact 840
actgctgttg catgacaacc ccaaatatgt tctgtcaaca caaacctgcc tttggtgtat 900

aaacagggca ttacagaatg gtacaccctt tatatttctg ttcagtatcc attcactagt 960
tcttcattta taaatatcat cttccccatt ctgctgctga atgccacaca tccatccagt 1020
ctgagaaagt gagagaggca atcatgccaa gaacaagcca gcaaagctct ttcaccagat 1080
gtagactgta gccctgctgc cttccctcca gcgagtctgc cagcatgctt cttcatcctt 1140
tttatatgtt ctttgcctcc tacttccctg tcttccaaca tactgttcac ttactctggc 1200
agtctttctg cttttcatta agcctcaaaa tctcctctgt tctacttggc accacaagct 1260
atgtcctata tatgtatttc tgacttggca ggatagtcca ggggtctggc agtttttatt 1320

taccttcatt attaaatggg cctctgggat gttgcctctt caggagcttt ttggtaatca 1380
atacttctct cagaagtatg agaccatcct ctgcactctg ctcgtcatc aaaggctgct 1440
gggtggagat accctttttg aaaggtggcc ttggtgagag gtatggagcc aagtcttcta 1500
ggttgccttc ccacatcact ctatctctgg cctctgattc tcaactttgt acctgtgtgg 1560
ctcctcttgt tagtgcaatg ttgactgttg aaaaagcagc agtatgctta caggtttctt 1620
tagtttgggg acaccgttac caccagaatg gctgctctga caatatgcct agggactttc 1680
tcatggcttt tatttaataa ggaggtggg caccctataa agcctcatgc attcacacct 1740

ttgcagcatg gtttatgcct cagtgttatg tgactggaa tgttttcac ttcacatttc 1800
caagtagaaa tattagtgtt acggaagtgc ctaatatccc agtccaaatt tttttttttt 1860
tttttttttt tttttgagac agagtcctgc tctgtcacc aggctggagt gcagtggctc 1920
gatcgctcac tgcaacctca gcctcctgga ttttaagtgt tctcctgcct cagcctccca 1980
agtagctggg attacaggtg tgcaccacca tgcccggcta attttttga ttttttagtg 2040
agacagggtt tcacatgtt ggccaggctg gtctcgaact cctgacctcg tgatccgcct 2100

gcctcagcct cccaaagtgc tgggattaca ggtgtgagcc accacgcctg gccccagtcc 2160

aaaatatatta aagattgttt ccttagtgtc ttgaagtttt gcacaaaatt cttttttttg 2220

agatggagtc tcaactctgtc acccaggctg gagtgcagtg gcgtgatctt ggctcactgc 2280

aacctctgcc tcctgggttc aagcaattct cccacctcag cctcccaagt agctgggatt 2340

acagacgtgt gccaccatac ctgggtaatt ttgcatttt tagtggagag ggagtttcac 2400

catgttgccc aggttggctt tgaactcctg acctcaggtg atcctcctgc ctcggcctcc 2460

caaagtgtg ggattacagg catgagccac cgtgctcagc cgcaaaattc tttatgaatt 2520

ttacacttgg caaatgttaa tgacggaagc catagtctgc tcctaataca tgtccaaagc 2580

attgactgtt gtgtcattag ctgcctgggt acattagctc cctggcttct tgttttagacc 2640

actgctaate ccttaaaaac aagaggtctg gcactagtag cacaacctaa ggtggcatta 2700

cagatctttg agcgagccac agcaactttt ctgccaagtc agcttagttt agacttcagt 2760

gaatcaggct attgctatcc taatgtatgt cttctatgagt gtatttagcc acacatctgc 2820

ccttggttga ctttctgact cattgcttgc ttgcttgttt ccttgccttg gaaaactatt 2880

gaagattgct aaaaaatacc actgcaaagt gatggaaaag ggtggagaac aggggagtag 2940

ccaggctgga tggctcaaat ataatgaat gaggaattct ttatgaagta tcagtcagat 3000

tttatgatta agtgatgtaa tataggaatt atgtaaaagg gaagaatgtc tgatactgat 3060

ctattagaga ggiacttttag aggcttcttg attggcataa agttcctaag gttatagatt 3120

ttccccctt ttggctgtat agcaaagtgt tttaatccac ggttgtgcct tattgttcca 3180

ttaaaattgt atcttcgac catcaataaa tacttgtggt tgaacaaaaa 3230

<210> 7

<211> 2678

<212> DNA

<213> Homo sapiens

<400> 7

agcgggaagtg ctcgttgggg gtgcacaagg cgcgttcgag cagcggcgac cgacgcggcg 60

aaggagcgcg ccatggagca tgtgacagag ggctcctggg agtcgctgcc tgtgccgctg 120

caccgcagg tgcctgggag gctgctgggag ctgggcttcc cgtacatgac gccggtgcag 180

tccgcaacca tcctctgtt catgcgaaac aaagatgtcg ctgcagaagc ggtcacaggt 240

agtggcaaaa cactcgttt tgtcatcccc atcctggaaa ttcttctgag aagagaagag 300

aagttaaaaa agagtcaggt tggagccata atcatcacc cactcgaga gctggccatt 360

caaatagacg aggtcctgtc gcatttcacg aagcacttcc ccgagttcag ccagattctt 420

tggatcggag gcaggaatcc tggagaagat gttgagaggt ttaagcaaca aggtgggaac	480
atcattgttg cactccagg ccgcttgag gacatgttcc ggaggaaggc cgaaggcttg	540
gatctggcca gctgtgtcg atccctggat gtccctggtgt tggatgaggc agacagactt	600
ctggacatgg ggtttgaggc aagcatcaac accattcttg agtttttgcc aaagcagagg	660
agaacaggcc ttttctctgc cactcagacg caggaaaggc agaacctggt gagagcgggc	720
ctccggaacc ctgtccgggt ctcaagtgaag gagaaggcg tggcagccag cagtgtccag	780
aagacccctt cccgcctgga aaactactac atggtatgca aggcagatga gaaatttaac	840
cagctgttcc attttcttcg caatcataag caggagaaac acctggtctt cttcagcacc	900
tgtgcctgtg tggaatacta tgggaaggct ctggaagtgc tgggaaggc cgtgaagatt	960
atgtgcattc acggaagat gaaatataaa cgcaataaga tcttcatgga gttccgcaaa	1020
ttgcaaagtg ggattttagt gtgcactgat gtgatggccc ggggaattga tattcttgaa	1080
gtcaactggg ttttgagta tgacctccc agcaatgcaa gtgccttcgt gcatcgtgc	1140
ggtcgcacag ctgcattgg ccacgggggc agcgtcttg ttttctctt gcccatggaa	1200
gagtcataca tcaatttctt tgcaattaac caaaaatgcc cctgcagga gatgaagccc	1260
cagagaaaca cagcggacct tctgccaaa ctcaagtcca tggccctggc tgacagagct	1320
gtgtttgaaa agggcatgaa agcttttgtg tcatatgtcc aagcttatgc aaagcatgaa	1380
tgcaacctga ttttcagatt aaaggatctt gatattgcca gccttgctcg aggttttgcc	1440
ctgctgagga tgcccaagat gccagaattg agaggaaagc agtttccaga ttttgtccc	1500
gtggacgtta ataccgacac gattccattt aaagataaaa tcagagaaaa gcagaggcag	1560
aaactcctgg agcaacaaag aagagagaaa acagaaaatg aaggagagaag aaaattcata	1620
aaaaataaag ctgtgtcaaa gcagaaggcc aaaaaagaaa agaagaaaaa aatgaatgag	1680
aaaaggaaaa gggaagaggg ttctgataat gaagatgagg acatggaaga acttcttaac	1740
gacacaagac tcttgaaaaa acttaagaaa ggcaaaataa ctgaagaaga atttgagaag	1800
ggcttggtga caactggcaa aagaacaatc aagacagtgg atttagggat ctgagatttg	1860
gaagatgact gctgattcca gtgccacaga tgaaccaca aggacatagc tgttccctaa	1920
cttggtggat ggctccagtt tgcttttaac gaaaatcaca acttcaggag acatctgaaa	1980
agaatgatgt ctctgaaagc tgctctttca gatgaggagc aatgaagga ttacacactt	2040
cagaatattt tactaaaaac attccagtct tggccgggtg cgggtgctcc tgcctataat	2100
cccagcactt tgggaggctg aggcaggagg atcacttgag cccaggagtt caagaccagc	2160

ctgggaacac agcgagaccc tctcattaaa aacaacaaaa caaaacaatt ccagtcttgg 2220

agtagtctaa cagaagaaaa tgtaaaatta tttgagtgtg aataatagat gtcagtattt 2280

atcatgatgg gtcacatata gacatatgta catattatat atatatatat atatatatat 2340

atatatatat atatatatat ataagctctt ttttctgagg ctatittata gttattttta 2400

aacataaaga tacagaagtc ttcttgactt ctgattttca aaaccattcc tcagtatctt 2460

caggcatittg acctcctgaa tgtgcttggc cctgggcttc agttatcctt tgatgtcctg 2520

caggggtggc taatgtgctg gggtttttct gtgttaatag tcacagtatt gttttattgg 2580

tgaatagctg aaaaacagag ggattaagtc atattccggg aaagagaatt atagttttta 2640

tgcctcctgt tgaataaatg gtgtcctgat tgcctggg 2678

<210> 8

<211> 14069

<212> DNA

<213> Homo sapiens

<400> 8

cgttaaatgc aaacgctgct ctggctcatg tgtttgctcc gaggtatagg ttttgttcga 60

ctgacgtatc agatagtcag agtggttacc acaccgacgt tgtagcagct gcataataaa 120

tgactgaaag aatcatgtta ggcatgccca cctaacctaa cttgaatcat gcgaaagggg 180

agctgttgga attcaaatag actttctggt tcccagcagt cggcagtaat agaatgcttt 240

caggaagatg acagaatcag gagaaagatg ctgttttgca ctatcttgat ttgttacagc 300

agccaactta ttggcatgat ggagtgcag gaaaaacagc tggcatggaa gatgaaagag 360

aagatgttca aaagaaaaca ttcacaaaat gggtaaatgc acaattttct aagtttggga 420

agcagcatat tgagaacctc ttcagtgacc tacaggatgg gaggcgcctc ctagacctec 480

tcgaaggcct gacagggcaa aaactgccaa aagaaaaagg atccacaaga gttcatgccc 540

tgaacaatgt caacaaggca ctgcgggttt tgcagaacaa taatgttgat ttagtgaata 600

ttggaagtac tgacatcgta gatggaaatc ataaactgac tcttggtttg atttgaata 660

taatcctcca ctggcaggtc aaaaatgtaa tgaaaaatat catggctgga ttgcaacaaa 720

ccaacagtga aaagattctc ctgagctggg tccgacaatc aactcgtaat tatccacagg 780

ttaatgtaat caacttcacc accagctggt ctgatgcctt ggctttgaat gctctcatcc 840

atagtcatag gccagacctt tttgactgga atagtgtggt ttgccagcag tcagccacac 900

aacgactgga acatgcattc aacatcgcca gatatcaatt aggcatagag aaactactcg 960

atcctgaaga tgttgatacc acctatccag ataagaagtc catcttaatg tacatcacat 1020

cactcttcca agttttgcct caacaagtga gcattgaagc catccaggaa gtggaaatgt	1080
tgccaaggcc acctaaagtg actaagaag aacattttca gttacatcat caaatgcact	1140
attctcaaca gatcacggtc agtctagcac agggatatga gagaacttct tcccctaagc	1200
ctcgattcaa gagctatgcc tacacacagg ctgcttatgt caccacctct gaccctacac	1260
ggagcccatt tccttcacag catttggaag ctctgaaga caagtcattt ggcagttcat	1320
tgatggagag tgaagtaaac ctggaccgtt atcaaacagc tttagaagaa gtattatcgt	1380
ggcttctttc tgctgaggac acattgcaag cacaaggaga gatttctaata gatgtggaag	1440
tggatgaaga ccagtttcat actcatgagg ggtacatgat ggatttgaca gcccatcagg	1500
gccgggttgg taatattcta caattgggaa gtaagctgat tggaacagga aaattatcag	1560
aagatgaaga aactgaagta caagagcaga tgaatctcct aaattcaaga tgggaatgcc	1620
tcagggtagc tagcatggaa aaacaaagca atttcatag agttttaatg gatctccaga	1680
atcagaaact gaaagagttg aatgactggc taacaaaaac agaagaaaga acaaggaaaa	1740
tggaggaaga gcctcttga cctgatcttg aagacctaaa acgccaagta caacaacata	1800
aggtgcttca agaagatcta gaacaagaac aagtcagggt caattctctc actcacatgg	1860
tgggtgtagt tgatgaatct agtggagatc acgcaactgc tgctttggaa gaacaactta	1920
aggtattggg agatcgatgg gcaaacatct gtagatggac agaagaccgc tgggttcttt	1980
tacaagacat ccttctcaaa tggcaacgtc ttactgaaga acagtgcctt tttagtcat	2040
ggctttcaga aaaaagaagt gcagtgaaca agattcacac aactggcttt aaagatcaaa	2100
atgaaatgtt atcaagtctt caaaaactgg ccgtttttaa agcggatcta gaaaagaaaa	2160
agcaatccat gggcaaacgt tattcactca aacaagatct tctttcaaca ctgaagaata	2220
agtcagtac ccagaagacg gaagcatggc tggataactt tgcccgtgt tgggataatt	2280
tagtcaaaa acttgaaaag agtacagcac agatttcaca ggctgtcacc accactcagc	2340
catcactaac acagacaact gtaatggaaa cagtaactac ggtgaccaca agggaacaga	2400
tcctggtaaa gcatgtcaa gaggaacttc caccaccacc tcccaaaag aagaggcaga	2460
ttactgtgga ttctgaaatt aggaaaaggt tggatgttga tataactgaa cttcacagct	2520
ggattactcg ctgagaagct gtgttgca gtcctgaatt tgcaatcttt cggaaggaag	2580
gcaacttctc agacttaaaa gaaaaagtca atgcataga gcgagaaaaa gctgagaagt	2640
tcagaaaact gcaagatgcc agcagatcag ctgagccct ggtggaacag atggtgaatg	2700
agggtgttaa tgcagatagc atcaacaag cctcagaaca actgaacagc cggtggatcg	2760

aattctgcc a gttgctaagt gagagactta actggctgga gtatcagaac aacatcatcg	2820
ctttctataa tcagctacaa caattggagc agatgacaac tactgctgaa aactggttga	2880
aaatccaacc caccacccca tcagagccaa cagcaattaa aagtcagtta aaaatttga	2940
aggatgaagt caaccggcta tcaggtcttc aacctcaaat tgaacgatta aaaattcaaa	3000
gcatagccct gaaagagaaa ggacaaggac ccatgttctt ggatgcagac ttgtggcct	3060
ttacaaatca ttttaagcaa gtcttttctg atgtgcaggc cagagagaaa gagctacaga	3120
caatttttga cacttttgcca ccaatgcgct atcaggagac catgagtgcc atcaggacat	3180
gggtccagca gtcagaaacc aaactctcca tacctcaact tagtgtcacc gactatgaaa	3240
tcatggagca gagactcggg gaattgcagg ctttacaag ttctctgcaa gagcaacaaa	3300
gtggcctata ctatctcagc accactgtga aagagatgtc gaagaaagcg ccctctgaaa	3360
ttagccggaa atatcaatca gaatttgaag aaattgaggg acgttggaag aagctctcct	3420
cccagctggt tgagcatgtt caaaagctag aggagcaaat gaataaactc cgaaaaattc	3480
agaatcacat acaaaccctg aagaaatgga tggtgaagt tgatgttttt ctgaaggagg	3540
aatggcctgc ctttgggat tcagaaattc taaaaagca gctgaaacag tgcagacttt	3600
tagtcagtga tattcagaca attcagccca gtctaaacag tgtcaatgaa ggtgggcaga	3660
agataaagaa tgaagcagag ccagagtttg cttcgagact tgagacagaa ctcaaagaac	3720
ttaacactca gtgggatcac atgtgccaac aggtctatgc cagaaaggag gccttgaagg	3780
gaggtttgga gaaaactgta agcctccaga aagatctatc agagatgcac gaatggatga	3840
cacaagctga agaagagtat cttgagagag attttgaata taaaactcca gatgaattac	3900
agaaagcagt tgaagagatg aagagagctc aagaagaggc ccaacaaaaa gaagcgaaag	3960
tgaaactcct tactgagctt gtaaatagtg tcatagtcga agctccacct gtagcacaag	4020
aggccttaaa aaaggaactt gaaactctaa ccaccaacta ccagtggctc tgcactaggc	4080
tgaatgggaa atgcaagact ttggaagaag tttgggcatg ttggcatgag ttattgtcat	4140
acttgagaaa agcaaacaag tggctaaatg aagtagaatt taaacttaaa accactgaaa	4200
acattcctgg cggagctgag gaaatctctg aggtgctaga ttacttgaa aatttgatgc	4260
gacattcaga ggataaccca aatcagattc gcatattggc acagacccta acagatggcg	4320
gagtcattgga tgagctaate aatgaggaac ttgagacatt taattctcgt tggagggaac	4380
tacatgaaga ggctgtaagg aggcaaaagt tgcttgaaca gagcatccag tctgcccagg	4440
agactgaaaa atccttacac ttaatccagg agtcctcac attcattgac aagcagttgg	4500

cagcttatat tgcagacaag gtggacgcag ctcaaagcc tcaggaagcc cagaaaatcc 4560
aatctgattt gacaagtcag gagatcagtt tagaagaaat gaagaaacat aatcagggga 4620
aggaggtgc ccaagagtc ctgtctcaga ttgatgttc acagaaaaa ttacaagatg 4680
tctccatgaa gtttcgatta ttccagaaac cagccaatth tgagcagcgt ctacaagaaa 4740
gtaagatgat tttagatgaa gtgaagatgc acttgccctgc attggaaaca aagagtgtgg 4800
aacaggaagt agtacagtca cagctaaatc attgtgtgaa cttgtataaa agtctgagtg 4860
aagtgaagtc tgaagtggaa atgggtgataa agactggacg tcagattgta cagaaaaagc 4920

agacggaaaa tcccaaagaa cttgatgaaa gagtaacagc tttgaaattg cattataatg 4980
agctgggagc aaaggtaca gaaagaaagc aacagttgga gaaatgcttg aaattgtccc 5040
gtaagatgag aaaggaaatg aatgtcttga cagaatggct ggcagctaca gatatggaat 5100
tgacaagag atcagcagtt gaaggaatgc ctagtaatth ggattctgaa gttgcctggg 5160
gaaaggctac taaaaagag attgagaaac agaaggtgca cctgaagagt atcacagagg 5220
taggagaggc cttgaaaaca gttttgggca agaaggagac gttggtggaa gataaactca 5280
gtcttctgaa tagtaactgg atagctgtca cctcccagc agaagagtgg ttaaactctt 5340

tgttggaata ccagaaacac atggaaactt ttgaccagaa tgtggaccac atcacaagat 5400
ggatcattca ggcagacaca cttttggatg aatcagagaa aaagaaaccc cagcaaaaag 5460
aagacgtgct taagcgttta aaggcagaac tgaatgacat acgccccaaag gtggactcta 5520
cacgtgacca agcagcaaac ttgatggcaa accgcggtga ccactgcagg aaattagtag 5580
agccccaaat ctcagagctc aaccatcgat ttgcagccat ttcacacaga attaagactg 5640
gaaaggcctc cattcctttg aaggaattgg agcagtttaa ctcagatata caaaaattgc 5700
ttgaaccact ggaggctgaa attcagcagg ggggtgaatct gaaagaggaa gacttcaata 5760

aagatatgaa tgaagacaat gaggtactg taaaagaatt gttgcaaaga ggagacaact 5820
tacaacaaag aatcacagat gagagaaagc gagaggaaat aaagataaaa cagcagctgt 5880
tacagacaaa acataatgct ctcaaggatt tgaggtctca aagaagaaaa aaggctctag 5940
aaatttctca tcagtggat cagtacaaga ggcaggtga tgatctcctg aaatgcttgg 6000
atgacattga aaaaaatta gccagcctac ctgagcccag agatgaaagg aaaataaagg 6060
aaattgatcg ggaattgcag aagaagaaag aggagctgaa tgcagtgcgt aggcaagctg 6120
agggcttgtc tgaggatggg gccgcaatgg cagtggagcc aactcagatc cagctcagca 6180

agcgtggcg ggaattgag agcaaatthg ctgagtttgc aagactcaac tttgcacaaa 6240
ttcacactgt ccgtgaagaa acgatgatgg tgatgactga agacatgcct ttggaaatth 6300
cttatgtgcc ttctacttat ttgactgaaa tctcatgt ctcacaagcc ctattagaag 6360

tggaacaact tcicaatgct cctgacctct gtgctaagga ctttgaagat ctctttaagc	6420
aagaggagtc tctgaagaat ataaaagata gtctacaaca aagctcaggt cggattgaca	6480
ttattcatag caagaagaca gcagcattgc aaagtgcac gcctgtggaa aggggtgaagc	6540
tacaggaagc tcctccccag cttgatttcc aatgggaaaa agttaacaaa atgtacaagg	6600
accgacaagg gcgatttgac agatctgttg agaaatggcg gcgttttcat tatgatataa	6660
agatatatta tcagtggcta acagaagctg aacagtttct cagaaagaca caaatcctg	6720
agaattggga acatgctaaa tacaatggt atcttaagga actccaggat ggcattgggc	6780
agcggcaaac tgttgtcaga acattgaatg caactgggga agaaataatt cagcaatcct	6840
caaaaacaga tgccagtatt ctacaggaaa aattgggaag cctgaatctg cgggtggcagg	6900
aggtctgcaa acagctgtca gacagaaaaa agaggctaga agaacaaaag aatatctgt	6960
cagaatttca aagagattta aatgaatttg ttttatggtt ggaggaagca gataacattg	7020
ctagtatccc acttgaacct ggaaaagagc agcaactaaa agaaaagctt gagcaagtca	7080
agttactggt ggaagagttg cccctgcgcc agggaattct caaacaatta aatgaaactg	7140
gaggaccctg gcttgaagt gctcccataa gcccagaaga gcaagataaa ctgaaaata	7200
agctcaagca gacaaatctc cagtggataa aggtttccag agctttacct gagaaacaag	7260
gagaaattga agctcaaata aaagaccttg ggcagcttga aaaaaagctt gaagaccttg	7320
aagagcagtt aaatcatctg ctgctgtggt tatctctat taggaatcag ttggaaattt	7380
ataaccaacc aaaccaagaa ggaccatttg acgttcagga aactgaaata gcagttcaag	7440
ctaaacaacc ggatgtggaa gagattttgt ctaaagggca gcatttgtac aaggaaaaac	7500
cagccactca gccagtgaag aggaagttag aagatctgag ctctgagtgg aaggcggtaa	7560
accgtttact tcaagagctg agggcaaac agcctgacct agctcctgga ctgaccacta	7620
ttggagcctc tctactcag actgttactc tggtagacaca acctgtggtt actaaggaaa	7680
ctgccatctc caaactagaa atgccatctt ccttgatgtt ggaggtacct gctctggcag	7740
atttcaaccg ggcttgaca gaacttaccg actggcttct tctgcttgat caagttataa	7800
aatcacagag ggtgatggtg ggtgaccttg aggatatcaa cgagatgatc atcaagcaga	7860
aggcaacaat gcaggatttg gaacagaggc gtccccagtt ggaagaactc attaccgctg	7920
cccaaaattt gaaaaacaag accagcaatc aagaggctag aacaatcatt acggatcgaa	7980
ttgaaagaat tcagaatcag tgggatgaag tacaagaaca ccttcagaac cggaggcaac	8040
agttgaatga aatgttaaag gattcaacac aatggctgga agctaaggaa gaagctgagc	8100
aggtcttagg acaggccaga gccaaagcttg agtcatggaa ggagggtccc tatacagtag	8160
atgcaatcca aaagaaaatc acagaaacca agcagttggc caaagacctc cgccagtggc	8220

agacaaatgt agatgtggca aatgacttgg cctgaaact tctccgggat tattctgcag 8280

atgataccag aaaagtccac atgataacag agaatatcaa tgcctcttgg agaagcattc 8340

ataaaagggt gagtgagcga gaggtctgtt tggaagaaac tcatagatta ctgcaacagt 8400

tccccctgga cctggaaaag tttcttgcct ggcttacaga agctgaaaca actgccaatg 8460

tcctacagga tgctaccgt aaggaaaggc tcctagaaga ctccaaggga gtaaaagagc 8520

tgatgaaaca atggcaagac ctccaagggt aaattgaagc tcacacagat gtttatcaca 8580

acctggatga aaacagccaa aaaatcctga gatccctgga aggttccgat gatgcagtcc 8640

tgttacaaag acgtttggat aacatgaact tcaagtggag tgaacttcgg aaaaagtctc 8700

tcaacattag gtcccatttg gaagccagtt ctgaccagtg gaagcgtctg cacctttctc 8760

tcgaggaact tctggtgtgg ctacagctga aagatgatga attaagccgg caggcaccta 8820

ttggaggcga ctttccagca gttcagaagc agaacgatgt acatagggcc ttcaagaggg 8880

aattgaaaac taaagaacct gtaatcatga gtactcttga gactgtacga atatttctga 8940

cagagcagcc ttggaagga ctagagaaac tctaccagga gccagagag ctgcctcctg 9000

aggagagagc ccagaatgtc actcggcttc tacgaaagca ggctgaggag gtcaatactg 9060

agtgggaaaa attgaacctg cactccgtg actggcagag aaaaatagat gagacccttg 9120

aaagactcca ggaacttcaa gaggccacgg atgagctgga cctcaagctg cgccaagctg 9180

aggtgatcaa gggatcctgg cagcccgtgg gcgatctcct cattgactct ctccaagatc 9240

acctcgagaa agtcaaggca cttcgaggag aaattgcgcc tctgaaagag aacgtgagcc 9300

acgtcaatga cttgtctgc cagcttacca ctttgggcat tcagctctca cgtataacc 9360

tcagcactct ggaagacctg aacaccagat ggaagcttct gcaggtggcc gtcgaggacc 9420

gagtcaggca gtcgatgaa gccacaggg actttgttcc agcatctcag cactttcttt 9480

ccacgtctgt ccagggtccc tgggagagag ccatctcgcc aaacaaagt cctactata 9540

tcaaccagca gactcaaaca acttgctggg accatcccaa aatgacagag ctctaccagt 9600

ctttagctga cctgaataat gtcagattct cagcttatag gactgccatg aaactccgaa 9660

gactgcagaa ggccctttgc ttggatctct tgagcctgtc agctgcatgt gatgccttgg 9720

accagcaca cctcaagcaa aatgaccagc ccatggatat cctgcagatt attaattgtt 9780

tgaccactat ttatgaccgc ctggagcaag agcacaacaa tttggtcaac gtccctctct 9840

gcgtggatat gtgtctgaac tggctgtga atgtttatga tacgggacga acagggagga 9900

tccgtgtcct gtcttttaaa actggcatca tttccctgtg taaagcacat ttggaagaca 9960

agtacagata ctttttcaag caagtggcaa gttcaacagg attttgtgac cagcgcaggc	10020
tgggcctcct tctgcatgat tctatccaaa ttccaagaca gttgggtgaa gttgcatcct	10080
ttgggggcag taacattgag ccaagtgtcc ggagctgctt ccaatttgc t aataataagc	10140
cagagatcga agcggccctc ttcctagact ggatgagact ggaaccccag tccatggtgt	10200
ggctgcccgt cctgcacaga gtggctgctg cagaaactgc caagcatcag gccaaatgta	10260
acatctgcaa agagtgtcca atcattggat tcaggtacag gagtctaaag cactttaatt	10320
atgacatctg ccaaagctgc tttttttctg gtcgagttgc aaaaggccat aaaatgcact	10380
atcccatggt ggaatattgc actccgacta catcaggaga agatgttcga gactttgcc	10440
aggtactaaa aaacaaattt cgaacaaaaa ggtattttgc gaagcatccc cgaatgggct	10500
acctgccagt gcagactgtc ttagagggggg acaacatgga aactcccgtt actctgatca	10560
actttggcc agtagattct gcgcctgcct cgtccctca gctttcacac gatgatactc	10620
attcacgcat tgaacattat gctagcaggc tagcagaaat ggaaaacagc aatggatctt	10680
atctaaatga tagcatctct cctaagaga gcatagatga tgaacatttg ttaatccagc	10740
attactgcca aagtttgaac caggactccc cctgagcca gcctcgtagt cctgcccaga	10800
tcttgatttc cttagagagt gaggaagag gggagctaga gagaatccta gcagatcttg	10860
aggaagaaaa caggaatctg caagcagaat atgaccgtct aaagcagcag cacgaacata	10920
aaggcctgtc cccactgcc tccctcctg aaatgatgcc cacctctccc cagagtcccc	10980
gggatgctga gctcattgct gaggccaagc tactgctca acacaaaggc cgcctggaag	11040
ccaggatgca aatcctggaa gaccacaata aacagctgga gtcacagtta cacaggctaa	11100
ggcagctgct ggagcaaccc caggcagagg ccaaagtga tggcacaacg gtgtcctctc	11160
cttctacctc tctacagagg tccgacagca gtcagcctat gctgctccga gtggttggca	11220
gtcaaaacttc ggactccatg ggtgaggaag atcttctcag tctccccag gacacaagca	11280
cagggttaga ggaggtgatg gagcaactca acaactcctt ccctagtcca agaggaagaa	11340
ataccctgg aaagccaatg agagaggaca caatgtagga agtcttttcc acatggcaga	11400
tgatttgggc agagcgatgg agtccctagt atcagtcatg acagatgaag aaggagcaga	11460
ataaatgttt tacaactcct gattcccga tggtttttat aatattcata caacaaagag	11520
gattagacag taagagtta caagaaataa atctatattt ttgtgaaggg tagtggtatt	11580
atactgtaga tticagtagt ttctaagtct gttattgttt tgttaacaat ggcaggtttt	11640
acacgtctat gcaattgtac aaaaaagtta taagaaaact acatgtaaaa tcttgatagc	11700
taaataactt gccatttctt tatatggaac gcattttggg ttgtttaaaa atttataaca	11760
gttataaaga aagattgtaa actaaagtgt gctttataaa aaaaagttgt ttataaaac	11820

ccctaaaaac aaaacaaaca cacacacaca cacatacaca cacacacaca aaactttgag	11880
gcagcgcatt gttttgcatc cttttggcgt gatatccata tgaaattcat ggctttttct	11940
ttttttgcat attaaagata agacttcttc taccaccaca ccaaagact actacacact	12000
gctcatttga gaactgtcag ctgagtgggg caggcttgag ttttcatttc atatatctat	12060
atgtctataa gtatataaat actatagtta tatagataaa gagatacga tttctataga	12120
ctgacttttt ccatttttta aatgttcattg tcacatccta atagaaagaa attacttcta	12180
gtcagtcac caggcttacc tgcttggctc agaatggatt tttcccgag ccggaagcca	12240
ggaggaaact acaccacact aaaacattgt ctacagctcc agatgtttct cattttaaac	12300
aactttccac tgacaacga agtaaagtaa agtattggat ttttttaaag ggaacatgtg	12360
aatgaatata caggacttat tatacagag tgagtaatcg gttggttggt tgattgattg	12420
attgattgat acattcagct tctgtctgct agcaatgcca cgatttagat ttaatgatgc	12480
ttcagtggaa atcaatcaga aggtattctg accttgtgaa catcagaagg tattttttaa	12540
ctccaagca gtagcaggac gatgataggg ctggagggct atggattccc agcccatccc	12600
tgtgaaggag taggccactc ttttaagtga ggattggatg attgttcata atacataaag	12660
ttctctgtaa ttacaactaa attattatgc cctcttctca cagtcaaaag gaactgggtg	12720
gtttggtttt tgttgccttt ttagatttat tgtcccatgt gggatgagtt tttaaatgcc	12780
acaagacata atttaaaata aataaacttt gggaaaagggt gtaaaacagt agcccatca	12840
catttgtgat actgacaggt atcaaccag aagcccatga actgtgttcc catcctttgc	12900
atttctctgc gagtagttcc acacaggttt gtaagtaagt aagaaagaag gcaaattgat	12960
tcaaattgta caaaaaaacc cttcttgggtg gattagacag gttaaatata taaacaaaca	13020
aacaaaaatt gctcaaaaaa gaggagaaaa gctcaaggagg aaaagctaag gactggtagg	13080
aaaaagcttt actctttcat gccattttat tttttttga tttttaaatc attcattcaa	13140
tagataccac cgtgtgacct ataattttgc aaatctgtta cctctgacat caagtgtaat	13200
tagcttttgg agagtgggct gacatcaagt gtaattagct tttggagagt gggttttgtc	13260
cattattaat aattaattaa ttaacatcaa acacggttc tcatgctatt tetacctcac	13320
tttggttttg ggggtgttct gataattgtg cacacctgag ttcacagctt caccacttgt	13380
ccattgcgtt attttcttt tcttttataa tttttcttt ttccttcata attttcaaaa	13440
gaaaacccaa agctctaagg taacaaatta ccaaattaca tgaagatttg gtttttgtct	13500
tgcatttttt tctttatgt gacgtggac cttttcttta cccaaggatt tttaaaactc	13560
agatttaaaa caaggggtta ctttcatcc tactaagaag ttttaagtaag taagtttcat	13620
tctaaaatca gaggtaaata gtagtcataa ataattttgt tttaatcttt ttgtttttct	13680

tttagacaca ttagctctgg agtgagtcgt tcataatatt tgaacaaaaa ttgagagctt 13740

tattgctgca ttttaagcat aattaatttg gacattatctt cgtgttgtgt tctttataac 13800

caccaagtat taaactgtaa atcataatgt aactgaagca taaacatcac atggcatgtt 13860

ttgtcattgt tttcaggtac tgagttctta ctgagtatc ataatatatt gtgttttaac 13920

accaacactg taacatttac gaattatctt tttaaacttc agttttactg cattttcaca 13980

acatatcaga cttcaccaaa tatatgcctt actattgtat tatagtactg ctttactgtg 14040

tatctcaata aagcacgcag ttatgttac 14069

<210> 9

<211> 2385

<212> DNA

<213> Homo sapiens

<400> 9

ggatgcgcgg cgtggccacg ccccttcagt gcttgtgacg caggcgccct gggctttttg 60

ggcgcgaaaa agaagcagtc ctgggttgta cccggcgagc ctgggagcgg ctgcttcctc 120

cggggtcgta tctccgcccg gcatggggct gctggacctt tgcgaggaag tgttcggcac 180

cgccgacctt taccgggtgc tgggcgtgac acgcgaggcc tccgacggcg aggtccgacg 240

aggctaccac aaggtgtccc tgcaggtaca cccggaccgg gtgggtgagg gcgacaagga 300

ggacgccacc cgccgttcc agatcctggg aaaagtctat tccgttctca gtgacagaga 360

acagagagca gtgtacgatg agcaggggaac agtggacgag gactctcttg tgctcaccca 420

agaccgagac tgggaggcgt attggcggct actctttaa aagatatctt tagaggacat 480

tcaagctttt gaaaagacat acaaaggctt ggaagaagag ctggctgata ttaagcaggc 540

ctatctggac ttcaagggtg acatggatca gatcatggag tctgtgcttt gcgtgcagta 600

cacagaggaa cccaggataa ggaatatcat tcagcaagct attgacgccg gagaggtccc 660

atcctataat gcctttgtca aagaatcgaa acaaaagatg aatgcaagga aaaggagggc 720

tcaggaagag gccaaagaag cagaaatgag cagaaaggag ttggggcttg atgaaggcgt 780

ggatagcctg aaggcagcca ttcagagcag acaaaaggat cggcaaaagg aaatggacaa 840

ttttctggct cagatggaag caaagtactg caaatcttcc aaaggaggag ggaaaaaatc 900

tgctctcaag aaagaaaaga aataatggaa tttttctctt caaaggctct taggtgtaaa 960

ttgatccat cgtaggcaag gtgcaggcag gatttgaagg caaaagtcaa ttcagctctt 1020

gagaaaagggt gtctttccag cctgaatttt tcagattgac tagaccaagc agaatctctc 1080

aacctgatct tagtatttcc tagaaagcac ttgacattgt gtgaggtctc acctgaagga 1140

acttggtggt gacatttggg aggggtggagg gaggcagtgt ccttcctgac agcacttgcc 1200
tccatggatc ttctgtacac agaactctta tctaggatgt ggttctgttc atgctgcttt 1260

ctgcgatgtg cgtgtctgtt agaataggct ctctaccag ctagaacacc ttccagacac 1320
ttgctggaca gctatcttcc acatacttcc cagtttacat ttggtcttaa tgatcttgaa 1380
tagatcctct cttcatttta ctcagccagg ttttgtactg atgtacaggt gttaaattac 1440
ttcaagcatt tttgtaagag gtgtatataa ttcaataaaa aaggtaaaac atgatgatta 1500
agttctgggg gctttgtaa tgatccact aaaatgtgac ctaggaaaaa tatgaatggt 1560
gttttaggatg agagaaaagg ggaaaacaat agccctggtc agctttataa tagagagcct 1620
ggtttcccta gcatgaagag atgtatgttg tagtcctgcc actgattact gaagtcctgc 1680

cattaattgc tgaatgtctt cagttgggcc actgagcttg tctgaatctg ttccctttta 1740
taaaagagtt actacatcaa aacaaagagt gaaatccaaa tttgtcaaac tgtatgtatt 1800
aaacatgtcc agtttttgg ttaaaaaaa attgcactgg ctttgaggga aaacacacag 1860
ggtgagggaa ttgggctaaa tgacttctta caggccctt tctgattctt taactttgaa 1920
aggcaagcca tattgatcca gttgttatag tgaactcatg gtaatggtt gtgagaacaa 1980
tagagatttt catttctatg tagatgagtt ggtatgagaa tataatggaat ttttaaggga 2040
ctgtttaaat ctttgatttg tagactatta aatataccgt atgcataaag taagccttta 2100

gctctaaggt aaagacgaca cgtttctggt ttgtgactac aaataggta aaaatagatt 2160
ttaattttat taaaaatata atttaatgca ggttggttga agcatctgtc ttcatatgat 2220
ggcattagaa caccttggtta taataaaaag ttaccgtaat ttatgattat ttgaatttat 2280
ccattctgaa aattaataag atctaaaact ggcatgacaa tcaagatttg tatttagtga 2340
aatttaaat aaatgtaagc catagttaaa aaaaaaaaaa aaaaa 2385

<210> 10
<211> 4206
<212> DNA
<213> Homo sapiens
<400> 10

cgccctccc cgcgcgctc gggatcccga ccagtctga ccgcacgggg gccgcggcca 60

cggggcgcag gggccatggt gcgcgcgagg atctcccggc tctcgggtccg ggacgtgcgc 120
ttccccacgt cgcttggggg ccacggcgcg gacgccatgc acacggaccc tgactactcg 180
gtgcctatg tcgtcataga aactgatgca gaagatggaa tcaaggggtg tggaattacc 240
ttcactctgg gaaaaggcac tgaagttgat tggtcagaa aagggcgtgg tgcacctggc 300

gacagcggcc gtcctaaacg cgggtgtggga cttgtgggcc aagcaggagg gaaagcctgt 360
ctggaagtta cttgtggaca tggatcccag gatgctggta tcctgcatag atttcaggta 420
catcactgat gtcctgactg aggaggatgc cctagaaata ctgcagaaag gtcaaattgg 480

taaaaaagaa agagagaagc aaatgctggc acaaggatac cctgcttaca cgacatcgtg 540
cgcttgctg gggtaactcag atgacacgtt gaagcagctc tgtgcccagg cgctgaagga 600
tggtctggacc aggttttaag taaaggtggg tgctgatctc caggatgaca tgcgaagatg 660
ccaaatcatc cgagacatga ttggaccgga aaagactttg atgatggatg ccaaccagcg 720
ctgggatgtg cctgaggcgg tggagtggat gtccaagctg gccaagttca agccattgtg 780
gattgaggag ccaacctccc ctgatgacat tctggggcac gccaccattt ccaaggcact 840
gggccatta ggaattggca ttgccacagg agaacagtgc cacaatagag tgatatattaa 900

gcaactccta caggcgaagg ccctgcagtt cctccagatt gacagttgca gactgggcag 960
tgtcaatgag aacctctcag tattgctgat ggccaaaaag tttgaaattc ctgtttgccc 1020
ccatgctggt ggagtggcc tctgtgaact ggtgcagcac ctgattatat ttgactacat 1080
atcagtttct gcaagccttg aaaatagggt gtgtgagtat gttgaccacc tgcattagca 1140
tttcaagtat cccgtgatga tccagcgggc ttctacatg cctcccaagg atcccgcta 1200
ctcaacagaa atgaaggagg aatctgtaa gaaacaccag tatccagatg gtgaagtttg 1260
gaagaaactc ctctctgctc aagaaaatta agtgcctcgc cccaacaact tttttcttc 1320

tgaagtgaag gggcttaaaa tttcttgaa atagttttac aaaaatggat ttaaaaaatc 1380
ctaccgatca agatgagttc agctagaagt cataccaccc tcaggaatca gctaaagcaa 1440
aaagaacttt tacctcgga tccagcccaa ccctaaga ctgacaatat ccttcgagct 1500
cctttgaaag caccctaacc agccatttcc attttaatag ttggatgcgg attgtaccct 1560
tcaatctgaa agtcttcagc tttgaagtca tcaattttct caacttttcg aagaatcctg 1620
agctttggga aaggctctggg ttctcgctga agctaaaaac aaaataaggc cattattttg 1680
ccataattgt acgacctgtt gtaattgctc ctcatgtccg tgaacaagt acacaggatg 1740

tgatcaacaa agttctatct tacaggagta tgatcctgtc gataccttgc cgtaggttat 1800
gtaacatgat tggagcgcaa ccagctgttc tcttgacag atcgagagtg aggggtatct 1860
tgtgacatta cacagcatca ggagcctggt gcctcatcag gtgtaagtgc ttataaccac 1920
tcttgcaaaa ttatttaaag acaggaacac agtcaatctg taactcatag tagctctacg 1980
tttacttgaa ttccacaatc cctaaccat ctgtccctgg cagaaagaag gaaagatgac 2040
atgatggac agtgaacaga aagggatgaa agccaggatt cctgggatga acagacagtg 2100

gcaattagga tgtgaagaca ggtcacaacc tattactatg tctaaaaacg accagagcag 2160

agagccagag agaataagcc tgaagtcacc tccactcaaa agcagccaaa ctccctcaaa 2220

ggagtaactt ttaaaacctg gatctaacct ggaaggggct aaaaagtgtc tggttctgag 2280

tttttttctt taaggctcat gaagcagatg aacttacatt tttattgcca tttcatatca 2340

attgttggct gctataactt agggatttca acagactttt gaagtttga cctaaatatt 2400

gtacttaatg taaaattaac aaaaaatatt tatggccagg gtggtggctt atgcctgtaa 2460

ttccagaatt ttcggaggct gaggcagggt gatcacttga agtcaggagt ttgagactag 2520

cctggccaac atgatgaaac cccatctcta ctaataatac aaaaattagc tgggtgtggt 2580

ggcatgtgcc tgtaatccca gctacctggg aggctgaggc agaagaattg cttgaacccg 2640

ggaggtggag gttgcagiga gctgagatcg caccacggca cactccagcc tggccgacag 2700

agaaagactc catctcaaaa aaaaaagaaa aggaaaaaca tttgcacttc aattctcctt 2760

caagttaaaa tgagttaaaa tgcccccttt tggacaatcc cctggcttga atgtggctct 2820

tccctctctg gtactgggtc ttagtacctc acagcacctg acatgttaag tgcccatggt 2880

tgctgaggca gatgcctgcc ttgtctgcc cacctgcca ccacttctcc ctaaactgaa 2940

gccccacatt tggagcagtc atctttatct tggacacagc attgagcaga tgcctgttcc 3000

acagtcaacc ttttatcaag agaaggtagc aaacccaaaa gtataacatc taattcttac 3060

ctgaattttc agtggctcga tgtgattcag gtaaatatgt gcatctccca aagtgtgtat 3120

aaagtcacct ggctataaac ccgggggaga aagcagaaca gtatgttagt ttcaattctt 3180

taaaacatca tttaaaaaca ttagaatatg cagacaccgc aaggtttttt ttaaaaaaat 3240

aatttagtgt agcttttcca tttttttgta gcaacagcat cttgttatgt tgcccaggct 3300

ggtattgaac tccagacctc aagcaattgc tctgtctca gtctcccaa gtgctgggat 3360

tacaggcatg agccaccata cccaacctca gcatagcttt tgagaaaatc catagaagct 3420

glatcacaaa caacctglat agatctgtta gtgcgtatac cacagggccca gaaaaccttc 3480

cagaagagga aggtttcaaa gtaaaagctg gttcatttct tacttacaca tatcaaattt 3540

aaaagctaag cagagactaa actctgcaat ttgttttccc atattaaaga actgaagagc 3600

tcagtgtggt aggctggcaa gtcaccttc ccgagacagc ccaccttcag gcccgtagtg 3660

tgcgcaatca tgtactgtgag cagggcgtag ctggcgatgt tgaaaggcac accgaggccc 3720

atgtctcccg atctctggta cagctggcag gacagctcac tgttcaccac atagaactgg 3780

cagagggcac ggcattggagg cagcgccatc agaggaagat ctgaggaacc agcagaggaa 3840

gataaggagg gatggtggtt tgaaagacca cagctaaagg caaagtaaaa caggagagaa 3900
acagaagcca actcataatgg tggagaccag gagagagagc cactgggctg cagtgatgtc 3960
cataacagcc tctgcagcga tggcacggag ctgagggaga ctatccatcg gtgcaaggtt 4020
tctgcagggtg tccattttacg gctgaagcaa tgctcttcca tcagagctga agggatctgg 4080
gctacctcgt ggcaccagat tacaataca gcaggaataa ttctgtttgc cacaggaaac 4140
tggtgcttct ggtacacct cctatattaa aagtctctat tacatggcaa aaaaaaaaaa 4200
aaaaaa 4206

<210> 11

<211> 1753

<212> DNA

<213> Homo sapiens

<400> 11

agcggactgc gcatgtgcag gaccagcag gtctagagct tttctgtgtt tctccggact 60
tcgagccatg gcggtgacgg aagcagacct gttgcgccag tgccccctgc ttctgcccc 120
gaaccggctc aaaaccgtgt atgagggatt catctcggct cagggaagag acttccacct 180
taggatagtg ttgcctgaag atttacaact gaagaatgca agattattat gtagttggca 240
gctgagaaca atacttagtg gataccatcg aatagtacaa cagagaatgc agcactctcc 300
tgatctaatag agctttatga tggagttgaa gatgcttttg gaagttgcct taaagaatag 360

acaagagctg tatgcactac ctctctctcc ccagttctac tcaagcctta ttgaagagat 420
aggaactctt ggttgggata aacttgtgta tgcggatacc tgcttcagta ccatcaagtt 480
aaaagcagaa gatgcttctg gtagagagca tttaatcact ctcaagttga aggcaaagta 540
tcttcagaaa tcaccagatt attttgtgga ttttctgtt ccattttgtg cctctggac 600
acctcaggta aattctctc agagctcctt aataagcatt tatagtcagt ttttggcagc 660
aatagaatca ctaaaggcat tctgggatgt tatggatgaa atcgatgaga agacctgggt 720
acttgagcca gaaaaacctc cacggagtgc aacagcacgc agaattgcat taggtaataa 780

tgtttccata aatataagagg tagaccccag gcacctact atgcttcctg agtgcttctt 840
tcttggagct gaccatgtgg taaaaccctt gggaattaag ctgagcagga acatacat 900
gtgggatcca gaaaatagtg tgttacaaaa tttgaaagat gtttagaaa ttgattttcc 960
agctcgtgct atcctggaaa aatctgattt tactatggat tgtggaattt gttatgctta 1020
tcaacttgac ggtaccattc ctgatcaagt gtgtgataat tctcagtgtg gacaaccttt 1080
ccatcaaata tgcttatatg agtggctgag aggactacta actagtagac agagttttta 1140

catcatatTTT ggTgaatgTc catattgtag taagccaatt accTTaaaaa tGTctggaag 1200

gaaacactga aataagaata caacattTtcg gTgaagagct ggaaactTaa aaaattatca 1260

aaaggaatTTT tggtatcatc tTcagagaaa aaataaagca agaaatacta acatcaaaag 1320

gacaggtatg atgatgcgat aataataaac atctgcgTtt gTctctTcac taagagTaaa 1380

ctgggaaatt gtaggccaaa gTccagTtga actTtTctaag tctgtgatcc cctgtctgac 1440

tgtggaagtg tattTatacc aagatggaga tcttgactTc ttgaatatat ctggactggt 1500

aaaatctTga tGaggctcat aaaatgagTt tgggaattgt gTatagctga tTtTtTgtgg 1560

gaaactgTtt actTcatTca aaggTtctTg agactctTga tattTctgTc tTctcctTgt 1620

gctTtTctat ggaaaaaata catatatagt ttagTtTgtt agacgtgagT tatccaagTa 1680

tTtattTtTgt gtagTgtgTa agaatgctaa ataaaatgtt atacaagatc aaaaaaaaaa 1740

aaaaaaaaaa aaa 1753

<210> 12

<211> 3189

<212> DNA

<213> Homo sapiens

<400> 12

ctatttgagT ttgtggcgcg cgaggccctg cagtccgggt tggcgctTgg gTactggctg 60

ggtccgatgc tgggtacgct gcgcgccatg gagggcgagg acgtggaaga cgaccagctg 120

ctgcagaagc tcagggccag tgcgcccg cTccagaggc gcatgcagcg gctgatagag 180

aagtacaacc agccctTcga ggacaccccg gtggtgcaaa tggccacgct gacctacgag 240

acgccacagg gattgagaat ttggggTgga agactaataa aggaaagaaa cgaaggagag 300

atccaggact cctccatgaa gcccgcggac aggacagatg gctccgtgca agctgcagcc 360

tggggtcctg agctTccctc gcaccgcaca gTcctgggag ccgattcaaa aagcggtgag 420

gTcgatgcca cgtcagacca ggaagagtca gTtgcTtggg ccttagcacc tgcagtgcct 480

caaagccctt tgaaaaatga attaagaagg aaatactTga cccaagtgga tatactgcta 540

caaggtgcag agtattTtga gTgtgcaggT aacagagctg gaagggatgt acgtgtgact 600

ccgtgcctt cactggcctc acctgccgtg cctgcceccg gatactgcag tGtatctcc 660

agaaagagTc ctggtgaccc agcgaaacca gctTcatctc ccagagaatg ggatcctTtg 720

catcctTcct ccacagacat ggccttagTa cctagaaatg acagcctctc cTacaagag 780

accagtagca gcagctTctt aagcagccag cctTtTgaag atgatgacat ttgcaatgtg 840

accatcagTg acctgtacgc agggatgctg cactccatga gccggctgtt gagcacaag 900

ccatcaagca tcattctccac caaaacgttc atcatgcaaa actggaactc caggaggagg 960

cacagatata agagcaggat gaacaaaaca tattgcaaag gagccagacg ttctcagagg 1020

agctccaagg agaacttcat accctgctct gagcctgtga aaggacagg ggcattaaga 1080

gattgcaaga acgtattaga tgtttcttgc cgttaagacag gtttaaaatt ggaaaaagct 1140

tttcttgaag tcaacagacc ccaaattccat aagtttagatc caagttggaa ggagcgcaaa 1200

gtgacaccct cgaagtattc ttcttgatt tacttcgact ccagtgaac atataatctt 1260

gatgaggaaa atagatttag gacattaaaa tggtaattt ctctgtaaa aatagtctc 1320

agaccaacaa tacgacaggg ccatggagag aaccgtcaga gggagattga aatccgattt 1380

gatcagcttc atcggaata ttgctgagt cccaggaacc agcctcgccg gatgtgcctc 1440

ccggactcct gggccatgaa catgtacaga ggggtcctg cgagtcctgg tggccttcag 1500

ggcttagaaa cccgcaggct gagtttacct tccagcaaag caaaagcaaa aagtttaagt 1560

gaggcttttg aaaacctagg caaaagatct ctggaagcag gtaggctcct gccaagagc 1620

gattcatctt catcacttcc aaagaccaac cccacacaca gcgcaactcg cccgcagcag 1680

acatctgacc ttacagttca gggaaatagt tctggaatat ttagaaagtc agtgtcacc 1740

agcaaaactc tticagtccc agataaagaa gtgccaggcc acggaaggaa tcgttacgat 1800

gaaattaaag aagaatttga caagcttcat caaaagtatt gcctcaaac tcctgggcag 1860

atgacagtgc cttatgtat tggagtgtct acagataaag caagtatgga agttcgatat 1920

caaacagaag gcttcttagg aaaattaaat ccagaccctc acttcaggg ttccagaag 1980

ttgccatcat cccccctggg gtgcagaaaa agtctactgg gctcaactgc aattgaggct 2040

ccttcatcta catgtgttgc tcgtgccatc acgagggatg gcacgaggga ccatcagttc 2100

cctgcaaaaa gaccaggct atcagaacct cagggtccg gacgccaggg caattccctg 2160

ggtgcctcag atggggtgga caacaccgtc agaccgggag accagggcag ctcttcacag 2220

cccaactcag aagagagagg agagaacacg tcttacagga tggaagagaa aagtgatttc 2280

atgctagaaa aattggaac taaaagtgtg tagctagggt atttcggagt gttatttattc 2340

ttcccacttg ctctctgttt gtatttttgt ttgtttttg attcttgaga ctgtgaggac 2400

ttggttgact tctctgccct taaagtaaat attagtgaat ttggttccat cagagataac 2460

ctcgagtctt tgggtgtaga attatgtgaa taaagtgtc caattagaat ttttaggggtt 2520

ctctttgata ggctgtttt tctgatgtgt gtgttttttt tggggggggg ttatttggtt 2580

gtttgtttgt ttgtttgttt gtttttgaga cagtctctct ctatcgcca ggctggagtg 2640

cggtggcaca atcttggctc actgcaactt ccgcctcccg ggttcaagcg attcttctgc 2700

ctcagcctcc cgagtagctg ggattacagg cgcgcgccac cacgcctggc taatttttgt 2760

agtttttagta gagacggggg ttcaccatat tgaccaggct ggtctcgagc tcttggcctc 2820

gtgatccatc tgccctggcc tcccaaagtg ctgggattat aggcgtgagc cactgctccc 2880

agccgtgtgt tcttttttaa atttagatat gtccagagaa tctctctccc tgtttcccat 2940

ttcattcgag aatattgttt gcttgtgaga cgtaagtgc agccctgcat gcaatgaccc 3000

ttgaaggaaa ataacagtc ctgggtggcc cagacgctcc tgcagccaca ggcctgtga 3060

ctctcatga ttcttactga agctgttgat gacaggatat catggtgacg tttttgtaat 3120

gaaatatttc acatattcag aatacattgg tgaaactcat gctggagtaa atagttaata 3180

tatggccat 3189

<210> 13

<211> 3485

<212> DNA

<213> Homo sapiens

<400> 13

cttcttcttt acctccgct tgttctgtc ctcaccacac ggactgagac tgatttgatt 60

aaagcaccag agtgtaatgg ccctcagagc agggctggtc ctgggggtcc acacctgat 120

gacctcctg agcccgagg aggcaggggc caccaaggct gaccatgg gctcctacgg 180

acccgccttc taccagtctt acggcgctc gggccagttc acccatgaat ttgatgagga 240

acagctgttc tctgtggacc tgaagaaaag cgaggccgtg tggcgtctgc ctgagtttgg 300

tgactttgcc cgctttgacc cgcagggcgg gctggccggc atcgccgcaa tcaaagccca 360

tctggacatc ctggtggagc gctccaaccg cagcagagcc atcaacgtgc ctccacgggt 420

gaccgtgctc cccaagtctc ggggtggagct gggccagccc aacatcctca tctgcatcgt 480

ggacaacatc ttccccctg tgatcaatat cacctggctg cgcaacggcc aaactgtcac 540

tgagggagtg gccagacca gcttctattc ccagcctgac catttgttcc gcaagttcca 600

ctacctgcc ttcgtgccct cagccgagga cgtctatgac tgccagggtg agcactgggg 660

cctggatgcg ccactctca ggcatggga gctccagggt cctattccac caccagatgc 720

catggagacc ctggtctgtg ccctgggcct ggccatcggc ctggtgggct tctcgtggg 780

caccgtctc atcatcatgg gcacatatgt gtccagtgc cccaggtaat gatccttctg 840

agagaaatga ctgtgggag acacctgca gatcctcatg ggtttgtgac agccctgcg 900

tgctcagtgc ccttaagtg catcccgctg tgctgacttt gattgggac aacatctgtc 960

ctacgggtcc ccctcttttt ggccccagta ttcattggcag ggtttgttgg acacctacta	1020
gttcccttc ccattcaaca cacacacaca ttcttgctct acccaaagct ctggctggca	1080
gcactaaatg ctttgggtgt gtttgactg tgcctttcc aggccttggc cagttcttcc	1140
aggggtgagg catgtgtgtc tggggattgg cagccatcct gggggccaca caggtgtgtc	1200
ttgtccatt tggccattg tgtgttactt tgtgaatgag ccatttcaca tggacttcat	1260
gaaatttgcc tctgagttc aggtttacc tgaagggat gcagattatc ctgttcctca	1320
cgacccctc agtaacaac agttctgaag ggtgctggga caggacaggc tcatggggac	1380
tccactcctg cctgggttta ctctgtatga agaggccact ggtatcctgc catgatgtta	1440
tctcctttt ctacttttcc ctagagtccc atgcatgata aagagaggcc caaggcttgg	1500
ataaggtggc cacttcctc agtggagtca gtcattgttag gtaggagtg gtagagtcgg	1560
tctgcgaggt atctcgttaag aggggaggtc cacctagaca cactctaaat atgtggccta	1620
gaagattttg gtctactttt ctgtgaacag aatttaaac atacaaagag ataaatcacc	1680
ataccacata gtttatgtca ggacaaaaat gagcaatata gattacgggt ttcaaaccag	1740
aatgcacata agaactgctt gggatccttt taaaagtaca ggcatggcc tgggtgcagtg	1800
gctattcct gtaatcccag cactttggga ggccaagggg acaggactgc ttgaggccaa	1860
gaggtggaaa ccatcttggg ctacatagag agaccccatc tctacaaaga aagatttaaa	1920
aattaaccag gcatggtggc tcgcacctgt attcccagcc actggggagg ctgaggccgg	1980
aggagtgtt gagcccagga gttcaaggct gcagttagcc aagattgcgc cactgcactc	2040
cagcctaggt gacagagtga gacctgtct ctaataaat aaataataa aatataaaaa	2100
taacagtcat caccagacc tactgaattt gaatctcggg agtgcagggg gcagcaacag	2160
ggaggctgtc ttttctgaga tgggtctca ctctgtcacc aggtggagt gccatggcat	2220
gatctcagct cactgcaacc tccactcct gatttcaagc cattctctg cctcagctc	2280
ctgagtagct gggactacag gtgtgcgcca ctacactcag ctaattttt tattttaagt	2340
agagacgggg ttcatcatg ttggccagga tggcctccat ctcttgacct cgtgatccac	2400
ccaccttccc tcccaaagta ctggaattac aggcattagc cactgtgccc agccgaggct	2460
gtcattttta accggctctg gatgactctg atgcagccat cctggacctt ggctgtgttc	2520
tggtaactgg aaccagatga cgtaatcagg tgccatcggg ggtcatggga aagggggatc	2580
ccaaggctt gaggtggact aggaaggctt tctgaagaac ctgggtctgt tagggcatca	2640
gccaatcaag gtacaagtaa atagaggcaa aatgagggtt tgaactgtga gcagttgttc	2700

ctggaaaaga aagaaaccaa gagattatgg ggactcaatg ggcttcttaa gagagaataa 2760

gttgaaatca atgaccagaa gacctgatg gaagtggagg agaatcatct caggcaaact 2820

ttttgtgtgc cagtaacaga aacctctttt gtgtgatcac atgcaaagta taggatattt 2880

gcaatatagc catggggagg agtgcagggc ccaaggtag atttagcca ggcctccag 2940

gaacagaact cggatccgaa aagcccagag aagctagagc tgcccctcca acactctcgg 3000

atccacatgg tctgtgttct ctagaccccc ctgcatgtta gcggtgttct ctctctgtgg 3060

actgactgtc ctctcagtg aacatgtcca cccgacagct cctgagtta tatcatctca 3120

acctcaca cccacagagg ctgtgtctcc tagtcacagc tttaaattac tggaaaaata 3180

aatgactggc caaactigga gcagggtgcc atcccagccc tgtgtagtta gagcaggaat 3240

caagatctca acacaaatgt ggctgccaaag cactcagccc cggggcgagg ggtcaagttc 3300

ttctcagaga aagaggaata agttgggtct cagaagacat cacaagatac gtgtgtaccc 3360

aacaatctct gatctctgct gatcttttgc ttagacgtta acttgatgca tcattggaaa 3420

ggtgtttctc tcattctgt cctaaggctt gataaagtca ttaaaattgt gttcttttga 3480

ctaaa 3485

<210> 14

<211> 1312

<212> DNA

<213> Homo sapiens

<400> 14

ttttaatggt cagactctat tacacccac attctctttt cttttattct tgtctgttct 60

gcctcactcc cgagctctac tgactcccaa cagagcgccc aagaagaaaa tggccataag 120

tggagtcctt gtgctaggat ttttcatcat agctgtgctg atgagcgctc aggaatcatg 180

ggctatcaaa gaagaacatg tgatcatcca ggccgagttc tatctgaatc ctgaccaatc 240

aggcgagttt atgtttgact ttgatgggtga tgagattttc catgtggata tggcaaagaa 300

ggagacggtc tggcggttg aagaatttgg acgatttgcc agctttgagg ctcaagggtc 360

attggccaac atagctgtgg acaaagccaa cctggaaatc atgacaaagc gctccaacta 420

tactccgata accaatgtac ctccagaggt aactgtgctc acaaacagcc ctgtggaact 480

gagagagccc aacgtcctca tctgtttcat agacaagttc accccaccag tggatcaatgt 540

cacgtggctt cgaatggaa aacctgtcac cacaggagtg tcagagacag tcttcctgcc 600

cagggaagac caccttttcc gcaagttcca ctatctcccc ttctgcct caactgagga 660

cgtttacgac tgcagggtgg agcactgggg cttggatgag cctcttctca agcactggga 720

gtttgatgct ccaagccctc tcccagagac tacagagaac gtgggtgtgtg ccctgggcct 780
gactgtgggt ctgggtggga tcattattgg gaccatcttc atcatcaagg gattgcgcaa 840

aagcaatgca gcagaacgca gggggcctct gtaaggcaca tggaggtgat ggtgtttctt 900
agagagaaga tcaactgaaga aacttctgct ttaatggctt tacaaagctg gcaatattac 960
aatccttgac ctcaagtcaa gcagtcacatc tcagcatctt ccagccctat agccacccca 1020
agtgtggata tgcctcttcg attgtctcgt actctaacat ctagctggct tccctgtcta 1080
ttgccttttc ctgtatctat tttcctctat ttctatcat tttattatca ccatgcaatg 1140
cctctggaat aaaacataca ggagtcctgc tctgctatgg aatgccccat ggggcatctc 1200
ttgtgtactt attgtttaag gtttcctcaa actgtgattt tctgaacac aataaactat 1260

tttgatgac ttgggtggaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aa 1312

<210> 15
<211> 3006
<212> DNA
<213> Homo sapiens
<400> 15

cgagttggaa gaggtgagtc ctgtctcaaa atggaggtaa aaccgccgcc tggttgcccc 60
cagcccgact ccggcagtcg ccgtcgccac tggggggagg agggccatga tccaaaggaa 120
ccagagcagc tgagaaaact gtttatttgg gtctctgagct ttgaaactac agatgatagt 180
ttaagagaac attttgagaa atggggcaca ctcacagatt gtctggtaat gagagacccc 240
caaacaaaac gticcagggg ctttggtttt gtgacttatt cttgtgttac agaggtggat 300

gcagcaatgc gtgctcgacc attcaagggt gatgggcgtg tagtgaacc aaagagagct 360
gtttctagag aggattctgt gaagcctggt gcccatctaa cagtgaagaa aatttttgtt 420
ggcagtatta aagaagatac agaagaatat aatttgagag actactttga aaagtacggc 480
aagattgaaa ccatagaagt tatggaagac aggcagagtg gaaaaaagag aggatttgct 540
tctgtaactt ttgatgatca tgatacagtt gataaaattg ttgttcagaa ataccacact 600
attaatgggc ataactgtga agtgaaaaag gcccttgcta aacaagtgat gcagccggct 660
ggatcacaga ggggtcgtgg aggtggatct ggcaattgta tgggtcacag aggaaacttt 720

ggaggtgggt gaggtaatTT tggccgtgat ggaaactttg gtggaagagg aggctatggt 780
ggtggaggtg gtggcagcag aggtagttaa ggaggaggtg atgtggatat aatggattag 840
gaggtgatgg tggcaactat ggcaagtgtc ctggttatag tagtagaggc gggatatggtg 900
gtggtggacc aggatatgga aaccaaggtg gtggatatgg tggcgggtgt ggaggatatg 960

atggttacaa tgaaggagga aattttgacg gtagtaacta tgggtggtgt gggaactata	1020
atgatttttg aaattacagt ggacaacagc aatcaaatta tggacacatg aaagggggca	1080
gttttggttg aagaagctcg ggcagtcctt atggtggttg ttatggatct ggtggtggaa	1140
gtggtggata tggtagcaga aggttctaaa aacagcagga aagggtctaca gttcttagca	1200
ggagagagag tgaaggatgt tcaggaaagc tacaggttac tttgagacag tcgtcccaag	1260
tgcattagag gaactgtaaa aatctgtcac agaaggaacg atgatccata atcagaaaag	1320
ttactgcagc ttaaacagga aacccttctt gttcaggact gtcatagcca cagtttgcag	1380
gaagtgcagc tatcgattaa tgcaatgtag cgtcaattag atgtacattc ctgaggtctt	1440
ttatctgttg tagctttgtc ttattctttt tcttttcatt acatcaggta tattgccctg	1500
taaattgttg tagtggtagc aggaataaaa aattaaggaa tttttaactt ttcaatatct	1560
gtgtagttca gttttctac attttagtac agaaacttta acaaaatgca gttttgaagg	1620
tgtttccttg tgagttaaca agtaagaag atcaattgtt aattactatt ttgtataaat	1680
tttgctaaag ttaactgtaa agaaacacct gctgacttgc agtttaaggga gaatctattc	1740
tccccatttc caaacatga tatgaatgga cgccgacatg tggagagaac agataatttg	1800
tgtgtttgca atgtgtgttt taggttaata ggattgggtt tttaaattag catttttgaa	1860
tttaatatga ttaagattac cttcaataaa aaaagtctca aaatttcttt ttggtttttg	1920
tgcactttct tttaaaatgt aatcacatga ttttagtgtg ttagacttgc tgagtcctag	1980
ctgtgtttag aacatctcca ttctacattt accttggtca aatttgaact gctgccatag	2040
gttttgggtg taaagaatgt ttactgcctt ccattttaat tctgaaaagg tatagtggat	2100
gttttccttc tctacatta gaaaccattc ttaaaaactt ttcaaaatat agaaccatta	2160
agcctgctat atctgagcaa attagtgggt accttttttc cttttttaa gcacaagagg	2220
cccataaatc ttgagttatt tgcattagtt tacatttttt gatacaactt ttcagaccaa	2280
gagaataaaa atcatgctgt attaaacccc tagctggctg gcatgcttcc ctgtttgtac	2340
tgtatacatt ttgctggatg aaaccaagga tagtttaggt ataattgtcc aaaataacct	2400
aactgcagca gaaatgtagg acagttgctt agtacaggct tctcacttcc tacagacctg	2460
aattcaaatt tggatagctt gagttattaa attcccaaag acaaagaaca cactcttatt	2520
tcttgtgtat atttcaacat aaatcatgtt gttaccaatt tgttgggaag gccctggttg	2580
agaagagttt tagataataa ggctgtatat atatagatat atatagatat ataccaatgt	2640
ctatatatag agatatattt tataatatata tacaggtata tataatgtgtg tgtatatata	2700
taggtatata catatatata tataatatata tatatatatg gatatatacc catgtctact	2760

gttttgcttc agctagtgtc tacaatttca ttcaagtcct gagtatgtgt cctgctgtta 2820

ctccttcttt ggtagttgaa cgttgaattc aagtctttcc ttctgtttta agaagtacta 2880

agcaaacaag caataaaaag gggaatggcg catgctagtgt tttgaatatg ctctcttgtt 2940

gctctaattc tgtgcctccg tgcattaata ttggatgca tgcaatgcca gcatggaaat 3000

tggcct 3006

<210> 16

<211> 1049

<212> DNA

<213> Homo sapiens

<400> 16

aaaacaacag gaagcagctt acaaactcgg tgaacaactg agggaaccaa accagagacg 60

cgctgaacag agagaatcag gctcaaagca agtgggaagtg ggagagatt ccaccaggac 120

tggtgcaagg cgagagcca gccagatttg agaagaaggc aaaaagatgc tggggagcag 180

agctgtaatg ctgctgttgc tgctgccctg gacagctcag ggagagctg tgcctggggg 240

cagcagccct gcctggactc agtgccagca gctttcacag aagctctgca cactggcctg 300

gagtgcacat ccactagtgg gacacatgga tctaagagaa gagggagatg aagagactac 360

aatgatgtt ccccatatcc agtgtggaga tggctgtgac cccaaggac tcagggacaa 420

cagtcagttc tgcttgcaa ggatccacca gggtctgatt ttttatgaga agctgctagg 480

atcgatatt ttcacagggg agccttctct gctccctgat agccctgtgg gccagcttca 540

tgcctcccta ctgggcctca gccaaactct gcagcctgag ggtcaccact gggagactca 600

gcagattcca agcctcagtc ccagccagcc atggcagcgt ctccttctcc gcttcaaaat 660

ccttcgcagc ctccaggcct ttgtggctgt agccgcccgg gtctttgccc atggagcagc 720

aaccctgagt ccctaaaggc agcagctcaa ggatggcact cagatctcca tggcccagca 780

aggccaagat aaatctacca cccagggcac ctgtgagcca acaggttaat tagtccatta 840

attttagtgg gacctgcata tggtgaaaat taccaatact gactgacatg tgatgctgac 900

ctatgataag gttgagtatt tattagatgg gaagggaat ttggggatta tttatcctcc 960

tggggacagt ttggggagga ttatttattg ttttatatt gaattatgta ctttttcaa 1020

taaagctta tttttgtggc taaaaaaaa 1049

<210> 17

<211> 7219

<212> DNA

<213> Homo sapiens

<400> 17

```

ggaccccggc aagcccgcg c acttggcagg agctgtagct accgccgtcc gcgcctccaa      60
ggtttcacgg cticctcagc agagactcgg gctcgtccgc catgtccgcc gcagacgagg      120
ttgacgggct gggcgtggcc cggccgcact atggctctgt cctggataat gaaagactta      180
ctgcagagga gatggatgaa aggagacgtc agaacgtggc ttatgagtac ctttgtcatt      240

tggaagaagc gaagaggtgg atggaagcat gcctagggga agatctgcct cccaccacag      300
aactggagga ggggcttagg aatggggtct accttgccaa actggggaac ttcttctctc      360
ccaaagtagt gtccctgaaa aaaatctatg atcgagaaca gaccagatac aaggcgactg      420
gcctccactt tagacacact gataatgtga ttcagtgggt gaatgccatg gatgagattg      480
gattgcctaa gattttttac ccagaaacta cagatatcta tgatcgaaag aacatgccaa      540
gatgtatcta ctgtatccat gcactcagtt tgtacctgtt caagctaggc ctggcccctc      600
agattcaaga cctatatgga aaggttgact tcacagaaga agaaatcaac aacatgaaga      660

ctgagttgga gaagtatggc atccagatgc ctgccttttag caagattggg ggcactcttg      720
ctaatagaact gtcagtggat gaagccgcat tacatgctgc tgttatgtct attaatgaag      780
ctattgaccg tagaattcca gccgacacat ttgcagcttt gaaaaatccg aatgccatgc      840
ttgtaaatct tgaagagccc ttggcateca cttaccagga tatactttac caggctaagc      900
aggacaaaat gacaaatgct aaaaacagga cagaaaactc agagagagaa agagatgttt      960
atgaggagct gctcacgcaa gctgaaattc aaggcaatat aaacaaagtc aatacatttt      1020
ctgcattagc aaatatcgac ctggcttttag aacaaggaga tgcactggcc ttgttcaggg      1080

ctctgcagtc accagccctg gggcttcgag gactgcagca acagaatagc gactggtact      1140
tgaagcagct cctgagtgat aaacagcaga agagacagag tggtcagact gacccctgc      1200
agaaggagga gctgcagtc ggagtggatg ctgcaaacag tgctgcccag caatatcaga      1260
gaagattggc agcagtagca ctgattaatg ctgcaatcca gaagggtgtt gctgagaaga      1320
ctgttttggg actgatgaat cccgaagccc agctgcccga ggtgtatcca ttgcccgcg      1380
atctctatca gaaggagctg gctaccctgc agcgacaaag tcctgaacat aatctaccc      1440
accagagct ctctgtcgca gtggagatgt tgtcatcggt ggccctgac aacagggcatt      1500

tggaatcagg agatgtgaat acagtgtgga agcaattgag cagttcagtt actggcttta      1560
ccaatattga ggaagaaaac tgtcagaggt atctcgatga gttgatgaaa ctgaaggctc      1620
aggcacatgc agagaataat gaattcatta catggaatga tatccaagct tgcgtggacc      1680
atgtgaacct ggtgggtgcaa gaggaacatg agaggatttt agccattggt ttaattaatg      1740

```

aagccctgga tgaaggatgat gcccaaaaaga ctctgcaggc cctacagatt cctgcagcta	1800
aacttgaggg agtccttgca gaagtggccc agcattacca agacacgctg attagagcga	1860
agagagagaa agcccaggaa atccaggatg agtcagctgt gttatggttg gatgaaattc	1920
aaggtggaat ctggcagtc aacaaagaca cccaagaagc acagaagttt gccttaggaa	1980
tctttgccat taatgaggca gtagaaagtg gtgatgttgg caaaacactg agtgccttc	2040
gtccccctga tgttggttg tatggagtca tccctgagtg tggtgaaact taccacagtg	2100
atcttctga agccaagaag aaaaaactgg cagtaggaga taataacagc aagtgggtga	2160
agcactgggt aaaaggtgga tattattatt accacaatct ggagaccag gaaggaggat	2220
gggatgaacc tccaaatttt gtgcaaaatt ctatgcagct ttctcgggag gagatccaga	2280
gttctatctc tggggtgact gccgcatata accgagaaca gctgtggctg gccaatgaag	2340
gcctgatcac caggctgcag gctcgtgcc gtggatactt agttcgacag gaattccgat	2400
ccaggatgaa ttctctgaag aaacaaatcc ctgccatcac ctgcattcag tcacagtgga	2460
gaggatacaa gcagaagaag gcataatcaag atcggttagc ttacctgcgc tcccacaaag	2520
atgaagtgt aaagattcag tccctggcaa ggatgcacca agctcgaaag cgctatcgag	2580
atcgctgca gtacttcgg gaccatataa atgacattat caaaatccag gcttttattc	2640
gggcaaaaa agctcgggat gactacaaga ctctcatcaa tgctgaggat cctcctatgg	2700
ttgtgtccg aaaatttgtc cacctgctgg accaaagtga ccaggatttt caggaggagc	2760
ttgaccttat gaagatgcgg gaagagggtta tcacctcat tcgttctaac cagcagctgg	2820
agaatgacct caatctcatg gatatcaaaa ttggactgct agtgaaaaat aagattacgt	2880
tgcaggatgt ggtttccac agtaaaaaac ttaccaaaaa aaataaggaa cagttgtctg	2940
atatgatgat gataataaa cagaaggag gtctcaaggc tttgagcaag gagaagagag	3000
agaagtggga agcttaccag cacctgtttt atttatgca aaccaatccc acctatctgg	3060
ccaagctcat tttcagatg cccagaaca agtccacca gttcatggac tctgtaatct	3120
tcacactcta caactacgcg tccaaccagc gagaggagta cctgctctg cggtcttta	3180
agacagcact ccaagaggaa atcaagtga aggtagatca gattcaagag attgtgacag	3240
gaaatcctac ggttattaaa atggttgtaa gtttcaaccg tgggtcccgt gcccagaatg	3300
ccctgagaca gatcttgccc ccagtcgtga aggaaattat ggatgacaaa tctctcaaca	3360
tcaaaactga ccctgtggat atttacaat ctgggttaa tcagatggag tctcagacag	3420
gagaggcaag caaactgccc tatgatgtga ccctgagca ggcgctagct catgaagaag	3480
tgaagacagc gctagacagc tccatcagga acatgcgggc tgtgacagac aagtttctct	3540

cagccattgt cagctctgtg gacaaaatcc cttatgggat gcgcttcatt gccaaagtgc 3600

tgaaggactc gttgcatgag aagtccctg atgctgggtga ggatgagctg ctgaagatta 3660

ttggtaactt gctttattat cgatacatga atccagccat tgttgctcct gatgcctttg 3720

acatcattga ccgtcagca ggaggccagc ttaccacaga ccaacgccga aatctgggct 3780

ccattgcaaa aatgcttcag catgctgctt ccaataagat gtttctggga gataatgccc 3840

acttaagcat cattaatgaa tatctttccc agtccctacca gaaattcaga cggtttttcc 3900

aaactgcttg tgatgtccca gagcttcagg ataaatttaa tgtggatgag tactctgatt 3960

tagtaaccct caccaaacca gtaatctaca ttccattgg tgaaatcatc aacacccaca 4020

ctctctgtt ggatcaccag gatgccattg ctccggagca caatgatcca atccacgaac 4080

tgctggacga cctcggcgag gtgcccacca tcgagtcctt gataggggaa agctctggca 4140

atttaaatga cccaataag gaggcactgg ctaagacgga agtgtctctc accctgacca 4200

acaagttcga cgtgccctgga gatgagaatg cagaaatgga tgctcgaacc atcttactga 4260

atacaaaacg ttaattgtg gatgtcatcc ggttccagcc aggagagacc ttgactgaaa 4320

tcctagaaac accagccacc agtgaacagg aagcagaaca tcagagagcc atgcagagac 4380

gtgctatccg tgatgcaaaa acacctgaca agatgaaaaa gtcaaatct gttaaaggaag 4440

acagcaacct cactcttcaa gagaagaaag agaagatcca gacaggttta aagaagctaa 4500

cagagcttgg aaccgtggac ccaaagaaca aataccagga actgatcaac gacattgcc 4560

gggatattcg gaatcagcgg aggtaccgac agaggagaaa ggccgaacta gtgaaactgc 4620

aacagacata cgtgctctg aactctaagg ccacctttta tggggagcag gtggattact 4680

ataaaagcta tatcaaaacc tgcttggata acttagccag caagggcaaa gtctccaaaa 4740

agcctaggga aatgaaagga aagaaaagca aaaagatttc tctgaaatat acagcagcaa 4800

gactacatga aaaaggagtt ctcttggaat ttgaggacct gcaagtgaat cagtttaaaa 4860

atgttatatt tgaatcagt ccaacagaag aagtggaga cttcgaagt aaagccaaat 4920

tcatgggagt tcaaatggag acttttatgt tacattatca ggacctgctg cagctacagt 4980

atgaaggagt tgcagtcatg aaattatttg atagagctaa agtaaatgtc aacctcctga 5040

tcttccttct caacaaaaag ttctacggga agtaattgat cgtttgctgc cagcccagaa 5100

ggatgaagga aagaagcacc tcacagctcc ttctaggctc cttctttcct cattggaagc 5160

aaagacctag ccaacaacag cacctcaatc tgatacactc ccgatgccac atttttaact 5220

cctctcgctc tgatgggaca ttgtttacc tttttcata gtgaaattgt gtttcaggct 5280

tagtctgacc ttcttggttt cttcatcttc ttccattact taggaaagag tggaaactcc 5340
actaaaaatt ctctgtgttg ttacagtctt agaggttgca gtactatatt gtaagctttg 5400
gtgtttgttt aattagcaat agggatggta ggattcaaat gtgtgtcatt tagaagtgga 5460
agctattagc accaatgaca taaatacata caagacacac aactaaaatg tcatgttatt 5520
aacagtattt aggttgtcat ttaaaaataa agttccttta ttttctgtc ccatcaggaa 5580
aactgaagga tatggggaat cattggttat cttccattgt gtttttcttt atggacagga 5640
gctaattgaa gtgacagtca tgttcaaagg aagcatttct agaaaaaagg agataatgtt 5700

tttaaatctt attatcaaac ttgggcaatt ctgtttgtgt aactccccga ctagtggatg 5760
ggagagtccc attgctaaaa ttacgttact cagataaatt cagaatgggt caaggcacct 5820
gcctgttttt gtgggtgcac agagattgac ttgattcaga gagacaattc actccatccc 5880
tatggcagag gaatgggtta gccctaattgt agaattgtcat tgtttttaaa actgttttat 5940
atcttaagag tgccttatta aagtatagat gtatgtctta aaatgtgggt gataggaatt 6000
ttaaagattt atataatgca tcaaaagcct tagaataaga aaagcttttt ttaaattgct 6060
ttatctgtat atctgaactc ttgaaactta tagctaaaac actaggattt atctgcagtg 6120

ttcagggaga taattctgcc tttaattgtc taaaacaaaa acaaaaccag ccaacctatg 6180
ttacacgtga gattaaaacc aattttttcc ccatttttcc tcttttttc tcttctgcc 6240
cacattgtgc ctttatttta tgagccccag ttttctgggc ttagtttaaa aaaaaaatca 6300
agtctaaaca ttgcatttag aaagcttttg ttcttggata aaaagtcata cactttaaaa 6360
aaaaaaaaa cttttccag gaaaatatat tgaatcatg ctgctgagcc tctattttct 6420
ttctttgatg ttttgattca gtattctttt atcataaatt tttagcattt aaaaattcac 6480
tgatgtacat taagccaata aactgcttta atgaataaca aactatgtag tgtgtcccta 6540

ttataaatgc attggagaag tatttttatg agactcttta ctcaggtgca tggttacagc 6600
ccacagggag gcatggagtg ccatggaagg attcgccact acccagacct tgtttttgt 6660
tgtatttttg aagacaggtt ttttaagaa acattttcct cagattaaaa gatgatgcta 6720
ttacaactag cattgctca aaaactggga ccaaccaag tgtgtcaacc ctgtttcctt 6780
aaaagaggct atgaatccca aaggccacat ccaagacagg caataatgag cagagtttac 6840
agtccttta ataaatgtg tcagtaattt taaggtttat agttccctca acacaattgc 6900
taatgcagaa tagtgtaaaa tgcgcttcaa gaatgttgat gatgatgata tagaattgtg 6960

gcttttagtag cacagaggat gcccacaaa actcatggcg ttgaaaccac acagttctca 7020
ttactgttat ttattagctg tagcattctc tgtctctct ctcctctct ttagccttct 7080
cctcgaccag ccatcatgac atttaccatg aatttacttc ctccaagag ttggactgc 7140

ccgtcagatt gttgctgcac atagttgcct ttgtatctct gtatgaaata aaaggtcatt 7200
 tgttcatgtt aaaaaaaaaa 7219
 <210> 18
 <211> 1354
 <212> DNA
 <213> Homo sapiens
 <400> 18
 gcagtgcccg actccgcagg agcgccaggg cggtcctgc tcttcctgga ctccctgaag 60

 aggcgtttgt cgaaatgtcc acagaaggag gatttggtgg tactagccgc agtgatgccc 120
 agcaaagcct aaagtccttc tggcttcggg tcatggaaga aatctggaat ttagcagtga 180
 aagatttctg aatgcaggaa ctcccactgg ctcgatttaa gaagattatg aaactggatg 240
 aagatgtgaa gatgatcagt gcagaggccc ctgtgctctt tgccagggca gcccagattt 300
 tttatcacag agttgactct tcgagcctgg attcacacag aggataacaa ctgccggact 360
 tatgtcgcca tggcaattac gaaatttgat caattggatt ttctcatcga tattgttcta 420
 agagatgaac tgaaacctcc aaagtgtcag gaggaggtgc tgcagtctgt aactcctgct 480

 gagccagtcc aatactatit cagctggct cagcagccca ccgccgtcc aagtcaggg 540
 acagcagcaa ggccagacca ccgccagctc catgaccacc atgcagcctg ggcagatcat 600
 catcgcacag cttcagcagg gccagaccac gcccgtagc acgcagggtg gagaaggta 660
 gcagggtcag attgtccagg cccagccaca gggtaagcc cagtaggccc agagtggtag 720
 tggatggacc gtgcagggtg tgtagcagat cctcactaac acaggagaga tccagcagat 780
 cccggtgcag ctgaaggctg gccagctgca gtgtatccgc ttagcccagt ctgtatcagg 840
 caccacgtt ctgcagggac agatccagac acttgccacc agcgtcaac cgattacaca 900

 gacagaggtc cagcaaagac agcagtagtt cagccagttc acagatggac agcagctcta 960
 ccagatccag caagtatcca tacctgcggg ccaggacctg cccagcccat gttttccag 1020
 tcagtcaacc agccctctga tgggcaggcc ccccggtga ctggcggtg agggccggag 1080
 ctggcaaggc cgaggacact caacacaatt ttgcccgtac agccccaggt catgaacaca 1140
 gccttcttcc ccagaggacc cggccgacct cagctcctcc tgcaggctag gacaatggcg 1200
 cactaggcct catgcctggg ggccgagatt ctccaacaga aagatgcaat atttttgtt 1260
 tccttttttc tccaaggaat caatatitca atatgttgag ctgtgtgtcc aatgctatga 1320

 aattaaaata ttaaatcaca aaaaaaaaaa aaaa 1354
 <210> 19

<211> 3653

<212> DNA

<213> Homo sapiens

<400> 19

aatgaatcca actactgtcc ttgtcctctc ctctctaggt ttgtggagac tgaattccac	60
aaacctaggg acagggcact ctctaggggc aagtcaactc tcaattatag tgagggcagg	120
ttccccagtt gccagcctac accctggcca gccaccaag ggaatacctg ctgctgctaa	180
ggcagtcagt gttgggaggg tcaggaagg ggagaggaag tagctgagtg tagagattat	240
ccaggttttc cttcccgctc tctgtacaga aaggcagaca tacactgact cctgaagtgc	300
cccaggatca tagttgggtc ttcttagggg gagggagtga aacggtggcc ttgctccaat	360
tccaggcctc tggagaaagg agtgtctaac tggagagtct cagaaccttt tacagtactt	420
cagcaggccc agcacccaac cttccccacc ataccctgc cctgggaatg ccccttacca	480
cagtggcttc cattcctgac atttgaacca gctcctgcac ttgaaggaca aggcagccac	540
tgggcagctc cgggaggcgg gaggcgtgac tccttcatat caggccatct ggaggagcac	600
cagatttccc tcttgtgaaa caacccccca cagtggggat ttaatggtca ccacacaagc	660
ccccaaaaac caggccctgc agagccatga cttcacaggg gagaaaacca gccaagagg	720
ctgccctcac ccaacactta gctctaagtc cagactctta aaggttctgt taaagatctg	780
cggccaggcg cagtggctca catctgtaat ccagcactt tgggaggccg aggtgggcgg	840
atcacgaggt caggagagcg agaccatcct ggctaacaca gtgaagccct gtctctacta	900
aaaatacaaa aaattagcca ggtgtggtgg cgggcacctg tagtaccagc tacttgggag	960
gctgaggcag gagaatggcg tgaaccagg aggcagagct tgcaagtgcg cgagatcacg	1020
ccactgcact ccaacctggg tgacagagcg agactccgtc tcaaaaaaaaa aaaaaaaaaa	1080
aaaagatttg cctagtgagc ttggccaacc caagagcctt cctgggctct caggtttctt	1140
gaggcaaac ttctaaagat gcaaatagaa tccttggttag ctacaaagct catctagcca	1200
aattataagt actatccaag ccagagattc attcttgaag atgagatgta aaagcactgc	1260
tgggcccttg caaagggaga gatcagagaa aataggagaa cgaacaccag ctcatgccaa	1320
tctcagtctc atgagctaca gagaaaaaga gccaaaaaag tttatcctgg ctgagccacc	1380
ttctggcttt gtagctacag gcaagttatt taacttttct gaatgttgg ttttccatct	1440
ggaaaaagga gacaggaaga gctgccactg gaggtacct taagggtcaa tgagtgaat	1500
ggggttgagt gcttaatgaa ctgttaaac atgacacaga tgggtgaggt gacatctgac	1560
tgctcttcac agcagtcctt gcatggtgag cagatgcaat cagtgtgctc gttcattcac	1620

ttgttcatca aacaccaaca gtaccacatt gtgccaggcc ttgtgctggg caccgtaggg	1680
gctatggaag gaggtaagaca cagtcattgct ctcaaggaac tcgctgtcca gcagagtgat	1740
aggacatgaa tacatacttc tagcaaaggc tgagtagcat taggcaggtg gccagatgag	1800
gtcagagctc tggccctagt gccctgtagt aagttgagag ggagtaggaa atgaagacaa	1860
aacagcaaga gcacaggctc agcacaagaa ggtgaaggac atggaaagag gagcagagca	1920
tgataaagct acaaaagtag ggggcaagtc atgaggccg ggtcactggg gagccctgga	1980
caggctctga atgggagata gactagactg acaaagcagc tctttctgga gacctcctgt	2040
ggagggtccc ctctttacc cttgggagac gaggtgtcat tcacttcacg atacacatgg	2100
ggaaaggaag ttggacaggg gaaggcactt gtctaaggtc actcagtgtt catgccagtg	2160
caaagcacc aaagcctggt ccaggctctg ccacctcctg cgtgggctcc atcttctcgg	2220
ctcagttcaa gccctttatta tcagagtcct tctgtgtgcc aggcctctgt ctgaatgtcc	2280
gtgtcggcca caaattgcac taacggtgct tactgccact tcctctccga cttacctcc	2340
aaagaccag ccgggcctaa ccctcacaca cagccagagg aatccttccc aaacacagtt	2400
aatcacatcg ctcatcgtt taaaactggc ttactagagc caacacagga taaaatccac	2460
aatcagtcct aaacctatct ttctctgccg tctctagacc acattcactg agcaccaagg	2520
cctgcacgct tcgcagccag cctcctgct ccccccttg cctccagcc aactggccc	2580
tcaaccccca aactgggccc cactctgag cctgcatca aacaccagca ccccttcgc	2640
cgagtcatt ctcatcatt cctcagagct cagcttaagc atcacctcc ttccctcgca	2700
cagggtcagg tcttttctg tgcgtccgc agcacctgc ctgtccctcg gagtctcgc	2760
gagaggaact agataactgt gatccccgcg cacagcacgg tgtctgccta ggacacagtg	2820
agcgcttcaa cgcgctgaac taaacgaatg aagggaaca ccaactcagc tgtaccccc	2880
gcccccaagt gtcactggct agaagatctt cccccgttc gccggcagca ccggtgggtc	2940
ttgtcacctc tgcgccccgc agccctccgg aggcctgcat tgctgtctgc tgacaggcgt	3000
ccctcagga gaacgggagc tctccagcg cagggccctg ctcagcacc ctggtcccg	3060
gggccccac ggaggccgc gcgctcagt aaactttgcc gcgcgcagca gtggccggag	3120
acccgcgcgg acctctccc cgcggggacc cgccaggcg agtcgccct cccccgcgc	3180
agacgaccc acctgggcca aggtcggcca agtgcctgcc gcctgccag cgcccttgg	3240
accacagga cccggaccgc agtgcgcgga agcctccgag ccgcccag gtctcagaat	3300
gcgcggcggg gcagcccgcc ccgtcaagca gcgaagccga aactagaagc ctgaggtctg	3360
gcttggctac tgtttgtgg ggaactccga cgagcaacta ccttcgggg actcagtttc	3420
ccccgggcca agtgagacgg acagctgcgg ctcccgcgag aactcgcgc ggaacaggag	3480

ctgcgggctc cgcacagcgc ccggcacgta gaccagctct actaacgggc tggaaggctc 3540
cgctccccgc tccgcgcctc cctagaacct ttctcacctc aagctcgggc tcccggactc 3600
ttctcacctca cgccccctcc ttccaccttg ggccgcccag cctcaaccgc cct 3653

<210> 20

<211> 1538

<212> DNA

<213> Homo sapiens

<400> 20

ggctacgcaa gaccttcagt tccggattag gaggccccgc cccccggccc gagggagggg 60
cggagagacc cgctcctgcg acttagggcg atgccacctt aaagggttg acctcctcga 120
agccagaact gcggaagagg atggagaaaag aaacgctaga tagaccagg attcgaaccc 180
acaacagctt ggatgcaaag ctcatittga attctgaaga gctgggagtt tagcagtgga 240
cgaccaaaaca aaaaaatacc agaagacggt gaaagcagca gctggaaatg agagaaaaat 300
taagaaatag aaaaatgctgt ttcatgtatt agggagtga catctttaaa gagaagtga 360

gaaccttttt ggctaggcgc tttctgggga ccttggcagt tatcaacaag tcactctgaa 420
actaacagaa ggtgaggagg gagtaatcca gaaaggaaac tgccattttt gctagggcaa 480
gaaagtagac ctagcaatgc aatgccatca aggagttagc tggtcttagc gttctccgaa 540
ctttgcaact catittatat tacattgtct gcgtcaagaa atttcaagta aatgccttga 600
gattttatat gtataaaatg tagtctctgg ccaggcgggg tggtctacgc ctgtaatccc 660
agcactttgg gaggctgagg cgagttagtc acgatgtcag gagatcaaga ccatcctggc 720
taacatggtg aaaccccgctc tctactaaaa aatacaaaaa attagccggg catgatggtg 780

ggcgctgta gtcccageta ctccggaggc tgagacagga gaatggtgtg aacccgggag 840
gcagagcttg cagttagccg agatcgcgcc actgcactcc agcctgggcg acagagcgag 900
actccgtctc aaaaaaaaaa aaaaaaaaaa aagtctcaga agaagtgtca agttgactaa 960
atgattttta agtcccttcc actctactat atcacaataa tttccctat ttaccttat 1020
ttaattttca caacaacct gcagcctgta agtaggtgac tcctccatgg tcagcaggtg 1080
gtcagtggtc gaactattta ggactatctg atgtcttttc ctctgtctac cattgcaata 1140
caatgagaaa aatgcaatg aatctaagta cagtgttctc tgggaatatg aagatagaac 1200

taaaaactgc ctgagagatc agggcaggct tctagaaagt tgtgtctaac tagtcttgag 1260
gtttacataa accacaccag gctgatggga ctgggaaggg cccactaagc agtgagacca 1320
ttcccttttg gagagtctct gcacccctc ccagatttcc tctttgaggg gaaggtgaga 1380

gaggaggttaa aaggggtgag gaatggagaa taactcattc tggttcttgt tccccctttt	1440
ccacataaaa gtatatattgt cttgtgttcc atacaccagt ccatactgat gtgatggtgt	1500
tttttatgct tccttttgaa taaacatttc attcttaa	1538
<210> 21	
<211> 3285	
<212> DNA	
<213> Homo sapiens	
<400> 21	
ggtcagtttc tggtcacatg attttcttct cgggctgcaa acaaagggaa gcctgcaaca	60
agttaagctg aagaccgaag caagagctgg ttcaggtggc agccacagca gcctcaggga	120
cctcagcaac tatggcctcc tgcccagact ctgataatag ctgggtgctt gctggctccg	180
agagcctgcc agtggagaca ctgggcccgg catccaggat ggacccagaa tctgagagag	240
ccctgcaggc ccctcacagc ccctccaaga cagatgggaa agaattagct gggacatgg	300
atggagaagg gacgctcttc cagactgaaa gccctcagtc tggcagcatt ctaacagagg	360
agactgaggt caagggcacc ctggaagggt atgtttgtgg tgtggagcct cctggcccag	420
gagacacagt agtccaggga gacctgcagg agaccaccgt ggtgacaggc ctgggaccag	480
acacacagga cctggaaggc cagagccctc cacagagcct gccttcaacc cccaaagcag	540
cttggatcag ggaggagggc cgctgctcca gcagtacga tgacaccgac gtggacatgg	600
agggtctgcg gagacggcgg ggccgggagg ccggcccacc tcagcccatt gtgccctgg	660
ctgtggagaa ccaggctggg ggtgagggtg caggcgggga gctgggcatt tccctcaaca	720
tgtgcctcct tggggccctg gttctgcttg gcctgggggt cctcctcttc tcaggtggcc	780
tctcagagtc tgagactggg cccatggagg aagtggagcg gcaggctctc ccagaccccg	840
agggtgctgga agctgtgggg gacaggcagg atgggctaag ggaacagctg caggccccag	900
tgctcctga cagtgtcccc agcctgcaaa acatgggtct tctgttgac aagctggcca	960
aggagaacca ggacatccgg ctgctgcagg cccagctgca ggcccaaaag gaagagcttc	1020
agagcctgat gcaccagccc aaagggttag aggaggagaa tgcccagctc cggggggctc	1080
tgcagcaggc cgaagccttc cagcgggctc tggagtcaaa gctgcagcag ctgcggggcc	1140
ggctccaggg gctggaggcc gactgtgtcc ggggcccaga tggggtgtgc ctcagtgggg	1200
gtagaggccc acagggtgac aaggccatca gggagcaagg cccagggag caggagccag	1260
aactcagctt cctgaagcag aaggaacagc tggaggtga ggcacaggca ttaaggcaag	1320
agttagagag gcagcgacgg ctgctggggt ctgtacagca ggatctggag aggagcttgc	1380

aggatgccag ccgcggggac ccagctcatg ctggcttggc tgagctgggc cacagattgg 1440

cccagaaact gcagggcctg gagaactggg gccaggaccc tggggtctct gccaatgcct 1500

caaagcctg gcaccagaag tcccacttcc agaattctag ggagtggagt ggaaaggaaa 1560

agtgttggga tgggcagaga gaccggaagg ctgagcactg gaaacataag aaggaagaat 1620

ctggccggga aaggaagaag aactggggag gtcaggagga caggagacca gcaggaaggt 1680

ggaaggaggg caggccaagg gtggaggagt cggggagcaa gaaggagggc aagcgacagg 1740

gcccgaagga accccaagg aaaagtggta gcttcactc ctctggagaa aagcagaagc 1800

aacctcgggt gaggggaagg actaaggaca gccatgaccc cctgccatcc tgggcagagc 1860

tgtttaggcc caagtaccg gcaccccagg gctgctcagg tgtggacgag tgtgcccgcc 1920

aggaggcct gactttcttt ggcacagagc tagccccagt gcggcaacag gagctggcct 1980

ctctgctaag aacatacttg gcacggctgc cctgggctgg gcagctgacc aaggagctac 2040

ccctctcacc tgctttcttt ggtgaggatg gcatcttccg tcatgaccgc ctccgcttcc 2100

gggattttgt ggatgccctg gaggacagct tggaggaggt ggctgtgcaa cagacaggtg 2160

atgatgatga agtagatgac tttaggact tcatcttcag ccacttcttt ggagacaaag 2220

cactgaagaa gaggtcaggg aagaaggaca agcactcaca gagccaaga gctgcggggc 2280

ccagggaggg gcacagccat agccaccacc accaccaccg gggctgacac cctgccccac 2340

agggaatggc cttagcctgg cccagcccaa gatcccagcg ttatctaact cctggagggt 2400

ggactctgtc ctggcttgtt tgggtctctc agatatcttt cacacagtag agcaaaatca 2460

ccagccctgc actgatgtca ctttatgtag aaaaaggcct tagctggacc tgcgttgccg 2520

tctatgcaaa tgcatgcaaa tactccaggc cctgggatgt gggcttgtgt ttgtcactg 2580

tgaaggggga gatgggagag gagcctgttt tggggtgggg tctggggaag gcaatctgat 2640

tctgaagcta aagagcttcc atcctcttga gtgtatgtcc ccatagtggg ccccttgacc 2700

cacatgctga ccggtgcctt gggatttgac tagagtgtct ggctcgaggc ccagcacgag 2760

gacttaccct ggggttttgt taggtttgga agcagctgtc cctagggggg gaagtcccc 2820

cccttttttt ttttaccct gcttctccca eggcttcacc tcctatgtg aactgtagac 2880

tcagatccca ataaagtgt gttgcagcta tgatgctagg tggtttctaa gcacagggga 2940

cacccacac cccctgcctg aatggatggg tccatcccag gcactggtac ttgccccctt 3000

gttctgtatc cccctttgcc cttagccttc ccttccaaca aacctaggc ccttgagaag 3060

ctgatacttc tccttttgtc cacagctgcc ttggccccac ccctgggaga ttagcaaat 3120

tgagtgtggg ttttggagtc tgagcctcag gctcaaatcc aggccaagt atcttgggca 3180

agttaatctc tgggaacttt gggtttctta tcctcaaaaa aggcgatgga agggctgggg 3240

aagtgattaa ataaaagcaa cgcaagaaaa aaaaaaaaaa aaaaa 3285

<210> 22

<211> 1176

<212> DNA

<213> Homo sapiens

<400> 22

aatagtatt aggaaacctt gaagcctgcc caacgatcgt gggcaggagg tggtttcttg 60
 ttgtttgggg cgtgtgtatg tgtatttggg gggactgaag ggtacgtggg gcgaaacaaa 120
 accggccatg gcagcagcgg aggaggagga cgggggcccc gaagggccaa atcgcgagcg 180
 gggcggggcg ggcgcgacct tcgaatgtaa tatatgtttg gagactgctc gggaagctgt 240
 ggtcagtgtg tgtggccacc tgtactgttg gccatgtctt catcagtggc tggagacacg 300
 gccagaacgg caagagtgtc cagtatgtaa agctgggatc agcagagaga aggttgtccc 360
 gctttatggg cgaggagacc agaagcccca ggatccaga ttaaaaactc caccgcgcc 420

ccagggccag agaccagctc cggagagcag agggggattc cagccatttg gtgataccgg 480
 gggcttccac ttctcatttg gtgttgggtc ttttcccttt ggctttttca ccaccgtctt 540
 caatgcccac gagcctttcc gccgggttac aggtgtggat ctgggacagg gtcaccacgc 600
 ctccagctgg caggattccc tcttctgtt tctcgccatc ttcttctttt ttggtgtgt 660
 cagtatttga gctatgtctg ctctctgccc acctccagcc agagaagaat cagtattgag 720
 ggtccctgct gacccttccg tactcctgga ccccttgac cctctatctt ctgttggtta 780
 aggccagccc tggacattgt ccaggaaggc ctggggagga ggagtgaagt ctgtgcatag 840

atgggagagc ctctgtctca gaggtcact cagtaacgtt gtttaattct ctgccctggg 900
 gaaggaggat ggattgagag aatgtctttc tctctccta agtctttgct ttccctgatt 960
 tcttgatttg atcttcaaag gtgggcaaag ttccctctga ctcttcccc actccccatc 1020
 ttactgattt aatttaattt ttactcccc agagtctaata atggattctg actcttaagt 1080
 gcttcgccc cctcactacc tcctttaata caaattcaat aaaaaagggtg aaatataaaa 1140
 aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaa 1176

<210> 23

<211> 5565

<212> DNA

<213> Homo sapiens

<400> 23

ctcctgcacg gcgagtgtcg gagcacgacg taccgctcgc tcggtcaggg cgccccctcc 60
 gccccctcc tgcttctcc tccgctgcct gccgccgccg cctccacat tgtataatgc 120
 tcggggcgcg caggcagaga acggcggagt cttagcttca gcctcgctg ctgcccgtc 180
 cccggcgcca cctcggggcc cctggagcgg ggcaactccg atggagcggg agtagctgag 240
 gagtggcg aaacccctcc tgatgcgtta gtcccaggt ggagctgcat gtgatatatg 300
 ttgggtaaag gagggaaacg gaagttgat gagcatgaag atgggctgga aggcaaatc 360
 gtgtctccct gtgacgggcc atccaagggt tcttacacct tacagcgcca gactatcttc 420

aacatttccc ttatgaaact ctataaccac agggccctga cagagcccag ctgcaaaag 480
 accgttttaa ttaacaacat gttgaggcgg atccaggagg aactcaaaca ggaaggcagc 540
 ctgaggccca tggtcacccc ctctcccag cccaccaccg agcccagcga cagctaccga 600
 gaggccccgc cggccttcag ccacctggcg tccccgtct cccacccctg cgacctcgga 660
 agcactacgc ccttgagggc ctgcctcacc ccggcctcac tgctcgagga cgacgatgac 720
 acgttttgca cctcccaggc catgcagccc acggctccca ccaaactgtc acctccagcc 780
 ctcttgccag aaaaggacag tttctctct gccttggacg agatcgagga gctctgtccc 840

acatctacct ccacagaggc ggccacggct gcgactgaca gtgtgaaagg gacctccagc 900
 gaggctggca ccagaaaact cgacggctct caagagagcc gcgcagatga ctcaaaactg 960
 atggactctc tgcttgggaa ttttgaaata acgacgtcca cgggtttctt gacagacttg 1020
 acctggatg acatcctgtt tgctgacatt gatacgtcca tgtatgattt tgacctctgc 1080
 acttctcat caggacagc ctcaaaaatg gcccctgtgt ctgccgacga cctctcaaa 1140
 actctggctc cttacagcag tcagcctgtc accccaagtc agcctttcaa aatggacctc 1200
 acagagctgg accacatcat ggaggtgctt gttgggtcct aagaccagg gaccagcga 1260

ctatgccac ccagaccca gagcgttccc ataacctga cagttctcca cactgtgcat 1320
 gcacccttgc ttgccttttt cagagaaaaa gaaaatttta caacaggatc aactagttt 1380
 ttgctttgag cagagttgga gtgccttcat ccaagtatga ccacttttaa tacactttt 1440
 tgagtgggtc ctcagagacc tactacctg gtataggaaa gaatccattt gaagacaatg 1500
 ttgcaatgtt gaatgacaaa aataaacagt tcaagtgaag cacaaggatt aagttggaaa 1560
 agctgtaaat tgcatgtgca tatttgtcta tttttctat aagttttatt gcaagaggta 1620
 aagaagaaaa ctatatatat atatcttatt tagataatct cagtacctt tctggcattt 1680

ttgcctgta taggttgact tggcaattcg gccttttttag aggcattaac tactcctcgt 1740
 aagtgttgca tttacatggc tgtttagaaa actgctgccc aaatttattt tatatttttg 1800
 tacagattct gcagtttatg atattgtttt tctaaaaaca aatgctgttt atacatatga 1860

gatagctatt ttgataggat ttgtcacat agttcctgca aacttcagat gtacaagttg 1920
 cacttgact tttatagagt tgtaatgttt tatatgtgta tgggtcaaga gaaaattgga 1980
 tcaaatcaat ctgcagttga tgtcccaaaa tgcaaacaca ggacacacac tgcacacacc 2040
 cataaacaca cacacagtgc ttttaagaaag ggccaggtga tatcacaccc aaatttcaca 2100

 agcactgacc ccttggcacc aacacccgcc agtactgtga cttccaaagc cagagccaca 2160
 tgtgtcacc aaacttgcac taagcagttg gcgggagatg gctgtggagc tgggggttta 2220
 agtgaagggtt ctcttttctt cctctttttg agggtaaagc tactgtcttt ctttaagagtg 2280
 tttttatgcc aagtttgcgc ttttaattgt ttttattttg ttttttaatg aaaaccaga 2340
 tctttccttt ttggcataat ttttatgatg acctgaaatt ttacatccga acaaaatfff 2400
 acatccgaaa agcaaccaac ttcttcattg aactcagccc tgttgcaatg cttagggccc 2460
 ttaaagaaga aaatctcccc agaaggcatc catcatgttg ctttaattgtc ttctgcagct 2520

 tctttccctt agagctttcc ctgtgttgct aagagctgaa aatggcatct tcgtgatcac 2580
 cacagtgagc ttggctcgcc tcggccggcc cgggatgcac tcttacaaca tgtgtgactc 2640
 ttgaacctgg agttcatcac attacgtcac agcttcccat ctggttgctt tcttgagtea 2700
 gctacttcac acttgtcaag gctgttttac cccaaaactc agacaggact ttctatgcat 2760
 gttttccctc ctcccccaa tcccccccc catcacctta tctcccagga cacacttgag 2820
 aagtagcttt ttattcctag tgggtgtacat ttaattttta aaaggttgca atgtatcatg 2880
 ctgttgccg aaactgttta tggccttctt gtttcagttt tttcttttct tccaatggta 2940

 ctttagctgt tgagtgcagg ttacaacctt tatgtttatg cagatggctt ctttaggaat 3000
 aacttttata tttattttaa aattttttaa ttatgggatg tttgttgtt gtgtgtgtct 3060
 ttgttgttgg tcaattgtca atattcagtc accaattctg ctacttctt gccatggata 3120
 aaattgggtc tttctgcta attaaaaaag acaactttat aaaatggcac ttttaagcaag 3180
 ccatagttag ttttattttt gtaatgcaca tggcaaagca aagacgtttg tgatgaagga 3240
 actgtcacc taagcaaaag atttgagtat gatatgataa aggttttcta cattctaatt 3300
 tactttttcc cccacttga atgtgtttta aaggctaatt atcagctcag tagagcagtg 3360

 agaaactgat caaattgcac ttgttctctt acaagcaacc tccacgcaga cacctcgtac 3420
 tgctacaggt gtgtcatttc ctttaatagg accagggacc atgtaactga ggtgagggtt 3480
 gtagtagatg ctccagtggt cagtatgcct gtttaattta agagcttccc tttcttgag 3540
 agaacaagtc tgcccagatt ccatgctttc tataactgga ggacctggca aacctgccgc 3600
 atgtgcaca catctacctt cgtacacata tacaatagta ttgatgattc tgaacaataa 3660
 cagggtaaaa cagttgggtt gccattgtta aaaactgatt tacagtaact tacaacaact 3720

gtacttttgt tggattagca aatcatgtgt ttaaacaat cccatatgtt gggcaacagt	3780
tcaaataagc acggagaagt gttgcccaaa ctgggttctc tgactcttat gtatttgtaa	3840
ggctgggctt caaaatcaaa acaaaaaccc caaaaacagc aggcaaatgc tttttaactc	3900
tgacaccgtt gccataaatc cctgatactc aaagtctaac aagaaagaca tggaaaatta	3960
gcagcccatt ttcagaaaga tcaaatgat ctagggttct aattgctttt gcatectatt	4020
cttacaagt gatgtccaa caggaacag taggagctgg agtgggatct ccaagtccca	4080
gtttgagtgt gggatgtgct tccagcagt ccttccttt atgaaagaca tcacatggca	4140
tccagggcca ggcaggcagc ttgaggtgcc ttacagaa aaccgagctg gggctgggag	4200
aggacagtta ttgacctga tgtgcaatga agtgacaaga tgagagcaga atcgtaagag	4260
ctttgaattt gaagtgagtt ttttcccc cataagttat ttattccttt tttctgtgta	4320
aatatattta tttactgtg gagcgctaac atctggatcg taacatgtgc agaattgatg	4380
gtaggaatgt attctctgt aggaatgtaa atctgtatta aaagggggtc caagccaggc	4440
ccccaggctt tctcattgta tgcacagtcc gcattcattt ttactcttct ctaatatggg	4500
tctatttgaa atatgcaaaa ggtatgagga atgttttaac acctccaaat ttttaagaaa	4560
agcatcaaag ggttgatatt ttttaagt ttttagtag cactttctct ggatgacaga	4620
aggagcaacc acatgggcac cttgttcat accaaaggt gagcagtggc cagagcctcc	4680
tctgcacctc tcgagtgtct ttaccaattg agctttttat cgccatagcc cttggagtg	4740
ccccagctgc cctgaggta atcaaggaaa atttcttaac gaaataagct ccaaagagcc	4800
aaagtatcaa cttacagatc gtttttaaag cttaaattta tgaaccacct ttgtggtaaa	4860
caatgaatta tgaataccgc agggcagcct tcttaaatga caaatgtaaa aaaaaaaaa	4920
aaaaagactc tacttcgtgc agcaattgct actctatag aattgtctta atttgaaaac	4980
cttgctgtta caaattggac cttatacat tttctgaaaa caatgaaaag agtatattta	5040
accttttctg gctgtaaatg gttaccttc tgtaactgcc ccgcacctgg aggcattggag	5100
ttgtgtgcat cctgcttatg tacaattgtt ttcagtgttt ctaagaatga gtctgaatgg	5160
ttcttgaaaa ttagccagga tcaaatgcta ttgcagacaa agccaataaa aagttggact	5220
tcttttgggg ataacaagtt ttggaagaga aatgcaggcc atatgtgcgc atgaccgaga	5280
ttttgaaaa agatgtacat agtgacatgt ttggtgcatg gtttttgagg agggcttttg	5340
tcaaaaagga ggiataacct ttccccaca gacctgagag ctgtgccttt tctatgcaat	5400
attacagacg ttacatcgga acccagatgg ctgtattcac atgtaggttt gggctgtaat	5460

ctaaacaatt ggacagatta aatgtacatg gaaatgagca gtcttacttt thtagtttta 5520
tattatacaa taaacagtta aaagatgaaa aaaaaaaaaa aaaaa 5565

<210> 24
<211> 1201
<212> DNA
<213> Homo sapiens
<400> 24

taccacctca ggagagtcc agggagaagc cccaccgca ctccaatgag gtcacaatgg 60
ctggagctct gaggggcccc ggctccctga gccaggagga gaggagaaag tccaaggaaa 120
gatggctggc agtcaccct acttcaacct gcctgactcc acacacccat cgccgcctc 180
cgctccacc agcctccgt ggcaccagcg ctgccagccc tctggtgcca ccaatggcct 240

gctggtgccc ctgctgggtg ggggcctgcc tctggtctt gtgggcccc tttctctat 300
ggcttaccag ggttccaacc tgccctcgt ggagctgctc atctgtcgat gcctcttcca 360
cctccctatt gccctgtac ttaactgcg tggcgacccc cttctgggac ctctgacat 420
ccgaggctgg gcctgcttct gtgccctgct caacgtctc agcattggat gtgcctacag 480
tgcagttcag gtggtgcccc ctggcaacgc tgccactgtt cgcaaaggtt cttccaccgt 540
atgctccgt gtctcacc tctgccttga gagccagggt ctggtggct acgagtgtg 600
tggactgtt ggcagcatc taggactaat catcattctg ggacctggac tctggacact 660

acaggagggg accacaggtg tctacaccac cctgggctat gtgcaggctt tcttgggagg 720
cctggcgctg tccctggggc ttctgggtcta tcgttctctg cactttccct cctgcctccc 780
aacagtggcc ttcctatctg gcttgggtggg gctgctgggc tgtgtgccag gcctctttgt 840
gctgcagacc cccgtgttgc ccagtacat cctgagtgg agttgtgtgg gggcagaggg 900
gatcctgcgc ttggtctcct tcacatgtgt gggctatgcg gtcaccaagg cccaccctgc 960
cctggtgtgc gctgtcctgc attccgaggt ggttgtggcc cttatactgc agtattatat 1020
gctccatgag actgtggcac tttctgacat catgggggca ggggttgtgc tgggcagcat 1080

tgccatcatt acagcccga acctcagctg tgagaggaca gggaaggtgg aggagtgaga 1140
tagaacttgg gagccgggg gttgggaggg acagggataa ataaagacaa agactgaaga 1200
c 1201

<210> 25
<211> 6335
<212> DNA
<213> Homo sapiens

<400> 25

agtgctgagg gagcaaagtt cattttctcg ggtaggagaa gatgattctc ttgcaacacg	60
tgcggattgt gacaaaatct ttcattaaca aggggagttt cggatgaagt gaggtttggg	120
gaaaggcgag gaagtcggtc tggagcaagc aagcaaagtg cggaagctgt actgggattc	180
ttctagaaag tggggtggga aaggagctag ggagggcgtg tggaggacg agatctgtgt	240
cagaacgtgc gtgtgagcgg atacaaaacc cgagagaggc gtgagcagcg ctgtgtttgc	300
gagcgggagc gaggggcgcc ggctgggggtg tgtgctcctg agctcttcag aaaccaggct	360
gctttcagga acattgctgt ggattcccag ggcctattcc actagaagca agatggctga	420
actcaatact catgtgaatg tcaaggaaaa gatctatgca gttagatcag ttgttccaa	480
caaaagcaat aatgaaatag tcctgggtgct ccaacagttt gatitaaatg tggataaagc	540
cgtgcaagcc tttgtgatg gcagtgaat tcaagttcta aaagaatgga atatgacagg	600
aaaaaagaag aacaataaaa gaaaaagaag caagtccaag cagcatcaag gcaacaaaga	660
tgctaaagac aagggtggaga ggcctgaggc agggccctg cagccgcagc caccacagat	720
tcaaaacggc cccatgaatg gctgcgagaa ggacagctcg tccacagatt ctgctaacga	780
aaaaccagcc cttatccctc gtgagaaaaa gatctcgata cttgaggaa cttcaaaggc	840
acttcgtggg gtcacagaag gcaacagact actgcaacag aaactatcct tagatgggaa	900
ccccaaacct atacatggaa caacagagag gtcagatggc ctacagtgtg cagctgagca	960
gccttgtaac ccaagcaagc ctaaggcaaa aacatctcct gttaagtcca ataccctgc	1020
agctcatctt gaaataaagc cagatgagtt ggcaaagaaa agaggcccaa atattgagaa	1080
atcagtgaag gatttgcaac gctgcaccgt tttcttaact agatatcgcg tcatgattaa	1140
ggaagaagtg gatagttccg tgaagaagat caaagctgcc tttgctgaat tacacaactg	1200
catcattgac aaagaagttt cattaatggc agaaatggat aaagttaaag aagaagccat	1260
ggaaatcctg actgctcgtc agaagaaagc agaagaacta aagagactca ctgaccttgc	1320
cagtcagatg gcagagatgc agctggccga actcaggga gaaattaagc actttgtcag	1380
cgagcgtaaa tatgacgagg agctcgggaa agctgcccgg ttttctgtg acatgaaca	1440
gctgaaggcc caaatcatgc tctgcggaga aattacacat ccaaagaaca actattcctc	1500
aagaactccc tgcagctccc tgcctcctct gctgaatgcg cacgcagcaa cctctgggaa	1560
acagagtaac ttttcccgaa aatcatccac tcacaataag ccctctgaag gcaaagcggc	1620
aaaccccaaa atggtagca gtctccccag caccgccgac ccctctcacc agaccatgcc	1680
ggccaacaag cagaatggat cttctaacca aagacggaga tttaatccac agtatcataa	1740
caacaggcta aatgggcctg ccaagtcgca gggcagtggt aatgaagccg agccactggg	1800

aaagggcaac agccgccacg aacacagaag acagccgcac aacggcttcc ggcccaaaaa	1860
caaaggcggg gccaaaaatc aagaggcttc ctgggggatg aagacccccg agggccccggc	1920
ccattctgaa aagccccggc gaaggcagca cgtgcagac acctcggagg ccaggccctt	1980
ccggggtagt gtcggtaggg ttccacagtg caatctctgc ccacagagaa tagaagtttc	2040
cacagatgca gcagttctct cagtcgccggc tgtgacgttg gtggcctgag ctaggaggaa	2100
aaagagcagt ttccactcag ttttggttcc ctgcccgagg tgcagacca attcgtgcc	2160
aaaagagtgt caatcagaat atacaaatcc cgtatggttg tgcacccctc tcttaatcat	2220
ttttactaat tctaataatc agctctagct tgcctcataa ttttcattggc ttgcttgat	2280
ctgttgatgc ttctctcat caagactttg cagcatttta gccaggcagt atttactcat	2340
tattaggaaa atcaagatgt ggctgaagat cagaggtca gttagcaacc tgtgtttag	2400
cagtgatgac agtccattga ttgtcttttag agagttaatg ttacaaaaaa gaattcttaa	2460
taatcagaca aacatgatct gctgaggaca catgcgcttt ttagaattt aacatctggt	2520
gtttttctga aaaaatatat atacatatat tgcctttatt gaaacaaatt aaaatatgct	2580
gcatttgaca cctggctagt ttcttttatt gataccacc tagttattga atgtactgtt	2640
tagtgctttc aaaaaaact ttagagacta gaggttggg tgcaaagctg tgtacaataa	2700
atactgtttc tgttagaca agtactcttt caggaaaata tatatatgcc ctttcaatta	2760
gattacacaa atagatggat atgcacctg atcatcttag acacaccatg tggcagttgg	2820
gcagttggaa acattggttg caagtactac aaacctcagc tgagcctagc ttcaacaata	2880
agaatttatt ggttcagtga gtgaaaagtc cagttggtcc aatttgatca ggatttcagc	2940
tcccatctct ttttttttt tcttttttct ttttctttt ttgagacagt ctgctttgt	3000
caccagggtg gagtgcaatg gcatgatctc ggctcactgc aacctccgc tctgggttc	3060
aagccattct cctgcccggc ctcccgagta gctgggatta caggcatgtg ccaccacgcc	3120
ctgctaattt ttatattatt agtacagaca ggatttcacc atgtgtcca ggctggtctc	3180
aaacctga cctcaggta tccacctgct ttggcctccg aaactgccgg aattacaggc	3240
atgagccacc gtaccgggcc agctcccatc tcttaattat cttagctctc ctttctctt	3300
tgggttgaca ttgcattcag aattgtggca aagggccacc atgctcttaa gactcaagtc	3360
tattttccac actgtccaga ggagagaagt tatcctagta gcttctacac agagcaagtg	3420
tctttctcag aaatccagc aaaggtcttg cataccattg ctggtaggcc tgtctcttaa	3480
accaatcatg aaagggggga gagaagtga tggtatgaac taatttgcag agactaatta	3540

gagcccccc ctggagcctg ggtgtggcca tcttcccaga gttcctgagc tagatggaga 3600
 aggggtactt ctgagaaagg gaaaatggat acccaatggc ccaaaccaca aatagcccca 3660
 gttcccctaa ctttgactac agggcagtc agtttgggtg ccgcttccgt tgcactcaca 3720
 tgtcctacat atctgttgac tactcacaag tgcaaatgct tattctcaac tcaacattaa 3780
 cattttttct ggcaaccag gttcactggi tctcttccac agagcggccc tgagcagctg 3840
 agcctgcaag ccacgcaagc atctgtttct tcttttgcca agtacaggag gatgtttgct 3900
 ctctctgtag agagctttct gaggctctctg ggtgtaccca gagatttaaat agaaattctt 3960

 aacgttaagt cacattccag gaaggaagga agagttgttc gttcaaataa gaaagataaa 4020
 tgttcggcac tgiaggccct gtttaccaca tctgaggccc tgaattcata tattacaaga 4080
 cggaaggatt ttgcacagtt ttttatgtag caagattttg ctccaccactg aaaaatgtca 4140
 gtgtaaatgt gaccgcttta aagatgagtc aagtaattct tggaaacagg aaaaaatga 4200
 atttgccagg tcaggagttc acctgccttt gtcagagttg aaccaacca ctcttgacct 4260
 cgactcactc cttagggtt aagaaagccc aaacacattc ctgagcacag agcaaact 4320
 cccatgtcac tgaaaagaaa caaaagaatg ctaaaaagt ctcagacctg atcacatttt 4380

 ttccaatatt ttttctttt ttttttttt tttgagacag ggtcttgctc taccacntag 4440
 gctggagtgc atgtttttga gacaggtct tgcctatca cctaggctgg agtgcattgat 4500
 catggctcac tatgccttg aactcctggg ctcaagccat ctcagcctc ccaagttgag 4560
 aggactacag gtgtgcacca caacgtccca gctactttt aaatttttag tagaaacgag 4620
 gtctcactat ggtgccaga ctggtctga actccggagc tcaagtgatc ttctgcttt 4680
 ggctcccaa agtgtagaa ttacaggcat gagccacctc gcctggctgg tttttgcctt 4740
 tcttatagac cctgggcatg taagcattta ttagtttgca ttttgaaac agtaatttca 4800

 atattttagt gccaatgtca ggccgcttaa aactgtatt acatatcttc atctgtctgg 4860
 tggaaactatt ggtgtgatcc tagagaactg agtctattc tgccattcat ttaaagtgtt 4920
 ttaaactcta atctctctac ttaatgcaca gtagtcagat tattctctta aacatttgcc 4980
 tagtagaggt taaaatagtt taatccttat gaagatggaa taacttcaaa ctcacattgt 5040
 ggcacttaga tcttccacca agactcactc cgtgaaatcc acactccct gttgggttcc 5100
 caattacatt ccaaatttac atttcttttg agaattctctg catactccag ctctgtcctg 5160
 ttgatcctat tctagaagtg cttaatgcag caagacacag aaagttaaac gcaaattgct 5220

 gcaaaattca cctcagttg aggactagaa acacaacatg tccaatttaa agctcagttc 5280
 acaagcagtt caattctgct ggcatcagaa aaggagattc taattaaaca ttcttaggga 5340
 aggacatcaa atgaggttaa tgggaaacgt taccagatta aaagcagttt ttgacaaag 5400

taacagattt ggaaattctg actctctgaa agccttgatt tgaacctcaa acttgatttc 5460
accatgagaa gtggggatca agggcctgcg cagttctttt cctaaatcga ttcgggtctc 5520
cccccccg cgcaggcaca ggtccgcaac cagataggga gatgcctgaa tttcaggcta 5580
cctttgacaa agctttcttc ctccctccct ccctttgcac gctgcatccc acgtgcctg 5640

cttaaagcgc cctcatgtgt ctacagatgg taaaacgttt atttctcaac agacattcca 5700
gtgatagcat ccaatgacct atgtaacggc accctttttt gctgtacgcg ttttttgaga 5760
tggagtctcg ctctgtcgcc caggctggag tgcagtggcg cggctctggc tcaactgcaag 5820
ctccgcctcc cgggttcacg ccattctctt gcctcagcct cccgagtagc tgggactaca 5880
ggcacccgcc accacacctg gctaattttt tgtattttta gtagatacag ggtttcaccg 5940
tgttagccag gatggttttg atctcctgac ctctgtatcc accccctcg gcctcccaaa 6000
gtgctgggat tacaggggtg agccactgcg ccgggccccca gtcacttggt cttaaagttc 6060

ttaagcaaac tataaatag caaaagacca aaaaaaagg aaaaaagca gttcgctaa 6120
tacattgttc cagcatttcc ttgaaagtac tgagccatct caattgctct gattttgtga 6180
gaaaattatg aagagttgca aagtccaggt gattctcttg ttacttagct aagaattga 6240
aatgtaattt aaatactatt ctttacaatc cattataagg attttaaat ctttttgctt 6300
ctttaataaa ttctaacaaa gaaaaaaaaa aaaaa 6335

<210> 26
<211> 3572
<212> DNA
<213> Homo sapiens
<400> 26

agagccgagg ccaggctgcc ctccaagcgg ggcggggcga agcggggcgg ggccgagcag 60

ggcggggcgg gggcttgagg tgattcccaa gccgcggggc ggctccggtg gtgcggggaa 120
accgaaagtg ggcggcggcc gcggcggggc ccctggcgga gacggcgga ggagctggc 180
ccagagacgc ggggacgggc cgtgggcccc cggaacgaga ttacctgcta tgccatggcc 240
tgcacagaaa ctgcaagaat tgctcagctt gtggctcgtc aaaggagtgc taaaaggaaa 300
accggcgtc aagttaattg tcagatgaga gtgaagaaaa ccatgccatt ttttctagaa 360
ggaaaaccaa aagcaacct cagacaacca ggatttgctt caaattttc tgttgcaaaa 420
aaacctaac cagcaccgtt aagagacaaa ggaactctg ttggagttaa gcctgatgct 480

gaaatgtctc cttatatgct acacacaact cttggaatg aagcattcaa agacattcca 540
gtgcaaaggc atgtgacct gtccaccaac aacaggttta gcccaaaggc gtcccttcaa 600

ccacctttgc agatgcatct ctcaagaacc tctactaagg aaatgagtga taatttaa	660
cagactgttg aaaaacccaa tgtcaagcct cctgcctctt acacttataa aatggatgag	720
gttcaaaatc gcataaagga aatactaaac aagcataaca atggcatttg gatatctaag	780
cttcacatt tttaacaaga gttatataaa gaagacctta atcaaggaat tttaaacag	840
tttgaacact ggcctcatat ttgcacggtg gagaaacctt gcagtgggtg ccaagattta	900
cttctttatc cagctaagag aaagcagctt ttgagaagtg aactggatac tgagaaagta	960
cctctatccc cactacctgg tcccaaaca acaccaccgt tgaaagggtg tccaacagtt	1020
atggcaggag actttaaga aaaagtggca gacctgctgg tgaaatacac aagtggcctt	1080
tgggccagtg cacttccgaa agcatttgag gaaatgtaca aagtgaatt ccctgaggat	1140
gccttaaaaa atcttgcctc actttctgat gtatgcagca tagactacat ttctggaaat	1200
ccccagaagg ccatttctta tgctaaactt ccattgcccc ctgacaaaat ccaaaaggat	1260
gcagggaag cacatggtga taatgataac aaggctatgg ttgaacaaga gtatttgcag	1320
gtagaagaaa gcattgctga aagtgcta atctttatgg aggacataac agttcctcct	1380
ttaatgattc caactgaagc atcaccatct gtattggtgg ttgaactgag caacacaaat	1440
gaagtggtta tcaggatgtg gggcaaagac tattctgctg ctgaggaatt aatggaagat	1500
gagatgaagg aatattacag taagaatcct aagatcacac cagtccaggc tgtgaatgtt	1560
gggcagtgtg tggccgtaaa tgccgaggag gacgcctggt tacgggcaca ggtcatctca	1620
acagaagaga acaaaataaa ggtatgctat gttgactatg gttttagtga aaatgttgaa	1680
aaaagcaaag catacaaat aaaccgaag tttgttcac tctcatttca agctacaaaa	1740
tgtaagcttg caggcttga agtcctaagc gatgacctg atctagtga ggtggttgaa	1800
tctttaactt gtggaaagat ctttgcagtg gaaatacttg acaaagctga cattccactt	1860
gttgttctgt acgatactc aggagaagat gatatcaata tcaatgccac ctgcttgaag	1920
gctatatgtg acaagtact agaggttcac ctgcaggttg acgcatgta cacaatgtc	1980
aaagtaacta atatttgctc tgatgggaca ctctactgcc aggtgccttg taagggtctg	2040
aacaagctca gtgaccttct acgtaagata gaggactact tccattgcaa gcacatgacc	2100
tctgagtgtt ttgtttcatt acccttctgt gggaaaatct gcctcttcca ttgcaaagga	2160
aaatggttac gagtagagat cacaatgtt cacagcagcc gggctcttga tgttcagttc	2220
ctggactctg gcactgtgac atctgtaaaa gtgtcagagc tcagggaat tccacctcg	2280
tttctacaag aaatgattgc aataccacct caggccatta agtgctgttt agcagatctt	2340
ccacaatcta ttggcatgtg gacaccagat gcagtgtgtt ggtaagaga ttctgttttg	2400
aatgtctcg actgtagcat taaggttaca aaagtggatg aaaccagagg gatcgcat	2460

gtttatttat ttacccttaa gaacttcctt gacctcatc gcagtattaa tcgccagatt 2520
acaaatgcag acttgtggaa gcatcagaag gatgtgtttt tgagtgccat atccagtgga 2580

gctgactctc ccaacagcaa aaatggcaac atgcccatgt cgggcaacac tggagagaat 2640
ttcagaaaga acctcacaga tgtcatcaaa aagtccatgg tggaccatac gagcgctttc 2700
tccacagagg aactgccacc tctgtccac ttatcaaagc caggggaaca catggatgtg 2760
tatgtgcctg tggcctgtca cccaggctac ttctgtcatc agccttggca ggagatacat 2820
aagttggaag ttctgatgga agagatgatt ctatattaca gcgtgtctga agagcgccac 2880
atagcagtgg agaaagacca agtgtatgct gcaaaagtgg aaaataagtg gcacagggtg 2940
cttttaaaag gaatcctgac caatggactg gtatctgtgt atgagctgga ttatggcaaa 3000

cacgaattag tcaacataag aaaagtacag cccttagtgg acatgttccg aaagctgccc 3060
ttccaagcag tcacagctca acttgcagga gtgaagtga accagtggtc tgaggaggct 3120
tctatgggtg ttcgaaatca tgtggagaag aaacctctgg tggcactggt gcagacagtc 3180
attgaaaatg ctaacccttg ggaccggaag gtatgtgtct acttagtgga cacatcgttg 3240
ccagacaccg atacctggat tcatgatttt atgtcagagt atctgataga gctttcaaaa 3300
gttaattaat gactgcctct gaaaccttga caactaatc agatttttta gcaataacaa 3360
aatgtagtag gcttaaaaaa aatcttaact ctgctacatg gctctgactg ctgtggggga 3420

ttgaaaagaa tatgcttatg ttgatgaaa gatatttaac aagttttgtt ttaacagagt 3480
tgacttttca aagaaaattg tacttgaatt attactataa tattagaata aaaatgttta 3540
tcaatataaa aaaaaaaaaa aaaaaaaaaa aa 3572

<210> 27
<211> 4476
<212> DNA
<213> Homo sapiens
<400> 27

agcagagaga acacacgtcc ttgcggaagt gacggcagtt ccgagtcag tggggcggt 60
gggagcgatg agggctctgag acgggtgggag cggttgtgtg aagatggaga cattccatac 120
accaagcttg ggtgatgagg aatttgaaat cccacctatc tcttggatt ctgatccctc 180

attggctgtc tcagatgtgg ttggccactt tgatgacctg gcagaccctt cctcttcaca 240
ggatggcagt ttttcagccc agtatgggtt ccagacattg gacatgcctg tgggcatgac 300
ccatggcttg atggagcagg gcggggggct cctgagtggg ggcttgacca tggacttggg 360
ccactctata ggaactcagt atagtgccaa cccacctgtt acaattgatg taccaatgac 420

agacatgaca tctggcttga tggggcatag ccagttgacc accattgata agtcagaact 480
 gagttcccag ctgggtttga gcctaggggg tggcaccatc ctgccacctg cccagtcacc 540
 tgaagatcgt ctttcaacca ccccttcacc tactagtcca cttcacgagg atggtgttga 600

 ggatttccgg aggcaacttc ccagccagaa gacagtcgtg gtggaagcag ggaaaaagca 660
 gaaggcccca aagaagagaa aaaagaaaga tcctaataaa cctcagaaac cagtttcagc 720
 atatgcttta ttctttcgtg atacacaggc tgccatcaag ggacagaatc ctaatgccac 780
 ttttggtgag gtttcaaaaa ttgtggcctc catgtgggat agtcttgag aggagcaaaa 840
 acaggatat aagagaaaaa ctgaggctgc caagaaagag tatctgaagg cactggctgc 900
 ttacaaagac aaccaggagt gtcaggccac tgtggaaca gtggaattg atccagcacc 960
 accatcaca actccttctc cactcctat ggctactgtt gaccagcat ctccagcacc 1020

 agcttcaata gagccccctg cctgtcccc atccattgtt gttaaactca ccttttcac 1080
 ctatgtggca aaccaggcat cttctggagc tgggggtcag cccaatatca ccaagttgat 1140
 tattacaaa caaatgttgc cctcttctat tactatgtct caaggaggga tggttactgt 1200
 tatccagcc acagtgtga cctccgggg gtcctaacta ggccaaacca gtacagctac 1260
 tatccagccc agtcaacaag cccagattgt cactcggta gtgttcagg cagcagcagc 1320
 tgctgtgct gctgttcta tgcaactgcc tccacccga ctacagccc ctccattaca 1380
 acagatgcca cagccccga ctacagcga agttaccatt ctgcagcagc ctctccact 1440

 ccaggccatg caacagctc cactcagaa agttcgaatc aatttacagc aacagcctc 1500
 tcctctgcag atcaagagtg tgctctacc cactttgaaa atgcagacta ccttagtccc 1560
 accaactgtg gaaagtagtc ctgagcggcc tatgaacaac agccctgagg cccatacagt 1620
 ggaggcacct tctcctgaga ctatctgtga gatgatcaca gatgtagttc ctgaggttga 1680
 gtctccttct cagatggatg ttgaatttgt gatgggtct cctgtggcac tctcaccca 1740
 gcctcgtatg gtgaggtctg gttgtgagaa cctccatt gtgagtaagg actgggacaa 1800
 tgaatactgc agcaatgagt gtgtggtgaa gactgcagg gatgtattct tggcctgggt 1860

 agcctctaga aattcaaca cagtgggtgt tgtgaaatag tccttctgt tctcaagcc 1920
 agtgaagagt tatctgttg gaaagtgtc aagagcctgt ttttgaaaca caagctgggc 1980
 ttctggtagt gctcatcac aacctatg ggctgttcat gttcacccc ttttcttct 2040
 tcagcagagg ccaggctatg gagcagggcc actgaatttg ctgtaatctg gagatgcttt 2100
 ttactttcaa ccataagcgg taatagcaga ggaaagggtg aaggagctct gggcaagcaa 2160
 agcatagaga tgggtgggtg gtgggtgggt tgaagaaact tgttggtata attgtcatag 2220

gacttgccta aaatattatt aaaattacgg gagtgtactc agctttgagc ctaggagaaa 2280

atgccactgt gtgcatccat tttaaagggt tccctcataa aaaaatgtta ttccccatta 2340

tcacatcagt acactgcttt gaaaacaaaa cttttcaaca tgggcatact gggctacatg 2400

gaaaatgaca tcaccagga gtgatttctc ttatatata ttatttctgc agttaccatc 2460

cttatctgag ttatcacagt tcatgaatct aagaggcgga actctacatc attagtaaga 2520

ggttccacca aagtctaaag ttgtattcac ttgtgtttga tgaactatct ttaaaagacc 2580

ataggtctat cattatttct tagacataat ctaaagaaaa acagactaga gaagccacct 2640

ggttgtaaca gaataagcag aagtttacag catgatagtc caagtgggta taactttaaa 2700

taaaactcaa atttttactg ttgttagaca ggaatgctgt cctagagAAC ctctcctca 2760

accagctacg tacatagttt taccctatgc attcctgttt tctgtgtgtt ttttgttttt 2820

tttttttttt ttttttttg agacagagtc tcgctctgtc acccaggtcg gagtgcagtg 2880

gtgcgacctc agctcactga aacctctgcc tcccgggttc aagcgattct cctgcatcag 2940

cctcccgagt agctaggatt acaggcgccc gccactacgc ccagctaatt tgtggatatt 3000

ttagtagaga cagggtttca ccatgttggc caggctggtc tcgaactcct gacctcatga 3060

tccgccccgc ttgacctccc aaagtgtctg gattacaggc atgagccacc gcaccagcc 3120

tgcattctcg tttttttaat ggttttggag ggtagcagta gagatggggt ctactatgt 3180

tgcccgctct agtcttgaac tcctgggcta cagttaccct cctacctcgg cttcccaaag 3240

tgctcggatt acagggttga gccactgtgc ctacgtata atgatcattt taatgtttcc 3300

catgcactca tttagtttga accttcacag caacccaatg aggttaatact cccatttcac 3360

atataatact gagagatgag ttgcacaaga ttataactg ttaagtagca gagccagaat 3420

ggacttcaga atcccaacta caatacaaat gtttatttaa ataaagaaga aagctattgt 3480

acaaatatca ctcttcaggt ttagcttaca gagccatggc tatggattct tagctctgta 3540

aggaagtgct tctataaatt cttaggttta gagatgatac catctgggta cctttgcttg 3600

aaccgtgcaa ccacatctgg gtctagtagg tggatcccat ccagtgggtt tccaagggtg 3660

atcctgaaac agtgtaaaag gaggggcaaa ccagaaatcc tggaattaga gggtttaata 3720

ttgttaaaaa atgcatacca aatgaagact gcctatcatc atatcaaata tgccaattct 3780

aaaaagagct taacattaga atagtatatg gtagaattac tagttcagaa ttggcataga 3840

ttctgggtgtt aaaatagact ggatctgtat tatctgaggg ttagtaacta atgcttagcc 3900

aggcctgctt cacagagttg ctaccaggga gtattctttg gataagcaaa atgctagcag 3960

catgtgtttt aagctctgtt aaggggtgaa agatgtaatt attgacagat taaatagata	4020
acttcgtaac caccaggggg cagattcaat acatcacaga atggctgagg aagatccttg	4080
ggttgtgaag agagtagaaa ccctagggag cagtgccttt gggtcctaga acctgttgag	4140
tttctaata atattttag aatctcataa aacagtttaa atacaagctt aagtggctta	4200
tgaatcctgt gaagctcatt tatggactag tgtaaaacaa tgtgaagctc tactaagttc	4260
tgtccttaat cataaataat agccccctga ggactagcct gttctctggt caccttacca	4320
gttgggttgc acatttgttg gtcgtccaaa taactcaatc ttgcgagtgc caggagatag	4380
tctttcaatc atgccataga ttcatctggt tttatgactg gtggaacgaa cctaggaaat	4440
aaaaactagc tgctttttaa gttacacaag aaaaaa	4476
<210> 28	
<211> 4814	
<212> DNA	
<213> Homo sapiens	
<400> 28	
cttcgtgcc cgtcaccgcc tgcgtcgctt ccggaggcgc agcgggcgat gacgtagagg	60
gacgtgccct ctatatgagg ttggggagcg gctgagtcgg cttttccgc ccgtccccc	120
ctcccccg ggcgcctcc ggctgcaccg cgtcgcctcc gagtttcagg ctctgctaa	180
gctagcgccg tcgtcgtctc ctttcagtcg ccatcatgat tatctaccgg gacctcatca	240
gccacgatga gatgttctcc gacatctaca agatccggga gatcgcgac gggttgtgcc	300
tggaggtgga ggggaagatg gtcagtagga cagaaggtaa cattgatgac tcgctcattg	360
gtggaaatgc ctccgtgaa ggccccagg gcgaaggtag cgaaagcaca gtaatcactg	420
gtgtcgatat tgtcatgaac catcacctgc aggaacaag ttccacaaaa gaagcctaca	480
agaagtacat caaagattac atgaaatcaa tcaaaggga acttgaagaa cagagaccag	540
aaagagtaaa accttttatg acaggggctg cagaacaaat caagcacatc cttgctaatt	600
tcaaaaacta ccagtctttt attggtgaaa acatgaatcc agatggcatg gttgctctat	660
tggactaccg tgaggatggt gtgaccccat atatgatatt ctttaaggat ggtttagaaa	720
tggaaaaatg tgatgcaaaa gaaagaaatc cctgcgcttt ctgtctgtct ttgtggcggc	780
ccagattgaa ttggggaata catcttttag ctggaaatgt aggtgcatg ttaatggtaa	840
tgtactttt gcagtgtaat gtttgaaaaa tattaatgta gttttgctt ttacagtaac	900
aaatgtggca attattttgg atctatcacc tgtcatcata actggcttct gcttgcac	960
cacacaacac caggacttaa gacaaatggg actgatgtca tcttgagctc ttcatttatt	1020

ttgactgtga tttatttga gtggaggcat tgtttttaag aaaaacatgt catgtaggtt	1080
gtctaaaaat aaaaatgcatt taaactcatt tgagagaatg ccttttagtt taatgcatat	1140
ttaaactaaa ttgatcctgt agtgttccctg gagaagctag agcctgattg taggctacta	1200
ctcatcaatt aacttctaca gtggagacta ctctctgggac tggaatataa aaaagaatca	1260
aaggttctga ttttgagttg caataaaggg aaagaccatg ctcatagcag tgccaacatc	1320
tgaagtgtgg agccttacc atttcatcac ctacaacgga agtagttaac tggaagagat	1380
taccaagaga ataaaaagag actcattcag tggaagcaac tttgtctcag cttatttcac	1440
ataaagagag cgaagtcttt tgggatgaat gtttaattaaa ctccctggta actagaacag	1500
ggactggcaa actagcctat ctgaccacct gttttgtaca ctttaagggtg gttgggtgcc	1560
tttttaaatg gttgagggga aaagaatacc ttgtgggata tggaatttaa gttcgagtcc	1620
agttttattg gaacgtggct atgcttattc atttatggat tgactgtggc tgttgtcagt	1680
gcatgagcag agttgtgtct aacagactag agcctgcaag ttgcccagcc cctgatttaa	1740
aagatgaagg tacacagaat gtgggctggc tgggtggcaa aggggtaaaa atgttctcta	1800
tattgtatct gaaaagatgg ggtgtctgaa taagaaaatg catctatttg acagacctgg	1860
agcagttgct atctgctgct atggtttcca ccacagatgc aagaagaaca tgtccttgcg	1920
ctttccgtct gtctaattgt ggcagctgag attgaataga ggaatacagg aggaaaaaaa	1980
gcgggaagag tttttgaggc aggtcgggtca cccaggcttg tagtgcagtg gcacaagcaa	2040
ctcactgcat tctctgcatc ctgtgctcaa gccattttcc cacctcagtc tcactagttag	2100
ctgggactgc aggcattgcac ccctatgcc agctaatttt tgtagagacc gagtatcgct	2160
tagttgcccc ggggtgtctc aactcctggg ctcaaggaga tctgcccacc tcagcctccc	2220
aaagtgcagg cctagcctgg gaggggaatt ttcaaacgt gagttttggg aaatagtcta	2280
tcagccttac ctggttgatt acacttgtaa aagaaagatt aaaagcaggc cagtgactct	2340
ggtctgcttg aacatgtgaa tgtagtggtt tgagcaatct ggagtttgcc ctagtgtcaa	2400
attccagact gtccatagtg tccaaaacct gaggcagata ctaatgttaa cccccagcac	2460
cccgtgattg gaaacaaacc taaatacgta ttgggaactt aatagcaatt ttaagcattc	2520
tgatagattt tttgtaggga tgggtcatg ccatgtggcc caggctggtc tgaaaactct	2580
ggcctcaagt gatctcaage tttggccttc taaagtgttg ggattacagg tgtgaggcat	2640
tgcacctggc ttagcgttct gatttgacat tgtaatgaaa agtgtgagtc tcatctacag	2700
ggccttttgt cctctgaaat gatagcagga agggaatttt caggcagtgg tcaaagctgg	2760

ggaaaccagg atagtgaaga aggccttgag gtgagagatg gaagctaatt ggtgaactag 2820
 ccttggaagc ctgaaacaga caagtagcaa ttcagagact ttgtgggctc cactgctcca 2880
 acttgttttg aagattttca gttctgcaga agaggatattt ccccagttgt cctttcagtg 2940
 ctcttagctg ttttcccaac atccagatcc aatcaaggct gggacatagc attttatcat 3000
 gtctatttaa gtcagaagtg atgaaccca gctgtttacc tcatggtaaa cctttgaaga 3060
 ttccaggtag aatcttctca gactttgaag actgtctcat tttatatctt tttctcgta 3120
 ttcttagggt caagacgttt tgggcaagaa taaggatgtg aacatcagaa agctcataac 3180

 attttgtttt tgatgctaag tttacaaag gcatgcttta gtagcctgtg ggccttaggg 3240
 ttgtttaaag tgtggagaac aactgagtgg agcaagagga cttttctagg aaggtccttg 3300
 taatgtgaca ttigaaaaca aatgaagggtg tggaagtagg ccatgtggat atcaggacaa 3360
 accattccag gccaaagaca cagcagttag tctggagtgt gatgtgttct gggaaaaaag 3420
 tggccacttt gctaacccaa gaagacagga agggttgtaa agcagtggga gtgtgcaagg 3480
 aaggaagacc agacctcaag gaaaccacag gcgctctgag cagaagagtt acatgatatg 3540
 actcaaattt ttaaaggatc actttggctg ccagggtggca gggtaaaagc atagaataat 3600

 tgtgtataat gtgtttttaa ggcaaagata gtggcttagt ctagggtagt agactgaggt 3660
 ggtaggaaat gaagatagag acaacaggat atgctgggtg gtgaggatgg atttaatgtt 3720
 gatacaagta ttttggctg agcgtttga agaaagtgg cactgagggt ggaagtcgag 3780
 tttagttttg ttagttttg atgtgttaag tttagatgc tgattcttca gagaagtcta 3840
 agctggagaa ctatatagag agtggaaga taacaataga cattgaaagc catgatacag 3900
 gataaggta tttggagaga ggatagactg cattccaaca tgagattggt tgacaaagag 3960
 aaaccaacaa aggttaattaa gagtgctcc cactgcactt gtactcagaa ggctgaggta 4020

 ggattgttag aggccagcct gggcaccaca gggagacccc atctctaaaa tttagccagg 4080
 aacctggct catgcctgta gcccaggaa tttgggagc tgagtgggga gcatcgcttg 4140
 aggtcaggag tttgagacca gcctgggcaa catagggaga cctaaaaaaa ttaattgggc 4200
 atctgtagtc ccagctactc aggcggctga gctgagagga tggcttgagt ccgagagatt 4260
 gaggtgagc tgagctgtga tcataccact gcactccagc ctgggcggca gtgagacact 4320
 atctgaaaaa agtttaaaaa ttttaaaaaa gaaggaactg cccctgaggt aagaaccaag 4380
 ggagggcctc ccagaggta ggtggaaaaa gttttaggaa ggaggaagta gtcaacaggg 4440

 ttacctgttg caaagtactt aagtaatatg aggcctgata gtggtaaact tgactaccgt 4500
 tggatttcac tagtgggaaa ggaagtctaa ttaaaatgca ctcaagagac taacagtgc 4560
 aggcataaaa tacaatacag gtacatggtt ttttattatg tgtgcatctg cttcagtaat 4620

agggtgtaat tactcatttg gatcattagg agtttcaaaa tctagttaaa tgactagatt 4680
 tttgttgatg taaattctgt cattctgaac tgcagggatt gtcagtaact taactgcaaa 4740
 ctaaactggt gataattatg gtaaaattgc aagacgagca ataaatctca accaacttga 4800
 gagaacactg ataa 4814

<210> 29

<211> 2914

<212> DNA

<213> Homo sapiens

<400> 29

gatttcagtt gaaagatgtg tttttgtgag tagagcaccg cagaagaact gaagactgtt 60
 gtgtgtctccc cgcagaagg gctaccatga tcctttcttc ctataacacc atccagtcgg 120
 ttttctgttg ctgctgttgc tgttcagtgc agaagcgaca aatgagaaca cagataagcc 180
 tgagcacaga tgaagagctt ccagaaaaat acaccagcg tcgcaggccg tggctcagcc 240
 aattgtcaaa taagaagcaa tccaacacgg gccgtgtgca gccgtcaaaa cgaaagccac 300
 tgcctcccct cccaccctct gaggttgctg aagagaagat ccaagtcaag gcactttatg 360

attttctgcc cagagaaccc tgtaatttag ccttaaggag agcagaagaa tacctgatac 420
 tggagaaata caatctcac tgggtggaagg caagagaccg tttggggaat gaaggcttaa 480
 tcccaagcaa ctatgtgact gaaaacaaaa taactaattt agaaatatat gagtggtagc 540
 atagaacat taccagaaat caggcagaac atctattgag acaagagtct aaagaaggtg 600
 catttattgt cagagattca agacatttag gatcctacac aatttccgta tttatgggag 660
 ctagaagaag tacggaggct gccataaac attatcagat aaaaaagaat gactcaggac 720
 agtggtagt gtgtgaaaga cagcctttc aatcaatccc tgagttaatc tggtagcacc 780

agcacaatgc agccggtctc atgactcgtc tccgatatcc agttgggctg atgggcagtt 840
 gtttaccagc cacagctggg tttagctacg aaaagtggga gatagatcca tctgagttgg 900
 cttttataaa ggagattgga agcggtcagt ttggagtggc ccatttaggt gaatggcggc 960
 cacatatcca ggtagctatc aaggccatca atgaaggctc catgtctgaa gaggatttca 1020
 ttgaagaggc caaagtgtg atgaaattat ctattcaaaa gctagtgcaa ctttatggag 1080
 tctgtataca gcggaagccc ctttacattg tgacagagtt catggaaaat ggctgcctgc 1140
 ttaactatct caggagaaat aaaggaaagc ttaggaaaga aatgctactg agtgtatgcc 1200

aggatatatg tgaaggaaat gaatatctgg agaggaaatgg ctatattcat agggatttgg 1260
 cggcaaggaa ttgtttgtgc agttcaacat gcatagtaaa aatttcagac tttggaatga 1320

caagggtacgt ttgggatgat gagtatgtca gttcttttgg agccaagtgc ccaatcaagt 1380
 ggtccctcc tgaagttttt cttttcaata agtacagcag taaatctgat gtctgggtcat 1440
 ttggagtttt aatgtgggaa gtttttacag aaggaaaaat gccttttgaa aataagtcaa 1500
 atttgaagt cgiggaagct atttctgaag gcttcaggct atatcgccct cacctggcac 1560
 caatgtccat atatgaagtc atgtacagct gctggcatga gaaacctgaa ggccgcctta 1620

catttgccga gctgctgcgg gctgtcacag agattgcgga aacctggtga ccgaaacag 1680
 aatgccaacc caaagagtca tcttgcaaaa ctgtcattta ttgtgaatat cttcaccata 1740
 tggggctact tatggtgaat atctttcttc agagttgctg actcttgaaa acagtgcaaa 1800
 gatcacagtt tttaaaagtt ttaaaaattt aagaatattc acacaatcgt ttttctatgt 1860
 gtgagaggga ttgacacact cttatttttc tgtaaaatat ttcacatccc aaatgtgaag 1920
 aagtgaaaaa gacttcgcag cagtcttcat tgtggtgctc ttcattgatca tagccccagg 1980
 aaccttgag gtctttcttc acaaggctga gattgcttcc ttcttgaaga cgagtgcacat 2040

tcatcacttc agtgatccat gcatagaata tgaataaaa tctttccaac tcatgggata 2100
 aaggggactc cttgaagaa ttctatgttt ttgggctgta tagctcttta cagaaaatgc 2160
 acctttataa atcacatgaa tgttagtatt ctggaaatgt cttttgttaa tataatcttc 2220
 ccatgttatt taacaaattg tttttgcaca tatctgatta tattgaaagc agttttttgc 2280
 attcgagttt taaacactgt tataaaatgt agccaaagct cacctttgaa cagatcccg 2340
 tgacattcta ttccaggaa aatccggaac ctgatttttag ttctgtgatt ttacactttt 2400
 tacatgtgag attggacagt ttccagggcc ttattttgtc atactaagtg tctctgttaa 2460

ttttcaggaa gatgatttgt tctttccaga agaggagaca aaagcaagat agccaaatgt 2520
 gacatcaagc tccattgttt cggaatcca ggattttgaa ttcgagatga aacaaccagc 2580
 aatcacagtt aaatcttaac ttgacctgca ctctttgtag gaatgatcag aaatttatct 2640
 ttatcattct gattgcttca ggagtacaat aggaagaaag atactggaga aagcactaat 2700
 gtaatcacca tgaagtctga caacaggagc ccattatttg cgtactgtcc caccctgtat 2760
 catggttctc tgggaacaag ctttatgatt ctcatagag tttatttgtt gattgtcagt 2820
 agttgcgact tttaaattat atttcccca ctcaaagaat ggtatcttta tatatcaatg 2880

acattcaata aatgtgtatt atttctaag agaa 2914

<210> 30

<211> 2741

<212> DNA

<213> Homo sapiens

<400> 30

attaaataag agaaaaaagc ataaaaggag taggcttttt tggcagatac tgttatatgg	60
gatggacagg aggggaagac atgaaaatca actaaaatga aatacataaa aaatcagtaa	120
agagcctgct tacgaaagtg gaaaaacaac agctgggcgg ggtcgcaggg tggcaaacgt	180
acgcgggcac gtgcacgtgc ttttggggcc gacagacgcg ccagttgcct aggcgcacgc	240
gtctggctat cccagaagca cctgcgcctt ccggctcgtg ctttcctcag tctcgcgcct	300
ttctctgcag ctgcgcctt tctctgcagc tcgcgccttt ctctgcagct cgcgcctttc	360
tctgcagctc gcgcctttct ctgcagctcg ccccttcctc tgcagctcgc ccttcctctt	420
gcagctccca cctcactccc ctacagcttc tttttccac ggtcttcccg ttgccgctaa	480
cctaactaac tctcagccat ggcctccaac gaagatttct ccatcacaca agacctggag	540
atcccgagc atattgtgga gctccacgac atcaatgtgg agcccttcc tatggaggac	600
attccgacgg aaagcgtcca gtacaggat gtggatggca attggatcta cggatggccac	660
aacctccgc cattgatggt gttgcagccg ctcttcacga acacgggcta tggcgaccac	720
gaccaggaag tgcttatgtt gcagacacaa gaggaagtgg tgggtattg cgactcagac	780
aaccagctag gcaacgactt ggaggaccag ttggccctcc cggatagcat tgaagacgag	840
catttcaga tgacctggc ctctctgtcg gcctcggcgg catcaacatc aacatcaacc	900
cagagccgca gcaaaaagcc cagcaaaaag ccagcggca agagtggccac cagcactgag	960
gccaacccgg caggcagcag ctccagcctg ggcacagga agtgggagca gaagcaaatg	1020
caggtcaaaa cgctggaggg tgagttttcc gtgactatgt ggtcccctaa cgataacaat	1080
gaccaagggg cagtgggtga aggccaggct gaaaaccac ctgattattc cgagtacttg	1140
aaaggaaga aacttcctcc tgggggggta ccaggcattg atctctcaga tcctaaacag	1200
ctggcagaat ttactaaagt gaagccaaa aggtccaaag gagaacctcc caaaacagtc	1260
ccttgctctt atagcggctg cgaaaagatg ttccgggatt acgccgcat gagaaaacat	1320
ctccacatcc acgggccag agtccacgta tgtgcagaat gtggcaaagc ttttcttgag	1380
agctcaaagc tgagacgaca ccagctggc cacaccggcg agaagccctt tcagtgcaca	1440
ttcgaaggct gcgggaaacg cttttccctt gatttcaatt tgcgcacaca cttgcgcac	1500
cacaccggcg ataagccctt cgtgtgcccc ttcatgttt gcaacaggaa gttcgtcag	1560
tcaaccaacc tgaaaacca catattaacg catgtgaaga ccaaaaacaa cccgtgaaaa	1620
ggagaagacc cctctcagac ttgggaatta tcttcagga ctgcggtagg gaataaatat	1680
gcctctcaaa gctttgtatg ttgtttctaa gagtttttaa aaaaaatgaa tcctgcacat	1740
ttaaggttcg tgttttgtta gagtagtaa aatagaattt aaacgttttt aaaaaggtaa	1800

accttgacat aagataatag tgctaagatg ccatagcttg ttctgtaact atttttgtaa 1860
 agtttgggcc caacaggaga aaaattcgta gacttcacat caagagacgg ttcttataaa 1920
 ctgtttaaaa tgggactttt cacattctta gaaataggaa gttcatttat tgtttacaat 1980

gtttttaaaa aacttgtaa aaaattcaaa gtgttcatgt ttatactttt aggaatatgc 2040
 ttaataagtc tatgtatggt ttttctggag gttgataact ttgggaaaga ttacttttaa 2100
 aagagtgaac aattatatgc atacgtgaag tattttcctg cttaaaaaag ttatataggt 2160
 gttatttgtt ttaatcttgg ttgtagtctt ggatgttaac acatcttgca ttttagctgt 2220
 attaggtcat gtagtattga tattaggtga tttaatagta ctagttaaa cctatttttag 2280
 tcattttatt ttccccaaaa tactaccaga tgctgttgtt tagtgtaatt tctttgcctg 2340
 ttcagttaaa gtagtgcttg cttgtagaat atattgtgta tatgttgact ttaacactta 2400

agaagtacat cctgtgtaat agaaaaagca aaataaaaca cctcttctaa agaaggaaaa 2460
 aagtagtttg cctatatcag tacagaagtt agaactaaag aaaaggggga ggggtgctact 2520
 ggcatctggt gaggaggagg agatcaggaa tgccactaaa catcctacaa tgcacagaca 2580
 gccccacgaa acacataatt atttggctaa aatgccaata gtgtcagggtg caggggctca 2640
 ggccctgtaat gtcaacactt tgggaggccg aggtgggtgg atcgtttgag ctccaggaatt 2700
 gaacatcagc ctgggcaaca tggcataact cggctctctac c 2741

<210> 31
 <211> 6137
 <212> DNA
 <213> Homo sapiens

<400> 31

gtcttttgtc cctcggcgga caccgtttgc cagccaaagc tatgtctgcg cgctcaccga 60
 ctcataggg tgccgaattc tttttcccc aggccttgcca tggctagtgc aggggctcgg 120
 cagcgctga agggcagcgg ggccagcagt ggggatacgg ccccggtgc ggacaagctg 180
 cgggagctgc tgggcagccg agaggcgggc ggcgcgagc accggaccga gttatctggg 240
 aacaaagcag gacaagtctg ggcacctgaa ggatctactg ctttcaagtg tctgctttca 300
 gcaaggttat gtgctgctc cctgagcaac atctctgact gtgatgaaac attcaactac 360
 tgggagccaa cacactacct catctatggg gaagggtttc agacttggga atattcccca 420

gcatatgcca ttgcctccta tgcttacctg ttgcttcacg cctggccagc tgcatttcac 480
 gcaagaattc tacaactaa taagattctt gtgttttact ttttgcgatg tcttctggct 540
 tttgtgagct gtatttga actttacttt tacaaggctg tgtgcaagaa gtttgggttg 600

cacgtgagtc gaatgatgct agccttcttg gttctcagca ctggcatgtt ttgctcatca 660
 tcagcattcc ttcttagtag cttctgtatg tacactacgt tgatagccat gactggatgg 720
 tatatggaca agacttccat tgctgtgctg ggagtagcag ctggggctat cttaggctgg 780
 ccattcagtg cagctcttgg tttaaccatt gcctttgatt tgctggcat gaaacacagg 840

tggaagagtt tctttcattg gtcgtgatg gccctcatac tatttctggt gcctgtggtg 900
 gtcattgaca gctactatta tgggaagtig gtgattgcac cactcaacat tgtttgtat 960
 aatgtcttta ctctcatgg acctgatctt tatggtacag aacctggta tttctattta 1020
 attaatggat ttctgaattt caatgtagcc ttgcttttg ctctcctagt cctaccactg 1080
 acttctctta tggaatacct gctgcagaga tttcatgttc agaatttagg ccaccgctat 1140
 tggcttacct tggctccaat gtatatitgg ttataattt tcttcatcca gcctcacaaa 1200
 gaggagagat ttcttttccc tgtgtatcca ctatatgtc tctgtggcgc tgtggctctc 1260

tctgcacttc agaatgtta ccacttttg tttcaacgat atgcctgga gcactatact 1320
 gtgacatcga attggctggc attaggaact gtcttctgt ttgggctctt gtcattttct 1380
 cgctctgtgg cactgttcag aggatatac gggcccttg attgtatcc agaattttac 1440
 cgaattgcta cagacccaac catccacact gtcccagaag gcagacctgt gaatgtctgt 1500
 gtgggaaaag agtggatcgc atttcccagc agcttcttc ttctgacaa ttggcagctt 1560
 cagttcattc catcagagtt cagaggtcag ttacaaaaac cttttgcaga aggacctctg 1620
 gccacccgga ttgttctac tgacatgaat gaccagaatc tagaagagcc atccagatat 1680

attgatatca gtaaatgcca ttatttagtg gatttggaca ccatgagaga aacaccccg 1740
 gagccaaaat aticatcaa taaagaagaa tggatcagct tggcctatag accattcctt 1800
 gatgttctta gatcttcaa gctgtctgcg gcattctatg tccccttct gtcagatcag 1860
 tatacagtgt acgtaaacta caccatctc aaaccccgga aagcaaagca aatcaggaag 1920
 aaaagtggag gttagcaaca cacctgtggc cccaaaggac aacctcttg ttaactattg 1980
 attccagtga cctgactccc tgcaagtcac cgctgtaac atttgaata aaggtcttct 2040
 gacatgaata ctggaatctg ggtgtcttgg gctagtcaaa gtctatttca aagtctaate 2100

aaagtcacat ttgtccctg tgtgtgtctc tgttctgcat gtaactttt tgcagctagg 2160
 cagagaaagg ccctaaagca cagatagata tattgtcca catctcattg ttttctctt 2220
 gttaattat ttactagacc ggagaagagc agaaccaact tacaggaaga attgaaaatc 2280
 ctggtactgg atggctgtga taagctgttc tccacactct ggctggcat ctgagaacta 2340
 gcaagcctct cttaggccat atgggcttct ccaccaaagc tgtttggcag ctcttagcag 2400
 accttcttat tgaatcctc atgtgaaaa tgaacacagc ctagtgtcca acccatgt 2460

ccttttcacc tccagcaaga ctaagcttct ttaaagcact tcacaggact aggaccctgt	2520
cctggagcta tctcaggaag aaggtgacca ttgaggaac tgtgacctaa ttttattata	2580
atgatgcctc taattttcat ttccctttaca accaactgta actataaggt tgtattgctt	2640
ttttgttcag ttttagcatg ctattttttg aattctagac tcctccatgt gaagatatca	2700
acagacaaaa ctacaactgt ataggacata ttgggagaaa attctatcaa ttgatacatt	2760
tggatgacat cacattttta agtaatgtaa tctgaggcca ttgctgagga aattaagaat	2820
tttccctttt ttttaaccac cccagtgaa aaggatcagt gtatatttat agcacctatt	2880
ttttagtctt gtcgtgtgtg aggcacatcc tgcattggggc acttctagtc aaataggcaa	2940
tgataaggac ctaattaaaa tgtgataagt gtatactatt actttaaaag cctttacagt	3000
cagtacttca gtttacaagg cactttcaca gcattctggt tgatcctcac agtcacaaca	3060
tgtggtagac aaggcagggtg atttttatcc ccattttaca gataaggaaa caggctgcgg	3120
gtggggagtg aggggaggtg aagatagtta gttgcctaag gtcacacagc cagtaagtaa	3180
tagagctggg actggaaccc aggtttcctt actctcatct attgctcctc catattcctc	3240
actcaacat gaaaacatta ctgaaagga ctgatgaggt taaccagaga ctaactgat	3300
attgtaactt tctattttta ggaagaattg tgcctgtatt tgagttcttt ggagcctcca	3360
gtctgcctgt gtgttagacc agcacagcag tgcgtgtga tgcagcctga cctgtggcag	3420
gaaagtagtg ctctgtttg gaagtcattg tcttttcag ccacacagga tccaaatac	3480
agtactattc ctgtagtcaa tctgggttca cattataggt gccttatttc cctaagggtg	3540
actgatctga atatctgcaa ataggatgaa tctatttttc agaagttcca tctttcattt	3600
ttcttttttt ttttagaca gagtctcatt ctgtcgccca tgcaggagtg cagtggcgcg	3660
atctcggtc gctgcaacct ctgcctccca ggtgaagca attctcatgc ctgagccacc	3720
cgagtagctg ggattacagg catgcgcat catgccagc taatttatgt attttagta	3780
gagttggagt ttaccatgt tggccaggct ggtcttggac tcctgacctc aggtcatcca	3840
ccgcctcag cctcccaaag tgcgtgtatt acaggcgtga gccaccgcac ccagcccat	3900
ctttcatttt caaagagaag ggcatcttaa taggaactgg tgccaagaga gaagaaaaga	3960
agtataaca gaagaaatgg ctagtataa tattaaaaag ctctctttg agatctcctc	4020
tgcaggaata tcagagacgg agttgaagcg ctggagaggt aataggtcta gacagtacag	4080
aacaataact ggggagtggt tgaggataga ctgggctccc ccttgcttga aagatctctg	4140
gcatttaatt ctcaattctt gattactatt ttccagtga aaactagcac atatgatctg	4200

actacaggac agagaatttt aagtgaacaa tttgccttac ttgcagtaat aatgtgctgt 4260
tcttcacagt agctaaggcc ctctatgttt cccagaggta aataagaatc caggaatgga 4320
gggccatctg tgatgaatgg cttttttcta atcaaagtag tataatgctg ttttatctgt 4380
tttgtcatct tgtttttttt tttttttaa aaaacaaaac ctttaattata atatagcgca 4440
aagaaaggcc aggactgatg cagggattcc ttggaaatat cagtccctat cactttttaa 4500
acctgatttt ggatctctct gtctctatgta tgcctttagt gagagcacia tacatggcag 4560
aacgctgtgc caaatgttat aggttaaggaa tatagaaatg aatgtttttt gttgtgaagg 4620

tgttttcatg tgatatttta taaacacatt ttaaaaaatc tccatcactt tttagtatag 4680
gaaggatagc ttgacctggg aaaaacagtt tcaacacacc tgctcagagt agcagttctc 4740
cctcaaaaaa gcagtgttca gcctgcactg actgttctgc ttgccaaaag gaggaagcat 4800
gcaagatact tattttctca tagattgtgg agtatagagg gatgtgggac tacagattat 4860
tatttttttt ccccgagaca gagtcttgct ctgtcgccca ggttgaaca caatggcacg 4920
acctcagctc actgcaacct ctgtctcccg ggttcaagca attctctgc ttcagcctcc 4980
tgagtagctg ggattacagg cacacaccac caccgcactc agctaatttt tgtattttta 5040

gtagagggtg ggttttacca tgttggccag gctggcttta aactcctgac cttgtaatca 5100
tcccgcctcg gcctcctaaa gtgctaggat tacaggcatg agccaccgca cccggcccag 5160
ataattttta atagcctttg atcatggggt gagtgaggga gtaggtatag ttggcaaatg 5220
catggttctc tgatttctag ctctaaagca gccttatctg aatcccaaaa tcttgtgatg 5280
ctgagtacca ttactgaacc agtctgcacg gtaggcatct gctacaaaaa ttacctcct 5340
acctggtagg tgcactctga taagaaagaa gacaggttat ttttaatttt tgagataatc 5400
acagaaaatt gcagcccata ctctttatta ccgaattcaa gtttggaaat agaccctttg 5460

ttttaaatca tgatgggtct ttatcccaat catttatctg ggtcattttt ccaactttgg 5520
agttctagga aagaaccttg aaaacctgat atgattctgc agcatgaggc ctacggtgac 5580
catttgggca aagctccagt ggcaatcatt tattgtgttt tgcatttcct gggatttatt 5640
gaaataagaa ttcactgtga ttatgtatg ttctggctag tatcaggcag ctctgctttt 5700
aatttggtta attttatttt ctctgaagag ggagaagagg tacaatttaa tcttggcctc 5760
cacaagcata ttaaagctca cgtgttaatc agtgcattct tatgctccta cattaaatgc 5820
cttgggtaaa tggataaatg gacatgtgcc cagctttaat tttttttgca acagaaagat 5880

cagacttccg tatggcatcg ttggatttca gaggctttct ggtgtatctg taaatctgaa 5940
tgttgccttc tgccagtctg tataaccagg tgattcatgc tgcaaatgaa atcaggaagc 6000
agtaaagtgt taaagcaaga gtattgtcca attcattgt cttctgac cttgtacttt 6060

atttcacgtg tcggtgttta cattacatac ttatatattcc tgtgaaagaa agagttaaatt 6120
aaattgtagc agtttga 6137
<210> 32
<211> 3531
<212> DNA
<213> Homo sapiens
<400> 32
agcggagcgc caggcagcgc ggagcggagg ccaggccac agccgctccg cctcccggcc 60

cgcatatccc cgacggccgc accgcgggct cctctggccc gcaagaacac gtgcatggcg 120
tcctggggaa ggcgtgagt gcggagtcgc ggccgcgcac gcggcaccat ggccctggag 180
caggcgctgc aggcggcgcg cgagggcgag ctggacgtgc tgaggtcgct gcacgccga 240
ggcctcctgg ggccctcgct gcgcgacccg ctggacgcgc tgcccgtgca ccacgggcc 300
cgcgctggga agctgcaact tctgcgttc ctggtggagg aagccgcct ccccgccgcg 360
gccccgccc gcaacggcg caccacggcc cagcagcct ccgccaccgg ccacctgcc 420
tgctgcagt ggctgctgc gcagggcggc tgacaggtgc aggacaaaga caattctggt 480

gccacagtct tgcatttggc tgcccgttc ggccaccccg aggtggtgaa ctggctcttg 540
catcatggcg gtggggacc caccgggcc acagacatgg gcgcctgcc tatccactac 600
gctgccgcca aaggagactt cccctccctg aggttctctg tcgagcacta ccctgaggga 660
gtgaatgcc aaaccaagaa cggtgccacg cccctgtacc tggcgtgcca ggaggccac 720
ctggaggtag ccagtagct ggtgcaggaa tgcggcgag acccgcacgc gcgcgccac 780
gacggcatga ccccgctgca cgccggcg cagatgggcc acagcccagt catcgtgtgg 840
ttggtgagct gcaccgagct gagcctgtcc gagcaggaca aagacggcg caccgcatg 900

cacttcgcgg cgagcccgcg ccacaccaag gtgctcagct ggctgctgct gcacggcggg 960
gagatctcgg ctgacctgtg gggcgggacc ccgtgcacg acgccgccga gaacggggag 1020
ctagagtgt gccagatcct ggtagtgaac ggcgcgagc tggacgtccg cgaccgcgac 1080
gggtacacgg ccgccgacct gtcggacttc aacggccaca gccactgcac ccgtacctg 1140
cgacgggtg agaacctgag cgtggagcac cgcgtgcttt cccgggatcc atccgcagag 1200
ctggaggcta agcagccgga ttacggcatg tcctaccca ataccaggt gtcggtccag 1260
ccgtgaact ttgacctcag ctgcctacc agcacctct ccaactacga ctctgctcc 1320

tccagccact ccagcatcaa gggccagcac cctccatgtg ggctttccag cgctagagct 1380
gcagacatac agagctacat ggacatgctg aaccgggagc tgggcctgcc tcggggcacg 1440

attgggaagc ccacaccccc accacccccca cccagcttcc ccccgccacc cccgccccca	1500
ggcacccaac tgccccacc cccacctggc tacccagctc ccaagcctcc ttaggacca	1560
caggcagctg acatctacat gcagaccaag aacaaactcc gccacgtgga gacagaggcc	1620
ctcaagaagg agctgagctc ctgtgacggc cagcaggggc tgcggaggca ggactccagc	1680
cgcaagcccc gcgccttcag caagcagccc agcacggggg actactaccg gcagctgggc	1740
cgctgccccg gcgagacgct ggccgcacgc cggggcatgg cgcacagcga ggaggtgcgt	1800
gccccccagc ccgcgcgcgc cggctgcccc gcctcggcc ctgccgccg cggtcactc	1860
gaaggccct ccgtccccc gcaggcggcg ctgttctctg ggaacctgt tcctaacggc	1920
tgcgcgcgg accccaaggc gtccaggag ctgccaccgc cgcgccacc gccgcgcgcg	1980
cccctgccgg aggccgcgag ttgccaccg ccggccccgc ctctgccct cgagagcgt	2040
ggccctggct gcgggcagcg ccgtcctcc tcgtccaccg gcagcaccaa gtctttcaac	2100
atgatgtccc cgacgggcga caactcggag ctactggctg agattaaggc aggcaagagc	2160
ctgaagccga cccccagag caaggggctg accacagtgt tctcaggcat cgggcagccg	2220
gccttcagc ccgattcgc gctgccttct gtgtcacctg cactgtcacc agtccggagc	2280
cccacaccgc cagctgcggg gtttcagccg ctgctcaatg gaagcttggt tccgtgccg	2340
cccactactc ctgcgcggg agtgcagctg gacgtggagg ctctcatccc caccacgat	2400
gagcagggcc ggcccatccc cgagtggaaag cgccaggtga tggcgcgcaa gatgcagctg	2460
aagatgcagg aggaggagga gcagaggcgg aaggaggagg aggaggaggc cggctggcc	2520
agcatcccc cctggaggcg ggacctctg cggaagaagc tggaagaaga gagggagcag	2580
aagcggaaag aggaggagcg acagaagcag gaggagctgc ggccggagaa ggaacagtca	2640
gagaagctgc ggacgtggg ctacgatgag agcaagctgg cgccctggca gcgacaggtc	2700
atcctgaaga agggggacat cgctaagtac tagaggccgc agactcctgt ccgcagcctc	2760
gcagctccgt ggggccctcc gcccagccc cagccagcca ggccctggtg gaaaggctgg	2820
gagccgcaca gccctccct cctgcgtgg aaacctccc tgacccccc cctggccccc	2880
cgtatcccca gcccttgga aactggagt gcacacgcc ccacggttgc ccagaaaaag	2940
tgccaagct gctgacgcaa acaacaaca atgtgtctta tttgatgcc gacttacata	3000
tatttgcagc ttctgtgact atcaaagagt gcagagctct cccagcccc gtgggtggtg	3060
actttgtttt cctgcggggc tcagccccct ccaggatgca gcccctccc ccgcaccccg	3120
gaaccggcgt cgtggcgca tctgggtgg aggcaggccc cgagctcggg gaagggttt	3180
tcccttctc tctgacccag atctgcgcgc ggccctagccc ggccctcatt tcttatcccc	3240
gccaagggtt tctctcagt catttgttta ccagaaacat gaaaactgcc tgtctggccg	3300

ggccgcactt gtggcccccg ggacccacc tctggcccca cctccctcaa gtctgcgccc 3360
cgtccccagc cagaccact cgctgccggg accctttcac tgccccgtg gagtgaatag 3420

aggatgaggg gccctgacce tgtgtctcca actgtgcac cccatccga cctgtctec 3480
gccacctgc agccccatta aagcgtctc atctgggctc cggttcactc a 3531

<210> 33
<211> 2272
<212> DNA
<213> Homo sapiens
<400> 33

ttgggcgggtg gaccgcccct cggccccggg gtaggctgac acgggagggt cctcagctaa 60
agccaaaagc agatcaaagt ggtgggactc gcgtcgcggc cgcggagacg tgaagctctc 120
gaggctcctc ccgtgcggg tcggcgctcg cctcgtctt cctcgccctc cggcccggcc 180
ccggccccgc gcccgccatg gagaagactg agctgatcca gaaggccaag ctggccgagc 240

aggccgagcg ctacgacgac atggccacct gcatgaagge agtgaccgag caggcgcccg 300
agctgtccaa cgaggagcgc aacctgtctt ccgtggccta caagaacgtg gtcggggggcc 360
gcaggctccg ctggagggtc atctctagca tcgagcagaa gaccgacacc tccgacaaga 420
agttgcagct gattaaggac tatcgggaga aagtggagtc cgagctgaga tccatctgca 480
ccacggtgct ggaattgttg gataaatatt taatagccaa tgcaactaat ccagagagta 540
aggtcttcta tctgaaaatg aagggtgatt acttccggtc ccttctgtaa gttgcgtgtg 600
gtgatgatcg aaaacaaacg atagataatt cccaaggagc ttaccaagag gcatttgata 660

taagcaagaa agagatgcaa cccacacacc caatccgctt ggggcttgct cttaactttt 720
ctgtatttta ctatgagatt cttaataacc cagagcttgc ctgcacgtg gctaaaacgg 780
cttttgatga ggccattgct gaacttgata cactgaatga agactcatac aaagacagca 840
ccctcatcat gcagttgctt agagacaacc taacatttg gacatcagac agtcaggag 900
aagaatgtga tgcggcagaa ggggctgaaa actaaatcca tacagggtgt catccttctt 960
tccttcaaga aaccttttta cacatctcca ttcttattc cacttggatt tcctatagca 1020
aagaaacca ttcatgtgta tggaatcaac tgtttatagt cttttcacac tgcagctttg 1080

ggaaaacttc attccttgat ttgtgtttgt cttggccttc ctggtgtgca gtactgctgt 1140
agaaaagtat taatagcttc atttcatata aacataagta actcccaaac acttatgtag 1200
aggactaaaa atgtatctgg tatttaagta atctgaacca gttctgcaag tgactgtgtt 1260
ttgtattact gtgaaaataa gaaaatgtag ttaattacaa tttaaagagt attccacata 1320

acttcttaat ttctacattc cctcccttac tcttcggggg tttcctttca gtaagcaact 1380
 tttccatgct cttaatgtat tccttttttag taggaatccg gaagtattag attgaatgga 1440
 aaagcacttg ccatctctgt ctaggggtca caaattgaaa tggctcctgt atcacatacg 1500

gaggtcttgt gtatctgtgg caacaggag tttccttatt cactctttat ttgctgctgt 1560
 ttaagttgcc aacctccct cccaataaaa attcacttac acctcctgcc tttgtagttc 1620
 tggatttcac ttactatgt gatagaagta gcatgttgc gccagaatac aagcattgct 1680
 tttggcaaat taaagtgcgt gtcatttctt aatacactag aaaggggaaa taaattaaag 1740
 tacacaagtc caagtctaaa actttagtac tttccatgc agatttgtgc acatgtgaga 1800
 ggggtgccag ttgtctagt gattgttatt tagagagttg gaccactatt gtgtgttgc 1860
 aatcattgac ttagtccca aaaaagcctt gtgaaatgt tatgccctat gtaacagcag 1920

agtaacataa aataaaagta cttttataa accatttact atggctttgt aacaattgca 1980
 taccatatt ttaagggaca ggtgaattta ctactttcta aagtttattg atacttcct 2040
 tttatgtaaa atgtagtagt gataacctata ttccacatt gtgcattgtg acacacttgt 2100
 ctaggatgc ctggaagtgt ataaaattgg actgcatttc ttagagtgtt ttactataga 2160
 tcagtctcat gggccatctc ttccctcagat gtaaatgata tctggttaag tgttatatgg 2220
 aataaagtgg acattttaaa actagcaaag ttaaaaaaaaa aaaaaaaaaa aa 2272

<210> 34

<211> 4510

<212> DNA

<213> Homo sapiens

<400> 34

gcagaggggg cgagagcgc cccgggggc ggggcacgca agtgacggcg gcgcgggtgg 60
 tggagcgctg ggcgccagg ctccttggtt ggccggtttg ggcgtctggg ccgtgaaggt 120
 gggacctcct gttccgggcc gcaagtttcc ctctccagcc gcccgccgtt cgtagcatgt 180
 cccccagaac tcggggagcg caggcaggac aggccttagag aagacgcggt cccagcgt 240
 tgggccacgg acgtcccacc ccgtcctct gtcgtggag aaccgccggg ccgagccact 300
 gggagaagca ggccagagcc ttccagggcc tccggcccgt ggaccgagg aggatgagct 360
 ggctttttcc cctgaccaag agcgcctcct cctccgcggc tgggtcccc ggtggcctca 420

ccagcctcca gcagcagaag cagcgctga tcgagtcct ccggaactca cactccagat 480
 tgcttctcc acagtttct caggaaaaac cagtatcag tgtttatcca ccaatacgac 540
 atcacttaat ggataaaca ggagtgtatg ttacctctcc attagtaaac aattttaca 600

tgcaactcaga tcttggaata attattcaga gtctgttggg tgagttttgg aagaatcctc	660
cagtttttagc tctacttca acagcatttc cttatctata cagtaacca agtgggatgt	720
ctccttatgc ttctcagggt ttccatttc ttctccata tctccacaa gaagcaaaca	780
ggagtatcac ttctttatct gttgctgaca ctgtttcttc ttcaacaaca agtcatacca	840
cagccaagcc tgccgctcct tcatttgggtg tcttttcaaa tctgccatta cccattccca	900
cagtggatgc ttcaataaccg acaagccaaa atggttttgg gtacaagatg ccagatgtcc	960
ctgatgcatt tccagaactc tcagaactaa gtgtgtcaca actcacagat atgaatgaac	1020
aagaggaggt attactaga cagtttctga ctttgccca actaaaacaa attattaccg	1080
acaaagatga cttagtataa agtattgagg aactagcaag aaaaaatctc cttttggagc	1140
ccagcttggg agccaaaaga caaactgttt tagataagta tgaattactt acacagatga	1200
agtccacttt cgaaaagaag atgcaaaggc agcatgaact tagtgagagc ttagtgcaa	1260
gtgcccttca ggcaagattg aaagtagctg cacatgaagc tgaggaagaa tctgataata	1320
ttgcagaaga cttcttgagg ggaaagatgg aaatagatga ttttctcagt agcttcatgg	1380
aaaagagaac aatttgccat tgtagaagag ccaaggaaga gaaacttcag caggcgatag	1440
caatgcacag ccaatttcat gctccactat agattttcct ggaaacatga actgccaaga	1500
gaggaatggg acacaaaacc aaacactgtt ttatatttat ggtttgcaa ctggcatttc	1560
atcagtggct aaattcacag atactctata tagattgtat acagaactga gactgatttt	1620
gtaccgatta gaatgattgc tatgatcttt gagaaatttt tctgcactat ttgcactgaa	1680
atgtttattt attgttgata aattgtatca tatttaagtt ccaactgctg tctcttacc	1740
ttgattaaat gcctatgcat gtacttttag ctagttttta atattttata aaacttcatt	1800
taaatttgta tttttaactt gaagttccat ttctttatca aggatggtat ttagattttt	1860
ttctcttaa cttttttca aaaactattt tcaactgtga ggaaaccctt atttttcttt	1920
ctttgtggat aaaactttca aaagcaattt aagataattca tagtgtagg aaacacaaa	1980
cctgcctatg tgccatctca caaaagaaac ttttaatacc tacaataaat caaaagaata	2040
aaccagctgt tcttataat tgtttcattt ttaaaactaa agatgcattt aagaagcaat	2100
acaagtaaat attttaccta ataggaaaaa aaaaagttgc ctttcattta aaccattcca	2160
acagaaattc ttatgctaatt taaaacata tatatatctg taggtttgt ggttggatag	2220
gttttctaaa ttctaattgt taaaacaat ctttatgtta atataacta aatctataca	2280
caaaaaagt cagtgaactt ttctgacctt tactgtgagt taccttttcc taagaggaaa	2340
gctatagtaa taagtaaaat ttaattttta ggcaatcctg atttttaatg aatttaattg	2400
agtgttcttg tatactacat tgagcagttt gcttctatac cgtgtcacia aattcatgta	2460

tttcttgaga agccctaaaa gctcataaag gaaaatgccg tgaactatgt agctcaggct	2520
tggttaaggtg ccatctaaat tacaaaacaa actaatgcat aattttgctt aaatttcac	2580
ccagtatgat tgtcttccca acaccagcat atagtataga ttgtctgtct tttttatatt	2640
ttttagtctt tcctgtacat gtttttggca ataaagtat aggaagaaca aaattatfff	2700
gttagaatta aaacatgctt aatatttagt ctgtttgtgg agggcaggta ttcacgtgga	2760
ctgagatata atgttggata cagaaaataa ctttcattgt cttctgaca ctgtgctaag	2820
gacatgctgt taaagcttca aagtgaccag atgaggaagg aataattaat tattactcct	2880
gattttaga taactgaggt aagagtgttt caaatttatg atagtctttt gggtattcag	2940
aaacctttcc ttatactgca ctggccacca gagcttaatt ttcccagcag ttacagcaat	3000
gggagataga acagtctcaa tcttttgcca accatcaggt tcctagaaac caggtaggtg	3060
tatccataa caagggagga gcataccaca gccctcatt tgattaattc atttgatcta	3120
tctatgttat taagtaccta ctaggaataa ggcatgttgg aaatactata caaagataaa	3180
cattgtttag atgcttatct actttccttt tcaccagaaa aacagaaaaa aaagaaacat	3240
tttcttacag agtaaaaatg ttctacataa tcacatgagt agttcatctc agtgtttttt	3300
attctttaaa gtigaactat cccagtttca ttctatacca ttcatggat aaccttgta	3360
caaccagtc atgaaacaga gcagtgtgat cagtatatctg catttaacaa atagacaaat	3420
cagtttcatat aaaggttatg tatgtcacc acgatgaaa gaatctgcat ttgaatatgc	3480
ccgtatgaat gtgggttctg tttttgcaac agagattaag tgaccatttt ttctaatttt	3540
atggctatat attttcttca taaaaattgg tcacatcgga gaagcagtc cacaggaaaa	3600
atgaaatgca tigtgaaagt tgtattctga ttttacaaga tgagatagaa atcagaatta	3660
aagaggaata cttaggagt actaggctaa tcagtgtacg aatttgtcat aggtagagat	3720
ttaaaggta atatcttaaa atagaagaaa attctaaatc aatcaatcag tgagatataa	3780
actaaacaga cccacttcaa agttgaaaga aatttctagg cataaattga gactaggaaa	3840
tttatatcag aatagagggt gcttgacaca tatatatgct taaattgaag gacagctcag	3900
attcatTTTT aggagaagaa agtaaaactaa tgtgctctta aagaataaaa atttattcta	3960
tggtttctgt ctctgatcat cacttccat tctataaaaa gctcagttac tgatttgctg	4020
ggtcatggtc aaaattctta cctatttatt tcatatcaac tttaaaaaat aaattacttg	4080
cattctatat attactaatt gggaagtaat atgcctcaaa tcagttttat actggattat	4140
tccctatgct ttaaaccact gctctcaata aaacacttcc tgattaatgt ttgattatta	4200

gatatatttag tcttgttggg gatatttttag tcttgttggg ttagccatgc tctgaagaat 4260
ctgtgaaagt acagtaaagt ttttaataagc aataaatgta accttttata taaatctcag 4320
tgctaggtta acttctaata agcagacgaa catgttacat aaattataat gtctgtcttg 4380
taaaaaagtt gaggggacta aaagtttatg actctgatat ggaagtgtgc atattaaaaa 4440
actacatttt aaaacatcaa atatttatac tatttgcttt tcaaataaaa gcatagtgtc 4500
gtttggcata 4510

<210> 35

<211> 11062

<212> DNA

<213> Homo sapiens

<400> 35

gcagatcggg agcgggtgccg agaaaaattt ccttactaga tgacatttca tcgcaatgtc 60
cgatcgtttg gggcaaatta ccaagggcaa ggatgggaaa agcaagtact cgactctcag 120
cctgtttgat aagtataaag gaaaatcagt agacgcgatt agatcctcag ttattcctag 180
acatggctta cagagtcttg ggaaagtgtc tgcagcccgg cgcatgccac cgcctgcaaa 240
cctgccaagc ttgaagtctg aaaacaaagg aaacgacccc aacatcgtga tagtaccaa 300
ggacgggacg ggatgggcaa acaagcagga tcagcaagac ccaaagagtt ccagtgcgac 360
ggcctctcag ccgccggagt cgctgccgca gccgggtttg cagaaatctg tctccaattt 420

gcagaaaccg acacagtcaa tcagtcagga gaatacaaat tcagtgccag gtggacaaaa 480
gtcatgggca cagctgaatg gaaagccagt aggacacgaa ggtgggtttaa ggggctcaag 540
ccgactgtta tccttctctc ccgaggaatt tccgacgtg aaagcagctg gagggcagga 600
caaggtggc aaagaaaagg gcgtcttaga tctgtcgtat gggccaggac caagcctccg 660
ccctcagaat gtgacaagct ggaggaggagg cggtagggcga cacataattt ctgccacgtc 720
tctgagcacc tccccaactg agctgggcag caggaaactcg agtacgggag atggagcccc 780
ctctctggca tgtaccagcg attctaagga cccctctctc cgcccggctc agcctgtccg 840

aaaaggggct tcacagtcca tgggaaatgt ataccacca cctacatacc atgacatgct 900
tcctgtcttt atgtgttcgc cgaagtcac agaaaaccag ggtacagtgg aacgaggctc 960
ttttccctt cctcagctcc gccttgaacc tcgagttcct tttagacagt tccagatgaa 1020
tgaccaagac ggaaaagaaa acaggctggg attgtctcgc cactcggc cactaaggca 1080
gctggtggag cgggcaccac ggcccacat tatcaatgcg gaaaacctga agggccttga 1140
cgatctggac gccgatgccg atgatggctg ggcaggcctc catgaagaag tggactattc 1200

tgagaaactg aagttcagtg atgatgaaga ggaggaagaa gttgtgaagg acggcaggcc	1260
aaagtggaac agttgggacc ctaggaggca gcggcagttg tcaatgagct ctgcagacag	1320
tgccgacgct aagcggactc gagaggaagg gaaggactgg gctgaagcag tgggtgcgtc	1380
ccgtgtggtc cgaaaggcgc cagaccctca gccaccgccc aggaagcttc atggctgggc	1440
accaggccct gactaccaga agtcatcaat gggcagcatg ttccggcaac agtccatcga	1500
ggacaaggag gacaagcccc caccaaggca gaagttcatt cagtcagaga tgtccgaggc	1560
ggtggagcga gcccgaagc gccgggaaga agaggagcgc cgagcccgagg aggagaggct	1620
ggccgcctgt gctgccaac tcaagcagct ggaccagaag tgtaagcagg cacgaaaggc	1680
aggtgaggcc cggaagcagg cagagaagga agtgccttgg tctccaagtg ctgagaaggc	1740
atctccccag gaaaacggcc ctgctgtcca caaaggctcc ccagaattcc ctgccaaga	1800
gacccccacc acattcccag aagaggcacc cacagtgtcc ccagcagtgagg cacagagcaa	1860
cagcagtgag gaagaggcca gagaggctgg gtcccctgca caggagtcca agtatcagaa	1920
gtccccttct ccccgattcc agcgccagca gcagcaacaa cagcaggagc agctgtacaa	1980
gatgcagcac tggcagccgg tgtaccccc gccgtccac ccccgagcga ccttttacc	2040
acaccacccc cagatgttgg gcttcgatcc caggtggatg atgatgcctt cctacatgga	2100
cccacgtatc acgcccactc ggaccccggt ggactttctac cctccgccc tgcattccctc	2160
aggactgatg aagcccatga tgccccagga gtccctcaat gggacaggct gtgcgtctga	2220
ggatcagaac tgtgtgcccc cactccaaga aagaaaagtg acccccatcg actaccccc	2280
tgtgtggagc ccagagggtt acatggcact gcagagcaag ggctaccgc tcccgcacc	2340
gaagtgcagt gacaccttgg ctatggacat gcgtgtcagg aatgaaagct ctttctctgc	2400
ctcactcgga agggcagggg gcgtaagtgc tcagcgcgat ctctttgagg agagagggga	2460
ggagtacttg agtgcttttg acaagaaggc ccaagcagac tttagacagt gtattctcttc	2520
tcaaagaata ggccaggagc ttttgtttcc accccaagaa aatgttcagg atgcagggtgc	2580
tcctgggggt cacacccaaa acctcaggtg ttcccattg gagcctgact ttgtccaga	2640
tgagaaaaag ccagagtgtg gcagttggga tgtagccac cagccagaga ccgctgacac	2700
agcccatggt gttgagcggg agacaccccg ggaggggacg gcctttaaca tctctcctg	2760
ggacaagaac gggagcccca acaaacagcc atcctcggag cctgaatgga ctcccagacc	2820
ccggagctcc agcagccagc acccgagca gacgggcagg acccgaggt cgggacccat	2880
caagaaacca gtctgaaag ccctcaaggt ggaagacaag gagaaggagc ttgagaagat	2940

taagcaggag ctaggggagg agagtacccg gctggccaag gagaaggagc agagccccac	3000
ggcagaaaag gatgaggacg aagagaacga tgcctctctg gccactcct ccaccaccac	3060
tttgaggac aaaggccctg gccatgccac ttttgccgc gaggccacca aatttgaaga	3120
ggaggagaaa cctgacaagg cctgggaagc cagaccccca cgagagtcca gcgatgttcc	3180
ccccatgaag agaaataact ggatctttat tgatgaggag caagcctttg gggtcagagg	3240
acaggcccg ggccggggcc gtggtttcag agagttcact tttcgtggtc ggcctgctgg	3300
cggaaatggg agcggcctct gtggtggggg ggtcctgggg gcccgagca tctactgcag	3360
cagtcagcgc agcgccctg gccggggcct gcgagagttt gcgcggccag aggactgccc	3420
cagagccaag ccccgacgga gatttgccag tgagacccat agcgagggct cagagtatga	3480
agaacttccc aagcgccgcc ggcagagggg ctccgagAAC gggaatgaag gctcgctcct	3540
ggagagggag gagagcacct tgaagaagg cgactgcaga gattcttggc ggtccaacaa	3600
ggggtgctct gaggaccaca gcggtctaga tgccaagagc cgaggccctc gggcctttgg	3660
gcgagccctc cctccccgc tgagcaattg cgggtatgga cggagaacct tcgtctcaa	3720
agagtcaccc cactggcaga gcaaaagtcc aggcagctct tggcaggaat atggcccttc	3780
cgacacatgc ggatcccgc gacctacaga cagagactat gtcccagatt cctacagaca	3840
ccctgacgca tttggtggcc ggggctttga ggacagccgc gcggaggaca agagatcctt	3900
cttccaagat gaacacgtgg cagattctga aaatgcagag aaccggccct tcaggagaag	3960
gcgcccccca cgccaagata agccccctcg attccggcgc ctccggcaag agcgggagtc	4020
cctgggcctg tggggacccg aggaggagcc ccacctgctg gcaggtcagt ggccaggcag	4080
gccccaaactg tgttctgggg acaagagtgg cactgtgggc gcaggtccc ctgagctctc	4140
ctaccagaac tcctccgatc acgccaatga ggagtgggag acggcctccg aaagcagcga	4200
cttcagcgag cggcgggagc ggcgggaagg ccttgggtcc gagcccgact ccaggtgga	4260
tggtggcctg tcgggggcta gtttgggtga gaagaaggag ctggccaaga ggagcttctc	4320
cagtcagaga cccgtggttg acagacagag ccgaaagctg gagccgggag ggtttgggga	4380
gaagcccgtt aggccaggtg gtggtgacac ctccccctgc tatgagagcc aacagaatgg	4440
gacgcctttg aaagtgaAAA gatccccaga caggccttg cctggaggtc ttagtggctg	4500
cagcagtggt agtggccact cccctatgc cctggagcgg gcagcccatg ccagtgtga	4560
ccttcccgaa gcctccagta aaaaggcaga gaaggaggcc aagtggctg ctccgagggc	4620
aggtgaacag ggagaggcca tgaaacagtt tgacctgaac tatggaagt ccatcattga	4680
aaattgctgg tccagcccc gggaggagag tgagtggtg tctatggtg gcgaaggctt	4740
catcgaagtc ctgaccaaga agcagcgccg cctgctggag gaagagagaa gaaagaagga	4800

gcaggccgtg caggtagctg tcaaaggtcg aggcctttcc tcccgtattc ctctcgatt 4860
tgcaaaaaag cagaacaact tatgtctgga gcaaggtgac gtgaccgtgc ctggcagcag 4920
cctgggcaact gagatctggg agagcagcag ccaggctctc cctgtgcagg cccagccaa 4980
cgactcctgg aggaaagctg tcactgcctt cagcagcacc gagactggct ctgcggagca 5040

gggttttaag agcagccagg gagatagtgg cgttgacttg agtgccgagt ctcgaggagtc 5100
gtctgcgacc tctcgcagc gcagctcccc atatgggact ctgaagccag aggagatgag 5160
cgggccccgc ctggcggaac ccaaggccga cagccacaag gagcaggctc caaagccatc 5220
tgagcagaag gattcagaac aaggctctgg acagagcaag gagcacagac caggacccat 5280
cggcaacgag cgttctctga aaaacagaaa gggctcggag ggggccgagc ggctgcaagg 5340
ggctgtcgtc ccgctgtta acggggtgga gattcacgtg gactccgtgc tgcctgtgcc 5400
acccattgaa tttggagtca gtccaaaaga ctccgatttc agcttgccac ctggttctgc 5460

ctctggctct acitgggagtc cagtgtttaa acttcaggat gccttggcca gtaatgcagg 5520
gttaacacag agtatcccca tctcggcg ggaccatcac atccagaggg ccatcggtct 5580
ctcccaatg tcttcccca ccgccgacct tactctgaag atggagtctg cgcgcaaggc 5640
ttgggaaaac tccccagtt tgccggagca gagctctcca ggcggcgctg gctcaggcat 5700
ccagcctcca tctctgtgg gtgcctccag cggggtcaac tacagctcct tcggtggagt 5760
gtccatgcca ccatgcctg tggcctctgt agcacctct gcttctatgc caggcagcca 5820
cctccgccc ctgtacctg atggccatgt gtttgcaagt cagccccggc tggttctca 5880

aacgatacct cagcagcaga gttaccaaca ggccgcccgt gccagcaga tcccgatctc 5940
ccttcacaca tctctgcagg cacaagctca gcttggactg aggggtgggc ttcctgtgtc 6000
ccagtccag gagatcttca gctccttgca gcccttcaga tctcaggtgt acatgcaccc 6060
cagcctgtca ccgccagca ccatgatect ctctgggggc acagccttga agcctccata 6120
ctcgcgcttc ccaggcatgc agcccttga gatggtgaag ccgcagtctg gtcacccta 6180
ccagcccatg agcgggaacc aagccctggt ctacgagggc cagctcagcc aggctgctgg 6240
cctgggtgcc tccagatgt tggactccca gtccccacag ctgacctgc cactgcctcg 6300

gtacggctcc gggcagcagc cactgatcct gccccagtct attcagctgc cacctgggca 6360
gagcctctcc gttggggccc cccgaaggat tctccgccc ggggtcccag cgcagctct 6420
gaacaccagc agagagccct ctcatatgga gatgaaaggc ttccactttg ccgacagtaa 6480
acagaatgtc ccttcaggag gccccgtgcc atcgccacag acctacaggc ctagctctgc 6540
tagccccagt gggaagccct ctggatcagc agttaacatg ggctctgtgc agggacacta 6600
cgtgcaacag gcaaaacaac gagtggatga gaaaccagc ctgggagccg tgaagctgca 6660

ggaggccccc tcggctgcct cccagatgaa gcgaaccgga gcgatcaagc ctcgggctgt 6720

 caaagtggag gagagtaagg cctgacagtg cctggctgcc acctcgctc tccctactga 6780
 ggacggtgcc gccatgcggc ctcgacacag ccgacactcg ggagcctcac cagatccacc 6840
 gtccaaatgc gtggcccaga ctgagagacc tcctcctct cactccccga aagctccgtt 6900
 gtcaaccagc ttgcaccgt ggatatatgg cattgaccg cttgctttga tacgaaacaa 6960
 aaaagcagac gactcctca tcccatctgc tctaccgtg actgtggagt gacgcctcct 7020
 gtgcagtga gatttgcct ccctgcctcc tcctgtcct gccgcgcagc cagggcgctt 7080
 tctcagcagt gcttcggcc cagccgcca tcctaggca cagtatttg gcagcagggt 7140

 cattttactt tgaggctttt tgttttaaaa ttagccaag gtttttaca aggggaaagg 7200
 aaaagaaaac aaaaacgca gctccatgtg tatagctgaa cttttatatg tttcttgcca 7260
 gccccctcgc tccttccat ctctagctc tgcctgttt agtttgatac gtcactgcag 7320
 taccttaaga ggtgactctt aagaatgcat ccctcctga ttcctcagct ggttcacct 7380
 tgaggttatt tgcaaaaaga aaaggagggt cttgaggga ccgattgca gcattctggt 7440
 gcctggctcc ccgcctggga agcgatggg tgcagagc agcaggcagg ttgggggagg 7500
 gggggggtca tagttgggtt ccagctcctg gcttgatgag ccagggcgc ttacaggcag 7560

 cccatgaagt tgatgacagt ttagcatga gaacacaca gggtcctgt cctgggctcc 7620
 tctaaagcca gtggatgtgc tgggcaccag agacaaatca tggagatggc tgctggtggc 7680
 tcccaggttg gccagatgg ggtgagctga cataccacag gccatccca ggcctcgtg 7740
 gctctgcttc tggggtcca taccctgcc tgcagggtg ctgtgtttt cacacattc 7800
 tttccctgaa gccttctga acctgtcatt ttccttctt cctcttcgg agcctgctgc 7860
 tttctctgga cctgtctcca cctccacac agctcatct gaacaccact tggatgga 7920
 gggagtggac ccgtgtgtg tcccaagtg aggcactgg gatttgtcc tttctcct 7980

 ttgcttact cccagcagca gaccagggt gtcaggacag gaggcctga gctaagcagt 8040
 aggcacagt ctgtttgtc ttcagacggc gggggcagg ccagggtgag gctgggtgga 8100
 gggtgacca aggtccaaag ggcctgcga gcctccgga gggcagctt tccagccaga 8160
 ggcttgtgt agccatctg tctgggctt gtttttaagt aagaacaag gaaatcactc 8220
 cagattctgt cattccaagg aaagggaagg ggacagtca ggtttctcag ctgttcttag 8280
 gggctactga gcgtctacct cctctccag aggaggctg ctcagaacac ctaggagg 8340
 gggccgggga tgcaccccc accagaggct gccttcagc tctcacgggt gcaggacagc 8400

gctcaggctt gggctctaag ctctgtgtct agtgtagaac atggggaagg agcatcttag	8460
gaactgctga agtaacttct tactgtcttc acaattctaa ggaagcggga gaacggcctc	8520
ctaccaacag cgcccccccc agagctgcct gggaaaaggc agttttactg aaaggtgctt	8580
tactgttcac ctgcatcttt cagcagctcc cctcctgccc tcacctggtc ttttcctctt	8640
ttatcccaag cttttatgct tgagtccttt cccaggggc tgcccaccg acagtccag	8700
gcattcccta cctgagcttc ttgtctgctt ttccttctcc cactgcaagc ggctgcttgt	8760
ggggcctggg atgagccctc tctgtcccca ccggccctcc ttgccaagcc attcctgggt	8820
gagttcaggc ctgcgggagc cacacattca tctccacctg gacacttgag ccgcatggcc	8880
agaccctcc cactgatgc ggtggtgctg gtgatttgct aaaagaaagc cttctggatg	8940
ctgttaagat gtacccttca ggtgaacctg gtatcagacc cacagtactt gctgtttgag	9000
aaaaaataaa aacaaaaagg tcacctgttc tccagccctt ttctcttacc tggatatttc	9060
ttcctttctc ctccccacc ccaataaaaa aaacaaaaaa cactagaatt tatttatatg	9120
tattgatgtt gtaggtctag gtgaaaaaaa aagaagtaaa tgtttcactg ctctatttat	9180
atataatgtc tgaattaatt ctgtgcagga aaggccagga aattgcatgt gaagttcggt	9240
gcagtcacca ccgtgtgtg acctgagctg cagtctcttc gctgagatgc aggttttaaa	9300
tgagacttgg ggggctgagg gcaggcctca ggcctcccag cgccccaacc cctccttgg	9360
ctaataaagt gcagttctta gtgcagagat gttttaaggt gcaatatac tcttccttc	9420
ccgtggtttt agagccaagc tcaaggtagt aggacgtagg gtcttatttt gttttcaaac	9480
ccccatctc agagcgaga tacatgcaga ggcttctgcc aggataccac ggggccttag	9540
tgggaacagg tggagaccag cacttccctt tctgtctgct gaggtaggga ttggggggtc	9600
agaaccact cacttttgcc tgttaaagt gcctcctga cgctggcagc tctgccttgg	9660
tactgggga tgcggtcgt tgctcagcca ccagtggcct tgcggtattg tccaccatcc	9720
actagagtgg gatgaagtc agagtgtggg tatactctc agatgcccac ctaccactg	9780
gggacttcaa tgccagctgc atttggtttg gttttcttaa ctgttggtt cttcccacag	9840
cgttttttgt ttttttttaa acattcatai tgttttcaaa cttggaattc atagacactc	9900
tggctctagg ttcttaagg gggaaaacaa aagatgactt tattcacat tcaagaaat	9960
cagttcagtt ccaaagctg ggtccttcca gccacttcta gggacactgg ggaaccttgt	10020
taaacttga catcagtgt ctcagccgt gctgtcacc tcctatcttc tggatctgcc	10080
ttcgcgatgg tcagtacag cttctggaag ctgagcacac acaggtgcac agccatgctg	10140
tggcttgccc tgcacggca gcatggcagc tctggtggag cttctcctt tgccatttgg	10200
ttcccctgtg ccaagtagct gcaggctgcc cctcaaactt tcatttgtcc cttttcactt	10260

cctgcagaac aagcctgggt tagagggtct gctggaaatg gcctttgaag accaaggata 10320
ccaggatgtg tgcactctgt cgtgttctgt gatgaatggg aaacgtaggc ttccagaaag 10380
ccagctctct tctgaaatgt gacggaccta agcaggaagt catccaggac aggagtggct 10440
cagtgttggg gatggacgct gtcgccagc catgctccac cagggccacc aatgtgtagt 10500

tggctggtgg tcttcgggca tgtgagacct gctcttact gtttccacc cacttgggtg 10560
cctccaggat ggtagtggca ccctcagagc cccatcttca gcatgttctg aagcctcaga 10620
gtggaaattc ctgctaaggc tctgtgtgga cgcctttctc ccgtgatcta aaggggacac 10680
tgtactcaag cttttgacct catgccttgt gtagtaaaaa aggatttggg ggttttgttt 10740
ggttctctag agggttgtgt tttgtttttg tttccttttg tttatgtttt ggcctttcct 10800
ctttgtcttt ccatgtagac cagatatttg aaagggcaga cgatggctag aggtgtaatg 10860
tgcagcttgt ttatacggtta ttttgggaaa cttaccttgg atgggaaatc gaatcgtgga 10920

ttcaccaggc cgggtgctggc acactcacc tcgccctttc cctccggttc agtacctatt 10980
gtttctcctt tcaaataatgt gattgtacta gctctttcca tatgaaagaa ttctccttat 11040
ttaaataaaa aaagtttaaa aa 11062

<210> 36
<211> 7689
<212> DNA
<213> Homo sapiens
<400> 36

tcccacagtg cctggcccag aagccttgct aaatatttga acaggattgc ccaatacttt 60
tctgctgtga gaatgtaaga tggatccaga agagcaggag ctcttaaatg attacagata 120
cagaagctac tcttcagtga ttgaaaaggc tttgagaaat tttgagtcct cgagtgaatg 180

ggcggatctc atatcttcac ttggcaaact caacaaggct cttcagagta acctgaggta 240
ctccttgttg ccaagacggc tctcatcag caaaagatta gctcagtgtt tgcaccctgc 300
cctgcccagt ggtgtccact taaaagctct ggaaacctac gagattatct ttaaaatcgt 360
ggggacaaaa tggctggcca aggacttgtt tctgtacagc tgcgggttat ttcctctcct 420
ggcacacgcg gcggtgtcgg tgaggccggt gctgctcacc ctgtacgaga agtacttctt 480
cccactgcag aagctgctcc tgcccagtct gcaggccttc atcgtgggcc tgctgcccgg 540
ccttgaagag ggctccgaga tctccgacag aacggatgct ctgctcctga gactgtcgtt 600

ggtggttggc aaagaggtgt tttaaccgc cctctggggg agcgtcctgg ccagcccgtc 660
catccgcctc cctgcctcag tcttcgttgg ggccacatc aacagggatg cccccggccg 720

ggagcagaag tacatgctgg ggaccaatca ccaactcacg gtgaagtctt tgcgtgcctc 780
 cctgttggac tcaaatgttc ttgtgcaaag aaataatctg gaaatcgctc tgtttttctt 840
 cccatthttat acctgtctgg attccaatga gagagccatc cccctctca gatctgacat 900
 cgtgcgcatt ctctcagccg ccaccagac cctactgaga agggacatgt ccctgaacag 960
 aagactgtat gcatggttac taggctcaga cataaaagga aataccgttg tgccagaatc 1020

 tgaaatctca aattcttatg aagaccagtc gtcttatttt tttgaaaaat actccaagga 1080
 tcttttagtt gagggtttgg ctgagatatt gcatcagaag ttcatagatg ctgacgtgga 1140
 ggaacgcat catgcatacc tgaagccttt tcgctgcctc atcagtctgc ttgacaagcc 1200
 agaaataggg cctcaagtgg ttgggaattt gtttctcgaa gtcacaggg ccttttattc 1260
 ttactgcaga gatgcccttg gctctgatct taaacttagc tacaccaga gtggaaattc 1320
 gctgataagt gcaatcaagg aaaacagaaa tgcctctgag attgtcaaaa cggtaaattt 1380
 gctgataact tccttaagca cagactttct ctgggattat atgacaaggt gttttgagga 1440

 atgctttaga ccagtgaagc agcgttacag cgtgaggaac agcgtcagcc ctccccccac 1500
 ggtctcggag ctctgcgccc tcttggtctt cctgctggat gtcattcctt tggaaactta 1560
 ctctgaggtg caaaccagc atctccctca ggtgctcggc tgcctggtgc agcctcttgc 1620
 tgaggacatg gaggccttaa gtttacctga actcacgcac gccttgaaga cgtgtttcaa 1680
 ggtgctcagc aaagtcaga tgcctccttc ctacctgac acggagtcca ccagcggaac 1740
 ctcgagtcca gtaaaagggtg aaaacggcaa aataattttg gaaacaaagg cagtgtattc 1800
 cggtagcaga gatgcttctg tccccctct gaagtctgag gacagtggga tcgggctcag 1860

 tgcctcgtca ccggagctct ctgagcactt gagggttcct cgagtttctc tggaaaggga 1920
 cgacgttttg aagaaggcgg ggagcatgca gaggacgttt ctttgcattc aagagctaat 1980
 cgccaacttt gccagcaaga acatthtttg agtacagctg acagcgtcag gagaagaaag 2040
 caagtccag gagcctgcag ggaagaggga cagggatggg acgcagagcc tggcagccaa 2100
 tgattccagc aggaagaact cttgggagcc caagcccatc actgtgcctc agttcaagca 2160
 gatgctgtca gacttgttca cagcacgagg gtctccattc aagacaaaaa gttcagagtc 2220
 accatcgtct tcgccagca gccctgccag gaaaaacggg ggagaatggg atgttgagaa 2280

 ggtggtcatt gacctggggg gttccaggga ggaacgcagg gaggcctttg ccgccgctg 2340
 ccacctgctg ctggattgtg ccactttccc tgtctacctg tccgaggaag agaccgagca 2400
 gctctgtgca acgtcttcc agctgccagg agccggtgat tccagtthtc catcttggt 2460
 gaagtcctc atgactattt gctgtgtgt gactgactgc tacctccaga acgtggccat 2520
 ttccactctg ctggaagtga taaaccattc ccagtcctg gcgcttgtca ttgaagacaa 2580

gatgaaacgc tataagagct ctggacacaa cctttttttt ggcaagctgc agatggtgac	2640
ggttcctccc attgctccag ggatatgaa agtcattgca gagaaaacag atttctatca	2700
gagggtggct cgtgtgcttt ggaatcagct gaacaaagag acccgggagc atcacgtcac	2760
ctgcgtagaa ttgttctacc ggctgcactg cctggccctt acggccaaca tctgcgagga	2820
catcatctgc catgccctcc tggaccctga caagggaaca aggcctggaag ctctgttttag	2880
attttccgtg atctggcatc tgacaagaga gatccaaggc agtcgagtaa catctcacia	2940
tcgtctcttt gataggtcct tgtttgtcgt gctggacagc ctggcctgca cggatggtgc	3000
catcgttgcg gcagcccagg gctggctggt gcgtgcgctc tccctcgggg acgtggctcg	3060
catcctcgaa cccgtgctcc tgctgctgct gcagccaaaa acccagagaa cctccatcca	3120
ctgcctcaag caggagaact cggccgatga ctgacaccgt tggtttaaca ggaagaaaac	3180
ctctttcaga gaggcatcg cagtccccga gcctcaggag agcggctctg aagagcacct	3240
gcctctgagc cagttcacca cagtggaccg tgaagccatt tgggccgaag tggagaagga	3300
gcccagagaag taccgcctgc gaggcgagct gagcgaggaa gagctgccct actacgtgga	3360
gcttccagac aggacggccc acggcgcccc ggacagcagc gagcacaccg agtctgcaga	3420
tacaagctcc tgccacacgg acagcgagaa cacgtcctcc ttctcctccc cttcccacga	3480
cctgcaggag ctgagcaacg aagagaactg ctgtgcaccc atccccatgg ggggcagggc	3540
gtacccaag cgctcggccc tgctggcggc cttccagtca gaaagcttca aggcctggggc	3600
caagttaagc ctggtgcggg tggactcgga caagacgcag gcttctgagt cgttctccag	3660
cgacgaggag gcggaacttg agctccaggc cctcaccaca tccaggctgc taaagcagca	3720
gcgggaaagg caggaggccg tcgaggcctt gttcaagcac atctgtctct acctgcagcc	3780
ctacgactct cggcgggtcc tctatgcctt ctcggtgctg gaggtgtgct tcaaaaccaa	3840
ccctaaggaa ttcatcgagg ctgtgtccag gactagcatg gataccagct ccaccgcga	3900
cctcaacctc atctccaacc tctcgtctcg ccaccaggag gccctcattg gccagagttt	3960
ctacggaaag ctccagacc aggtccccaa cgtgtgcccc cactctctgc tcttgagct	4020
gtcacctac ctctgcctga gcttctctgc ctctactac ccttgctatt tgaaggtctc	4080
gcaccgagac attctcgga accgggacgt gcaggtcaaa agtgtcgagg ttttgatcag	4140
gataatgatg cagctggctt cagtggccaa gtcttcggaa ggaagaacg tggagtcat	4200
ccacagcttg ctgcagaggt gcaaagtcca ggagtttctc ctgctctccc tgtcggcgtc	4260
catgtacacg agccagaagc gctacgggct ggccaccgcc caccacggca gggccctgcc	4320

agaggacagc ctctttgagg agagtctcat taacttgggt caggaccaga tctggagtga 4380

gcacccgctg cagattgagc tgctgaagct gctgcaggtg ctgattgtct tggaacacca 4440

cctgggtcgg gcccatgagg aggcggaaaa ccagcccgac ctgtcccggg agtggcagag 4500

agccctgaac ttccagcagg ccatcagcgc cctgcagtac gtgcagcccc accccctcac 4560

ctcccagggt ctcttggtct ctgcggtggt gaggggtctg cagcccgct acggttacgg 4620

catgcatccg gcctgggtga gcttggtcac gcattccttg ccctacttcg gaaagtcct 4680

gggctggacg gtgacaccct ttgttgcca gatttgcaa aacttgatg acttggtcaa 4740

gcagtatgaa agcgaatctg tgaagctctc tgcagcaca acctccaaga gggaaaacat 4800

ttctccagat taicactca ccttctaga aggtctaacg accattagtc attttgtct 4860

tttgaacaa gccaacaaa acaaaaagac catggctgca ggtgatcctg ccaacttgag 4920

gaatgccaga aatgccattt tggaagagct gcctcgaact gttaacacca tggcccttct 4980

ctggaatgtt ctcagaaagg aggagactca aaagagacct gtcgatctcc taggggccac 5040

gaagggatcc tcttcggtt actttaaac caccaaaacc ataagacaaa aaattttaga 5100

cttcttaaac ccttgacgg cccatcttgg ggttcagtig acagcggtg ttgcggcagt 5160

gtggagcaga aagaaagccc agcgtcacag taagatgaag attatccaa cggcaagtgc 5220

atcccagcta acccttgctg acttggtgtg tgcactcagc accctgcaga ctgacacgt 5280

gtgcacctg gtgaaggagg tggtaagag gccacccaa gtcaaagggg gtgatgagaa 5340

atcggcccta gtggacattc ctgtgttgca gttttgtat gcttttctcc aaaggtccc 5400

agtaccagcc ttgcaagaga acttttcttc actgttggga gtattgaaag agtctgtaca 5460

gttgaatcta gccccactg ggtattttct gcttctcagc atgctgaatg actttgtaac 5520

aagaactccc aacctggaaa acaagaagga ccaaaaagac ctgcaggaaa tctactcagaa 5580

aatcctagaa gctgtgggga acattgccgg ctcttcttgg gagcaaacca gctggctaag 5640

cagaaacctg gaagtgaagg cccaacctca ggctctcta gaagaatctg atgctgagga 5700

ggacctgtat gatgctgtg cagcttcagc aatggtgtct tcattccgcc cgtcggtgta 5760

cagcgtgcaa gccctctctc tcctggcaga ggtactggct tccctcctgg acatggttta 5820

tcgaagtgat gagaaggaga aagctgtgcc gttaatctcc cgtctgcttt actatgtttt 5880

tccatactta cgcaaccaca gtgectacaa tgcctccagc ttccgggctg gcgctcagct 5940

gctgagctcc ctgagtggct atgcctacac aaagcgagcc tggaggaagg aggtcctgga 6000

gctgtttctc gaccccgtt tctttcagat ggatacttcc tgtgttcatt ggaagtccat 6060

tattgaccat cttttgactc atgagaaaac aatgtttaag gatttaatga acatgcagag 6120
cagttctttg aaactattct caagttttga acagaaagcc atgctgttaa agcgccaggc 6180
ttttgctgtc ttcagtggag aacttgatca ataccacctt taccttcac tgatacaaga 6240
acgctgaca gacaatctca gaggttgaca gacatccata gttgctgctc agatgtttct 6300
tttttcaga gttttgctgc taagaatc tctcaacat ttgacttcat tgggccaat 6360
aatggtctct gaattgattc agacattcac acagcttgaa gaagatctaa aagatgaaga 6420
tgagtcattg agaagcacca acaaagtaaa cagaacgaaa gtttcagtcc cggatgcaaa 6480

tggaccctca gtgggggaga taccacagag tgaactcacc ttgtatttat cagcttgcaa 6540
attcttgac acagcgttt cttttccacc tgacaagatg ccattatttc aaatttatag 6600
gtgggcattt attccagaag tggacacaga gggccctgcc ttcctgtcgg atgtagagga 6660
gaatcaccaa gaatgcaaac cccacactgt caggattcta gaacttctaa aattaaagtt 6720
tggggaaatc agtagctctg atgagatcac catgaagagt gaattccgc tctgcgcca 6780
acattctgtt tccagcatca ggcagttgat gccattcttc atgactctaa atggtgcatt 6840
taagaccag agacagctgc ctgctgatag cccaggaact ccattcttgg actttcctgt 6900

cacagatagc ccaaggatct taaaacaact ggaagaatgc atcgaatatg atttctgga 6960
acatccagaa tgtaaccat gtgagagaga atatgttaa tccatgtatt ggtactttac 7020
tgaaaaccag gttatattct aaagaagaaa gaaggcagga tagtgctttt gaacaagcct 7080
atttccattt tgaaagtaga tttcaggcta ggtgcggtgg ctacacactg taatctcagc 7140
actttgggag gccaaaggcag gcagatcact tgaggtcagg agttcgagac cagcctgacc 7200
aacatggtga gaccctgtct ctactaaaaa tacaaaaatt agctgggtgt ggtggcggcg 7260
cctgtaatcc cagctacttg ggaggctaag gcatgagaat tgcttgaacc caggaggtgg 7320

aggctgcagt gagccgagat cagcactg cactccagct gtgtgacaga atgagacat 7380
ctccaaaaa aaaaaaagt agatttcaga taatttactg ttcagcaaca ggacacacct 7440
ccctaaatgc cttgtaatat atttgaatct gattctgcat ttcttctca atttatgtaa 7500
tgaaaataaa attaatatat catctaacag tagcacaaaa tttgtaatat gaagtaaagt 7560
atgaagataa tgaagaagtt gttttctttg ttgaagcagt tatatgggtc tttctcagta 7620
tatttctctt ttctctaaaa gtttaactt attaaaagaa tgttattttt aacctttcaa 7680
aaaaaaaaa 7689

<210> 37

<211> 1138

<212> DNA

<213> Homo sapiens

<400> 37

```
gctctggccg gccccggcga ttggtcacccg cccgctaggg gacagccctg gcctcctctg      60
attggcaagc gctggccacc tccccacacc ccttgccaac gctcccctag tggagaaaag      120
gagtagctat tagccaattc ggcagggccc gctttttaga agcttgattt cctttgaaga      180
tgaaagacta gcggaagctc tgcccttttc cccagtgggc gagggaaactc ggggcgattg      240
gctgggaact gtatccacc aaatgtcacc gattttcttc tatgcaggaa atgagcagac      300
ccatcaataa gaaatttctc agcctggccg aaaatggttg gccccacgaa gccacgacaa      360
```

```
ctggaggcaa agagggttgc tcaacgcccc gcctcattgg aaaaccaa atcagatctggg      420
acctatatag cgtggcggag gcggggcgat gattgtcgcg ctgcaccca ctgcagctgc      480
gcacagtgcg atttctttcc ccgcccctga gacctgcag caccatctgt catggcggt      540
gggctgtttg gtttgagcgc tcgccgtctt ttggcggcag cggcgacgag agggctcccc      600
gccgcccgcg tccgtggga atctagcttc tccaggactg tggtcgcccc gtccgtgtg      660
gcgggaaagc ggccccaga accgaccaca ccgtggcaag aggaccaga acccgaggac      720
gaaaacttgt atgagaagaa cccagactcc catggttatg acaaggaccc cgttttggac      780
```

```
gtctggaaca tgcgacttgt cttcttcttt ggcgctctcca tcactctggt ccttggcagc      840
acctttgtgg cctatctgcc tgactacagg tgcacagggt gtccaagagc gtgggatggg      900
atgaaagagt ggtccccgcg cgaagctgag aggcttgtga aataccgaga ggccaatggc      960
cttcccatca tggaatccaa ctgcttcgac cccagcaaga tccagctgcc agaggatgag      1020
tgaccagtgt ctaagtgggg ctcaagaagc accgccttcc ccacccctg cctgccattc      1080
tgacctcttc tcagagcacc taattaaagg ggctgaaagt ctgaaaaaaaa aaaaaaaaa      1138
```

<210> 38

<211> 1377

<212> DNA

<213> Homo sapiens

<400> 38

```
atgctaaaac taatcgtccc aacaattata ttactaccac tgacatgact ttccaaaaaa      60
cacataattt gaatcaacac aaccacccac agcctaatta ttagcatcat cccttacta      120
ttttttaacc aaatcaacaa caacctattt agctgttccc caaccttttc ctccgacccc      180
ctaacaaccc ccctccta atactaactacc tgactcctac ccctcacaat catggcaagc      240
caacgccact tatccagtga accactatca cgaaaaaaac tctacctctc tatactaate      300
tccctacaaa tctccttaata tataacattc acagccacag aactaatcat attttatatc      360
```

ttcttcgaaa ccacacttat cccacaccttg gctatcatca cccgatgagg caaccagcca 420

gaacgcctga acgcaggcac atacttctta ttctacaccc tagtaggctc ctttcccta 480

ctcatcgcac taattttacac tcacaacacc ctaggctcac taaacattct actactcaact 540

ctcactgccc aagaactatc aaactcctga gccacaact taatatgact agcttacaca 600

atagctttta tagtaaagat acctctttac ggactccact tatgactccc taaagcccat 660

gtcgaagccc ccatcgctgg gtcaatagta cttgccgcag tactcttaaa actaggcggc 720

tatggtataa tacgcctcac actcattctc aacccctga caaaacacat agcctacccc 780

ttccttgtac tatccctatg aggcataatt ataacaagct ccatctgcct acgacaaaca 840

gacctaaaat cgctcattgc atactcttca atcagccaca tagccctcgt agtaacagcc 900

attctcatcc aaacccctg aagcttcacc ggcgagctca ttctcataat cgcccacggg 960

cttacatcct cattactatt ctgcctagca aactcaaact acgaacgcac tcacagtgc 1020

atcataatcc ttctcaagg acttcaaact tactccact aatagctttt tgatgacttc 1080

tagcaagcct cgtaacctc gccttacccc ccactattaa cctactggga gaactctctg 1140

tgctagtaac cacgttctcc tgatcaaata tcactctcct acttacagga ctcaacatac 1200

tagtcacagc cctatactcc ctctacatai ttaccacaac acaatggggc tcactacccc 1260

accacattaa caacataaaa cctcattca cagagaaaa caccctcatg ttcatacacc 1320

tatcccccat ttctctcta tccctcaacc ccgacatcat taccgggttt tcctctt 1377

<210> 39

<211> 1779

<212> DNA

<213> Homo sapiens

<400> 39

cggcgtgccc tggggcggcg cgggcgcagg ggcgctgcg cggcgggctg tcgttggtg 60

gagcagcggc tgcgcgggtc gcggtgctgt gaggtctgcg ggctgtggca aatccggccc 120

aggatgtaga gctggcagtg cctgacggcg cgtctgacgc ggagtgggt ggggtagaga 180

glagggggcg gtagtcgggg gtgggtgggag aaggaggagg cggcgaatca ctataaatg 240

gcgccgaagc aggaccgaa gcctaaattc caggaggttg ggatgaatgg gttccggaga 300

gcagagtact caaatacgtg gacaccaatt tgcagaaaca gcgagaactt caaaaagcca 360

atcaggagca gtatgcagag gggaagatga gaggggctgc cccaggaaaag aagacatctg 420

gtctgcaaca gaaaaatgtt gaagtgaaaa cgaaaaagaa caaacagaaa acacctggaa 480

atggagatgg tggcagtacc agtgagaccc ctgagcctcc tcggaagaaa agggcccggg 540

tagatcctac tgttgaaaat gaggaacat tcatgaacag agttgaagtt aaagtaaaga 600
 ttcctgaaga gctaaaaccg tggcttggtg atgactggga ctttaattacc aggcaaaaac 660

agctctttta tcttctgcc aagaagaatg tggattccat tcttgaggat tatgcaaatt 720
 acaagaaatc tcgtggaaac acagataata aggagtatgc ggttaatgaa gttgtggcag 780
 ggataaaaga atacttcaac gtaatgttgg gtaccagct actctataaa tttgagagac 840
 cacagtatgc tgaattctt gcagatcatc ccgatgcacc catgtcccag gtgtatggag 900
 cgccacatct cctgagatta tttgtacgaa ttggagcaat gttggcttat acacctctgg 960
 atgagaagag ccttgcttta ttactcaatt atcttcacga tttcctaaag tacctggcaa 1020
 agaattctgc aactttgttc agtgccagcg attatgaagt ggctcctcct gagtaccatc 1080

ggaaagctgt gtgagaggca ctctactca cttatgtttg gatctccgta aacacatfff 1140
 tgttcttagt ctatctcttg tacaacgat gtgctttgaa gatgttagtg tataacaatt 1200
 gatgtttgtt tctgtttga ttttaacag agaaaaata aaagggggtg atagctcctt 1260
 ttttctctt tcttttttt tttcattca aaattgctgc cagtgtttc aatgatggac 1320
 aacagaggga tatgctgtag agtgttttat tgcctagtig acaaagctgc ttttgaatgc 1380
 tgggtggttct attccttga cactacgcac tttataata catgttaatg ctatatgaca 1440
 aaatgctctg attcctagt ccaaagggtc aattcagtgt atataactga acacactcat 1500

ccatttgtgc ttttgtttt ttttatggig cttaaagtaa agagcccatc ctttgcaagt 1560
 catccatgtt gttacttagg cattttatct tggctcaaat tgttgaagaa tgggtgcttg 1620
 tttcatggtt tttgtattig tgtctaagc acgttttaac atgatagacg caatgcattg 1680
 tgtagctagt tttctggaaa agtcaatctt ttaggaattg ttttcagat cttcaataaa 1740
 tttttcttt aaatttcaa gaacaaaaaa aaaaaaaa 1779

<210> 40
 <211> 7827
 <212> DNA
 <213> Homo sapiens
 <400> 40

gtagtcttga cgtgagctag ctggcatggc ggctgcatt gcagcgggac actgggctgc 60

aatgggccta ggccggagtt tccaagccgc caggactctg ctccccccgc cggcctctat 120
 cgctgcagg gtccacgcgg ggctgtccg gcagcagagc actgggcctt ccgagcccgg 180
 tgcgttccaa ccgccgccga aaccggtcac cgtggacaag caccgccccg tggaaaccga 240
 acgcagggtc ttgagtctg aattcattcc tcgaagggga agaacagatc ctctgaaatt 300

tcaaatagaa agaaaagata tgttagaaag gagaaaagta ctccacattc cagagttcta	360
tggttggaagt attcttcgtg ttactacagc tgacccatat gccagtggaa aaatcagcca	420
gtttctgggg atttgcattc agagatcagg aagaggactt ggagctactt tcatccttag	480
gaatgttatac gaaggacaag gtgtcgagat ttgctttgaa ctttataatc ctcggttcca	540
ggagattcag gtggtcaaat tagagaaacg gctggatgat agcttgctat acttacgaga	600
tgcccttccct gaatatagca cttttgatgt gaatatgaag ccagtagtac aagagcctaa	660
ccaaaaagtt ccigttaatg agctgaaagt aaaaatgaag cctaagccct ggtctaaacg	720
ctgggaacgt ccaaatttta atattaaagg aatcagattt gatctttgtt taactgaaca	780
gcaaatgaaa gaagctcaga agtggaaatca gccatggcctt gaatttgata tgatgagga	840
atatgatact tcaaaaattg aagctgcaat atggaaggaa attgaagcgt cgaaaaggtc	900
ttgattctga gaatgaattt ggtagttgc agaagataca ttggtcttaa gaggatatat	960
tttgagacca atttaatttc atttataaga acatagtaat taagtgaact aagcattcat	1020
tgttttatta atactttttt tctaaaataa aacttgtaca ccagtttatt actctaaaaa	1080
gagaattaca catgccaaat ggaccaatgt ccatttgctt attggaggca aagctacaat	1140
agaagtcaga gcatcaccag aatggctctt aatgagcatg gaacctgagc aaagggaata	1200
ggtgggatga atttttttt taattgtgaa acaattcata agcacaatat gatttacaga	1260
ataataaaca ttcatgtacc cactatcagg ttaagaaata gaacatttat taatatgtag	1320
gaatgttaag aaataaaaaca tttataaga tctcagaaga ctccagtaaa tctgcaattg	1380
tatctctctc ctttttaaat gtaaatatca tcttgacttg ttaattatc ccttgcatth	1440
cttttagttt acigccaaca catatattct tcaacaatat atttaatttt gaaaaacctg	1500
aaaaaaaaa cctgttagca agtataaagg ggcagtatta ctattattgc atgaaggctt	1560
caagggaac gttacagtct ttgggtcata gtctggttc agcttctct gagagtttac	1620
agaggccaat tttagcaaa ttcatggcta aggttatgag tgagttctgc taaacagaag	1680
gctcaccaca aggtatctgg caggattata ctgggtagct ggatgttgca gaaatgtggt	1740
tagaggaagt aaactgtttt ttgatgctca cagcatgatg aatcaaaactc tgtatcttag	1800
gattaggtta aaacaatacc tttggtatga tatgagtgtt gttgctgac catgcagcat	1860
ggattggaaa gctggggtat aagcacacat gctaaagaaa aacatgtaat ttggtccata	1920
ctcacctgga tatactgttc ctacagttta aaaatacagt actatcctaa atcttgaagg	1980
caactctcag cctatccatt gagttacctt cagatctgcc ctctggttcc tagctgtctt	2040
gggactaact tctttctgc gctcagctgt tttctggatt ccatgttttc cattttattg	2100

agtactaact tgttttctg cagcacatcc tttagtagct tctagaggaa gtttgtgtgg 2160

 aggtaaaatt tttagacct tgcattgtc atgtttgatt gatactttat acgttttaggt 2220
 aggaggtaat ttcccttcag gactttaaaa atattgttgc tccattttct ttgtttctat 2280
 tgttgtattg agaaatccaa tgccattttg atttcccat cataaatttc atgatgatgt 2340
 gtcttggtgt gggctctatat ttatccattg tattgggttt taggtgaacc cttccagata 2400
 gtaactcatt tctgtcagtt ctgggaaaca cttagcattg gttgatgatt tattctctgc 2460
 tgctttgttc tccaactat tatttggatg ttggatatcc agcactgggt atctattttc 2520
 ttacctccct cccttgacce cagtctctgt tttttagctc tttagctcaa tcttccaact 2580

 ctttgcattt gtattttaaa atcttaagac cccttcttga ttgtagaag ttccttttct 2640
 tacaacaaaa aagcctttat ctatggattt gttcacagat aaggggtatt caatatagtg 2700
 tatttttttt tcatttaaaa ttgtttgcgc atctatttcc tccaaatttc tttctgtatt 2760
 tattttttgt tgtctatatt tcagactttt ccaggatata tgataatctt tggtgtctt 2820
 ctatgggtg aaagaggagc taaaaagctt ggaaagcctt tgggttgttg gaaggggctg 2880
 tcttttaggat tatctgaatg ggcttttttg ggagtccct cctccacatg aatatttttg 2940
 ttttgcaga ttccctagaa tagaggcttc caatctcctt cctggagggg tctgtccagg 3000

 aaggagattg tctaggggtc tgcagacag cagctttcag ctacttcctt gatctttttc 3060
 actaatgatt atatagtcac taaactactg tcaacaagta atagatatcc tatccttcac 3120
 ttgtttagat tatttgcga gataacctct caaaagaacc tctcaaaata aaaggttaac 3180
 aagagcctat atcttatatt tttcttctct ttatcttggt agaagatagc tattaaaacc 3240
 tgttcttttt ctgtcttgat aaacacactt caatcttggt agaatggtag atgggacagt 3300
 atatttttag acctaaagct ctgcaaatgt atgacagct tgtaagtaca ggtgctcaaa 3360
 aacatgtaaa caatcatgct ttttactctg taggaatata tttaaaattc ttgtgaattt 3420

 ttccccagaa gtaaagcaaa tcttcccca gaaataaaat taaatgtgca taatctaaag 3480
 cttttttttt ttatttgtgt aggatatata tataaaacat aatttgccat tgtaaacatt 3540
 ttaaatttac aagtcagagg cattaattac atcacaatgt tgtgaaatta ttactactat 3600
 ttccaaaatt ttctcatcac cccaaactga aactctgtaa ctgttgagca ataacctcat 3660
 tctgtatct ctcccaacce caggtaacct caaatcttc tttttatctt tgagacaagg 3720
 tctcattcta tctctcagg aggagtgcag tgggtgtgac atagctcatt gcagcctcaa 3780
 aatcctgggc tcaagcaatc ctcttgagt agctaagact ataggcacac attaaactgcg 3840

cctggctgat ttgtttttt gtagagatgt ggctctgcta tgtttcccat gctggctctg 3900
 agttcctggc ctcaagcagt ccttaagatt catccatgtt gtggcatgtg tcagaatttc 3960
 atttgtttt atgactaaat aatattccat tgtatgtata tacattttgt tcatccatct 4020
 tctgatgaac acigggatgt gtctaccttt tggctattgt gaataatgct gcagtaaaca 4080
 ttgacataac aagtatgtat ttgattgcct gtttctaagt tcttttgggt atacatcttg 4140
 agtagaattg ctagataatg tcatgtttta tttctcttgt gatttcttct tcgatccct 4200
 ggttgagtgt gtttaattct acatgtttat gaatttccca ctgtttttt gttattgatt 4260

 tccaagtcca ttccattgtg attagagaag atacttagta tgattttaat gtttttgaga 4320
 attgggtgtg ggccctgatag atggctctgc ctggagaatg ttcctcatac acttgagcaa 4380
 aatattatc atgctattgt tgactgtagt tttctatatg tctcttaggt caagggtggt 4440
 tacaatgtgt taaggttctc tttttttaa aaaattttg cacagagtat ctttttctat 4500
 gtgttccatg tatttgtgc tttggagctt tagtctcttg tagacagcat atcactatct 4560
 tgttttgtt tgtttttct gtccattctg ccaatttctg ctttttgatt ggaaaattta 4620
 atccatttgc atttaaagta attaaggaag gactttcttc taccatttaa cacttcttct 4680

 atatgacata tacttttttg gccctcatt tcctctttat ggccctcttt tctgtttttt 4740
 tgtagtgaac tagtctgatt ctctttccac tcccctttgt gtatatttgt tagatgtttt 4800
 atttgtggtt gctatgggga ttatagttaa catctacac ttaaaacaat ctaattttaa 4860
 ctgataccaa ttaccctca atagcataka aaatctctac tcctgtaaag ctctgccct 4920
 gccccctta tgtattgat ggcacaaatt gcctaataaa taatttatag ttatttgtat 4980
 gagtttgtct tttaaatcat ttaggaaata aaaagtgag ttagaaaaca gtatgatagt 5040
 aatactgact ttatatttg tcaatatatt tatcttattt tggatcctta ttcatata 5100

 tagatttgag ttactgtcta gtgcccttcc atttcggccc aaaggattcc cttatgcatt 5160
 tcttgaggg caagtctaatt tgtaataaac tcctcagct tttgttttat ctgagaatgt 5220
 ctgtatttct ccttatttt tgatggataa ttttgccaga tacatgaatt ttggtaaca 5280
 gtatttttct ttcagcactt taaatatgtc atcccactac cttctgactt catggtttct 5340
 catgagatat tagatgttat aaaatttgag gattcctcat tcttgatgag tcagtctgt 5400
 cttattgctt ttcggatttg ctcagctttt gtcttttgac agtttgatta taacgcggct 5460
 cagtgtgggt ctctgagttt atcccactta gagtttggt agtttcttg agtcatagat 5520

 ttatgtcttt tatcaaattt tggacataat tggtatttat ttcttcaatt ttttctactg 5580
 ctcttttctt ttctttctga aatattctta atgtatatgt tggctctgtt gatgctgtct 5640
 caccagtctc ttaggctgtg ttctctttt ttctcagac ttgattattg cagttgccct 5700

tctttttatt tttttcaagt ttgttgattc ttctccctgt tcagatcaac tgttgaactc	5760
ctctagtga tttatttcag ttactgtact ttccagctcc aagattttatc ttgtgttcc	5820
ttttataacg tctgtgtctt tattgatatt ctcatcttgt tcatatgtct ctttcttcc	5880
ttagttcttt gtccatgttt tcccttagct ctttgggctt atttaagaca attgtttaaa	5940
gtctttgcat agtaagtcca atgtctgtgt ttcttcaggg atggttttca ttattttgtt	6000
ttcaatgagc catactttcc tgtgtctttg tatgtgtct tttgtttgt gaaaactgta	6060
tgtttgaaca tcataacgtg gtggccctga aaatcagata ttccccctt cctgagagtt	6120
agttttattt ttattattga agattgtagc agtctattgc tacatgtgca gtcatttcca	6180
aactattttt gcaaagactg tattccttct gtgtgtcatc actgaagtct ctgttcctta	6240
gtttgtgtt aatagtttga catagatttc ctgaaagga gttaaaacta gcagaaaaat	6300
ctctctccca gtctttccag tctttgtaga ttggttctgt gctgggcttt tccattaata	6360
cttagccagg ctgtactga gcctaacaat caggcccaaa agcgtagggt ctttgcagat	6420
cttgtctgag catgttctt gctgtgtatg cacgtagttt tctaaatctc cctgtatgtg	6480
ctgttgaata ttctaatttc ccaaagaaac tcttttcag ctttttctca cagaacatag	6540
atggtttttt ggatatcttg accatagtct ttcgaccag gtgtttgcgg ttgttagttc	6600
accttacact tttttcaagc attgcctact gcttacgatg agtgctctgt caatcctta	6660
agtagcccca gacaggctac cagagactta aacaagaatt tgtaagtct gtcagcttc	6720
ctctagaaat ggggatcagg gtccaagaca gaatgcagtt gctgatttca agactgctgc	6780
aacaccaggg agcttgtgg ggaagggcaa gcagaaatgt cacaagctt tcttgccatt	6840
ttaaagttgc ctgttcttga ctacagcttt gcttcattgc tataaacttt ttactgtttt	6900
tcagagtctt gataaaattg gctatgcctg ttctgtcttt aaaaaatata tatatatttt	6960
ttagggattg gggctctact atactgacca ggctggcttt gaacttctgg cctcaagcca	7020
tcctctcatt tcagcttccc aaagtgtgc aattacacgc gtgaaccacc acaccagcc	7080
cctgttgttt ttcaatgtg cctactccac catgttctc aagtatgtat attttctaaa	7140
ctaccttgta gtgttgtgat gggaaataaa tccctgagcc ttttgaataa ctacagagaga	7200
tcaaaaactt agtttatcct attcgaagga ttagaaaaat gatatatctt tcaacttttc	7260
agggataggc tctcattag aaggctccta tgtgccgatg ctgtacaaga catttcattt	7320
ctcttaatgt ttacaacaag cttgttgcca aggtgatct tgaactcctg gcctcaaacg	7380
atcctcccag ctacgtctca caaagtgttg ggatgtctgg ccaactaatg actatcttaa	7440
ctcttgtgtt tcaatgttta tgccttcttt tatcttgact gattgtatga ctatgtcttc	7500
tagaacaatg ttgaacagaa atggtgagag cagacatcct tgctttaata tttcaccatt	7560

atatatgatg ttaggtatag atttttctca cagatgcctt ttatcagatt gaggaattta 7620

tattcctact ttgccgaaag gttttttag taggagggg tgctgaattt tgtcaaacac 7680

tttttcggtg ataattgaga tgattggttc tgcagtcac gagatgtgga ttttctcctt 7740

tattctgttc gtgagtatt acactgggtg actaatgtta aaacaacctt actttccagg 7800

aataaacctt attatctttt ttataca 7827

<210> 41

<211> 1821

<212> DNA

<213> Homo sapiens

<400> 41

tgccggtagc gacagcgcat gagcttatgt tgaggcgga gccagacca gcccttcgtc 60

ctatctgcc ctccagcac ctctcagccg taacttaaac tacacttccc agaagcctcc 120

tcagccaggg acttccgttg tcgtcagcgg aagcggtagc agatcatccc aggccacaca 180

gaggccggct tggctactat ggaggagata ggcatcttgg tggagaaggc tcaggatgag 240

atccagcac tgcctgttc ccggccccag accggcctgt ccttctctgg cctgagcct 300

gaggacctgg aggacctgta cagccgtac aaggaggagg tgaagcgaat ccaaagcatc 360

ccgttggtca tggacaatt tctggaggct gtggatcaga atacagccat cgtgggtctt 420

accacaggct ccaactatta tgtgcgcatc ctgagcacca tcgatcgga gctgctcaag 480

cccaacgctt cagtggcctt ccacaagcac agcaatgcac tggtagacgt gctgcccccc 540

gaagccgaca gcagcatcat gatgtcacc tcagaccaga agccagatgt gatgtacgcg 600

gacatcgag gcatggacat ccagaagcag gaggtgcggg aggccgtgga gctcccgtc 660

acgatttcg agctctaca gcagatcggc atcgatcccc ccgaggcgt cctcatgtat 720

ggccacctg gctgtggga gaccatgttg gcaaaggcgg tggcacatca cacaacagct 780

gcattcatcc gggctgtgg ctcggagttt gtacagaagt atctgggtga gggccccgc 840

atggtccggg atgtgttccg cctggccaag gagaatgcac ctgccatcat cttcatagac 900

gagattgatg ccatgccac caagagattc gatgtcaga caggggccga caggaggtt 960

cagaggatcc tctggagct gctgaatcag atggatggat ttgatcagaa tgtcaatgtc 1020

aaggtaatca tggccacaaa cagagcagac accctggatc cgccctgct acggccagga 1080

cggctggacc gtaaaattga atttccactt cctgaccgcc gccagaagag attgattttc 1140

tccactatca ctacgaagt gaacctctct gaggaggttg acttggaaga ctatgtggcc 1200

cggccagata agatttcagg agctgatatt aactccatct gtcaggagag tggaatgttg 1260

gctgtccgtg aaaaccgcta cattgtcctg gccaggact tcgagaaagc atacaagact 1320
gltatcaaga aggacgagca ggagcatgag ttttacaagt gacccttccc ttcctccac 1380

cacaccactc aggggctggg gcttctctcg cacccccagc acctctgtcc caaaacctca 1440
ttcccttttt tctttacca ggattgggtt cttcaataaa tagataagat cgaatccatt 1500
taattttctt ttagaagttt aactcctttg gagaatgtgg gccttgaata ggatcctctg 1560
ggtcctcttt aatctgacag atgagcagac gaggtgcatg gcctgggttg cagcttgaga 1620
gaacaaaaat attcaaacca gatgacttcc aaaatgtggg gaaagggatg gaaaatgaac 1680
ctgagatgga gtctttaatc acgggataaa gccctgtgca tctccctcat ttcctacagg 1740
taaaagacag taaagaaatt caggtcacag gccttgggag ttcattaggaa ggagatgtcc 1800

agtgtgtcc agtagaactt t 1821

<210> 42

<211> 5159

<212> DNA

<213> Homo sapiens

<400> 42

ggccccgaa gtgcgccagt cgtaccttcg cgcccgcaac tcgtctggcc gccgccatct 60
tgcgagctcg tegtactgac cgagcgggga ggctgtcttg aggcggcacc gtcaccgac 120
accgagggcg actggcagcc ctgagcgtcg cagtcatgcc ggccggaccc gtgcaggcgg 180
tgccccgcc gccgcccgtg cccacggagc ccaaacagcc cacagaagaa gaagcatctt 240
caaaggagga ttctgcacct tctaagccag ttgtggggat tatttaccct cctccagagg 300

tcagaaatat tgttgacaag actgccagct ttgtggccag aaacgggcct gaatttgaag 360
ctaggatccg acagaacgag atcaacaacc ccaagttaa ctttctgaac cccaatgacc 420
cttaccatgc ctactaccgc cacaaggtca gcgagttaa ggaagggaag gtcaggagc 480
cgtccgccg catcccaag gtcatgcagc agcagcagca gaccaccag cagcagctgc 540
cccagaaggt ccaagccaa gtaatccaag agaccatcgt gcccaaagag cctcctctg 600
agtttgagtt cattgctgat cctccctcta tctcagcctt cgacttggat gtggtgaagc 660
tgacggctca gtttgtggcc aggaatgggc gccagtttct gaccagctg atgcagaaag 720

agcagcgcaa ctaccagttt gactttctcc gccacagca cagcctcttc aactacttca 780
cgaagctagt ggaacagtac accaagatct tgattccacc caaaggttta ttttcaaagc 840
tcaagaaaga ggctgaaaac ccccgagaag ttttggatca ggtgtgttac cgagtggaat 900
gggccaatt ccaggaacgt gagaggaaga aggaagaaga ggagaaggag aaggagcggg 960

tgccctatgc tcagatcgac tggcatgatt ttgtggtggt ggaaacagtg gacttccaac	1020
ccaatgagca agggaacttc cctccccca ccacgccaga ggagctgggg gcccgatcc	1080
tcattcagga gcgctatgaa aagtttgggg agagttagga agttgagatg gaggtcgagt	1140
ctgatgagga ggatgacaaa caggagaagg cggaggagcc tccttcccag ctggaccagg	1200
acaccaagt acaagatatg gatgagggtt cagatgatga agaagaaggg cagaaagtgc	1260
ccccacccc agagacaccc atgcctccac ctctgcccc aactccagac caagtattg	1320
tccgcaagga ttatgatccc aaagcctcca agcccttgcc tccagcccct gctccagatg	1380
agtatcttgt gtccccatt actggggaga agatccccgc cagcaaaatg caggaacaca	1440
tgcgcattgg acttcttgac cctcgtggc tggagcagcg ggatcgctcc atccgtgaga	1500
agcagagcga tgatgagggtg tacgcaccag gtctggatat tgagagcagc ttgaagcagt	1560
tggtgagcg gcgtactgac atcttcggtg tagaggaaac agccattggt aagaagatcg	1620
gtgaggagga gatccagaag ccagaggaaa aggtgacctg ggatggccac tcaggcagca	1680
tggcccgac ccagcaggt gcccaggcca acatcacct ccaggagcag attgaggcca	1740
ttcacaaggc caaaggcctg gtgccagagg atgacactaa agagaagatt ggccccagca	1800
agcccaatga aatccctcaa cagccaccgc caccatcttc agccaccaac atccccagct	1860
cggtccacc catcactca gtgccccgac caccacaat gccacctcca gtctgtacta	1920
cagttgtctc cgagtaccc gtcatgcccc ggcccccaat ggcatctgtg gtccggtgc	1980
ccccaggctc agtgatgcc cccatgccgc ccatcatcca cgcgcccaga atcaacgtgg	2040
tgcccatgcc tcctcggcc cctctatta tggcccccg cccaccccc atgattgtgc	2100
caacagcctt tgtgcctgct ccacctgtgg cacctgtccc agctccagcc ccaatgcccc	2160
ctgtgatcc cccacctccc atggaagatg agccacctc caaaaaactg aagacagagg	2220
acagctcat gccagaggag gagttcctgc gcagaaacaa ggggccagt tccatcaaag	2280
tccaggtgcc caacatgcag gataagacgg aatggaaact gaatgggcag gtgctggtct	2340
tcacctccc actcacggac caggtctctg tcattaaggt gaagattcat gaagccacag	2400
gcattgcctgc agggaaacag aagctacagt atgagggtat cttcatcaa gattccaact	2460
cactggctta ctacaacatg gccaatggcg cagtcacca cctggccctc aaggagagag	2520
gcgggaggaa gaagtagaca agaggaaact gctgtcaagt cctgccatt ttgcctctcc	2580
tgtctccac cccctgcccc agaccagga gccccctga ggctttgcct tgcctgcata	2640
tttgtttcgc tcttactcag ttgggaatt caaattgtcc tgcagaggtt cattccccctg	2700
acccttccc cacattggta agagttagctg ggttttctaa gccactctct ggaatctctt	2760

tgtgttaggg tctcgatttg aggacattca tttcttcagc agcccattag caactgagag	2820
cccagggatg tcctacagga tagtttcata gtgacagggtg gcacttggct aatagaatat	2880
ggctgatatt gtcattaatc attttgtacc ttgacatggg ttgtctaata aaactcggac	2940
ccttcttgtg aaatcagtta aataagactt gtctcggtea cctgtgccct gtccagactc	3000
gaggcagtgg taacactgca cagtgcctatg tggcttctct ttgaggattt ttgggttttg	3060
taactaaatt cttgctgccc tcatactttt tatgtattag aatcatattc gtattgccct	3120
tttaaaacat tgggacctc caaaggcctg ccccatgtat ttaacagtaa tacaggaagc	3180
atggcaggca ccatgcaaac caaggatgga tggcgcagtc cctgtgtcag tgggcggtgg	3240
tttctgtctg gcctggaatc actcatcacc tgattgattg gctctgtggt cctgggcagg	3300
tgccatcatag gtgtgtggat atgatgacgt tttcttaaaa tgtatgtatt taacaaatac	3360
ttaattgtat taaggtcatg taccaaggat ttgataaagt ttaaataatt tactctctac	3420
ttttatccat ttatccatt ttaactcatg taatcctcat gtgagtattc ctgtttaaca	3480
cttgagtaaa ctgaggcaca gagaacataa gttgcatgcc atagtcacac actgtgaaag	3540
tgaagagaga atgtgtgcaa aacacgtcac agtcttggtt tctgagtaaa ggcaggctgt	3600
tatctttaga atcaagctat cacagggaga taggcaatgc tgtgggtgtt ggaggaaggt	3660
gagagcctgt tgctaacaat ttcttggttt taaagctaag gctgatttta ttgggaagat	3720
ctcacatgtg tgtggccct gagagtccc agtgcctttt atttgcagtc ctccatttg	3780
gacctctag ctgccccatc aggtcatctc cagggtcag aggggtgaga ccatttcca	3840
aggtcacaga accagctctc tagtcaccac cctgcctctc cctctaccc agagtcatg	3900
ccagttttat ggctttatta caaactgctg ggtccctccc attttcaact tgattgatgg	3960
gatgtcatcc ctatctctg ctgacatttg cctctggcct ggttgctaga agtttgcccc	4020
aggggcaaga gttgaaattt ggcttctga ggtgggcttt gtggtttgcg tccctaaagt	4080
gagccacta ctggttgctt gtccatggcc aacaccagaa atcccctgag cactacctgg	4140
gtctcattcc aagaaggaag agggtcagga gacctgggga gtctcatatt ccaagtctt	4200
ctttctttct gggagcagtg ggcagttcat ggtgttaggg cactcacccc cacagactgg	4260
caaaccctgc aggaattccg tggctgaggc tgtgaccgga ggccaggaat gccgttgggt	4320
ggattgtgag tgaatgggcc ctttgagctg cctctagag agcaaatcca gtttctgga	4380
gtctctgaat gaatatctgt actggctcgc tcagatgcag aagctccatt gaccatgagg	4440
ccttgtaac atcagtggcc acaggcccag tgtgtgctt ggcaactgcac tagtttagga	4500

cctgcagcat gtaggtagcg tcctagtgtt tataatacaa agctgctctg cacagctttt 4560
ctgattcttc ttgcaatctc ctgaggatta tctgccccat ttttaaacg aggtggaata 4620
cccaaggtea ttaggccagt gagtgtcttg gaaagccaaa gcagctcatc ctttcttggg 4680
gaccacactg ctctgtccca ccagaccaca ctatgaaata ggaataagtg ctctgttgc 4740
aggactgctg ggaaaacagg tgggtgtgga cttaagtcac cataattttg aagacttgca 4800
tgcagagggc tccaggaatt gtagacatta aggaatttca ctttcagtgc taccacttac 4860
ttaagtactt gtcatgtact cttagaggag gccagtaatg atcagaacca ttttacttta 4920

aaattaataa tattgtatta gagaatatat taaatggtta tattgggtta tgttaggata 4980
tatacttgaa tggaaatata tgtactatta gcaatcatat ttcattttat cctgtaatta 5040
gacaagaaag cataatatag ctctactcat gggtacacat accagtgtat aagattttta 5100
gaagtttact ttttaaaaat aaaagcaaaa tgtaagatct taataaaaaa aaaaaaaa 5159

<210> 43

<211> 5416

<212> DNA

<213> Homo sapiens

<400> 43

agtgggccgc catgtttgtc gagtgaaagg taagggggag cgagagcgcc agagagagaa 60
gatcgggggg ctgaaatcca tcttcatact accgctccgc ccgtgttggt ggaatgagcg 120

ttgcatgtgt cttgaagaga aaagcagtgc ttggcagga ctctttcagc cccacactga 180
aacatcacc tcaagaacca gctaatacca acatgcctgt tgttttgaca tctggaacag 240
ggtcgcaagc gcagccacaa ccagctgcaa atcaggctct tgcagctggg actcactcca 300
gccctgtccc aggatctata ggagttgcag gccgttccca ggacgacgct atggtggact 360
acttctttca gaggcagcat ggtgagcagc ttgggggagg aggaagtgga ggaggcggct 420
ataataatag caaacatcga tggcctactg ggataacat tcatgcagaa catcaggtgc 480
gttccatgga tgaactgaat catgattttc aagcacttgc tctggaggga agagcgatgg 540

gagagcagct ctigccaggt aaaaagtttt gggaacaga tgaatccagc aaagatggac 600
caaaaggaat attcctgggt gatcaatggc gagacagtgc ctggggaaca tcagatcatt 660
cagtttccca gccaatcatg gtgcagagaa gacctggtca gagtttccat gtgaacagtg 720
aggtcaattc tgiactgtcc ccacgatcgg agagtggggg actaggcgtt agcatggtgg 780
agtatgtgtt gagctcatcc cggggcgatt cctgtctaag aaaaggagga tttggcccaa 840
gggatgcaga cagtgatgaa aacgacaaa gtgaaaagaa gaacaagggt acgtttgatg 900

gagataagct aggagatttg aaggaggagg gtgatgtgat ggacaagacc aatggtttac 960

cagtgcagaa tgggattgat gcagacgtca aagatttttag ccgtaccctt ggtaatggcc 1020

agaactctgc taatgaagtg gatcttcttg gtccaaacca gaatggttct gagggcttag 1080

cccagctgac cagcaccaat ggtgccaagc ctgtggagga tttctccaac atggagtccc 1140

agagtgtccc cttggacccc atggaacatg tgggcatgga gcctcttcag tttgattatt 1200

caggcagca ggtacctgtg gactcagcag cagcaactgt gggacttttt gactacaatt 1260

ctcaacaaca gcgtttccaa agacctaatg cgcttgctgt ccagcagttg acagctgctc 1320

agcagcagca gtatgcactg gcagctgctc atcagccgca catcggttta gctcccgtg 1380

cgtttgctcc caatccatac atcatcagcg ctgctcccc aggacggac ccctacacag 1440

ctggattggc tgcagcagcg aactaggcc cagctgtggt ccctcaccag tattatggag 1500

ttactccctg gggagtctac cctgccagtc ttttcagca gcaagctgcc gctgccgctg 1560

cagcaactaa ttcagctaat caacagacca cccacaggc tcagcaagga cagcagcagg 1620

ttctccgtgg aggagccagc caacgtcctt tgaccccaaa ccagaaccag caggacagc 1680

aaacggatcc ccttgtggca gctgcagcag tgaattctgc ccttgcatth ggacaaggtc 1740

tggcagcagg catgccaggt tatccggtgt tggctcctgc tgcttactat gaccaaactg 1800

gtgcccttgt agtgaatgca ggcgcgagaa atggtcttgg agctcctgtt cgactttag 1860

ctcctgcccc agtcatcatt agttcctcag ctgcacaagc agctgttgca gcagccgag 1920

cttcagcaaa tggagcagct ggtggtcttg ctggaacaac aaatggacca tttcgccctt 1980

taggaacaca gcagcctcag cccagcccc agcagcagcc caataacaac ctggcatcca 2040

gttctttcta cggcaacaac tctctgaaca gcaattcaca gagcagctcc ctcttctccc 2100

agggtcttgc ccagcctgcc aacacatcct tgggattcgg aagtagcagt tctctcggcg 2160

ccacctggg atccgccctt ggagggtttg gaacagcagt tgcaaaactcc aacactggca 2220

gtggctcccc ccgtgactcc ctgactggca gcagtgcct ttataagagg acatcgagca 2280

gcttgacccc cattggacac agtttttata acggccttag ctttctctcc tctctggac 2340

ccgtgggcat gcctctccct agtcaggac caggacattc acagacacca cctccttccc 2400

tctcttcaca tggatcctct tcaagcttaa acctgggagg actcacgaat ggcagtggaa 2460

gatacatctc tctgtctcca ggcgtgaag ccaagtaccg cagtgcgaag agcgctcca 2520

gcctcttcag cccgagcagc actcttttct ctctctctcg tttgcgatat ggaatgtctg 2580

atgtcatgcc ttttggcagg agcaggcttt tggaagattt tcgaaacaac cggtagccca 2640

atttacaact gcgggagatt gctggacata taatggaatt ttccaagac cagcatgggt 2700
 ccagattcat tcagctgaaa ctggagcgtg ccacaccagc tgagcgccag ctgtgtttca 2760
 atgaaatcct ccaggctgcc taccaactca tgggtgatgt gtttgtaat tacgtcattc 2820
 agaagtictt tgaatttggc agtcttgaac agaagctggc tttggcagaa cggattcgag 2880
 gccacgtcct gtcatgtgca ctacagatgt atggctgccg tggtatccag aaagctcttg 2940
 agtttattcc ttcagaccag caggtaatta atgagatggg tcgggaacta gatggccatg 3000
 tcttgaagtg tgtgaaagat cagaatggca atcacgtggg tcagaaatgc attgaatgtg 3060

 tacagcccca gtctttgcaa tttatcatcg atcgctttaa gggacaggta ttgccttat 3120
 ccacacatcc ttatggctgc cgagtgttc agagaatcct ggagcactgt ctccctgacc 3180
 agacactccc tattttagag gagcttcacc agcacacaga gcagcttgta caggatcaat 3240
 atggaaatta tgtaatccaa catgtactgg agcacggctg tctgaggat aaaagcaaaa 3300
 ttgtagcaga aatccgaggc aatgtacttg tattgagtca gcacaaattt gcaagcaatg 3360
 ttgtggagaa gtgtgttact cagcctcac gtacggagcg cgctgtgctc atcgatgagg 3420
 tgtgcaccat gaacgacggg cccacagtg cttatacac catgatgaag gaccagtatg 3480

 ccaactacgt ggtccagaag atgattgacg tggcggagcc aggccagcgg aagatcgtca 3540
 tgcataagat cgggccccac atcgcaactc ttcgtaagta cacctatggc aagcacattc 3600
 tggccaagct ggagaagtac tacatgaaga acggtgttga cttagggccc atctgtggcc 3660
 cccctaattg tatcatctga ggcagtgtca cccgtgttc cctattccc gctgacctca 3720
 ctggcccact ggcaaatcca accagcaacc agaaatgttc tagttagag tctgagacgg 3780
 gcaagtgggt gctccaggat tactccctcc tcaaaaaag gaatcaaac cagcagtgga 3840
 aaagcctttg taaatttaac tttattacac ataacatgta ctatttttt taattgacta 3900

 attgccctgc tgttttactg gtgtatagga tacttgtaca taggtaacca atgtacatgg 3960
 gaggccacat attttgttca ctgttgtatc tatatttcac atgtggaaac tttcagggtg 4020
 gttgttttaa caaaaaaaaa aagcttttaa aaaaaaagaa aaaaaggaaa aggttttttag 4080
 ctcatittgc tggccggcaa gttttgcaaa tagctcttcc ccacctctc attttagtaa 4140
 aaaacaaaca aaaacaaaaa aacctgagaa gtttgaattg tagttaaatg accccaaact 4200
 ggcatttaac actgtttata aaaaatatat atatatatat atatatatat aatgaaaaag 4260
 gtttcagagt tgctaaagct tcagtttgtg acattaagtt tatgaaattc taaaaaatgc 4320

 cttttttgga gactatatta tgctgaagaa ggctgttcgt gaggaggaga tgcgagcacc 4380
 cagaacgtct tttgaggtg ggcggtgtg attgtttact gcctactgga tttttttcta 4440
 ttaacattga aaggtaaaat ctgattattt agcatgagaa aaaaaaatcc aactctgctt 4500

ttggtcttgc ttctataaat atatagtgia tacttgggtgt agactttgca tatatacaaa	4560
ttttagtat tttcttgttt tgatgtctaa tctgtatcta taatgtaccc tagtagtcga	4620
acatactttt gattgtacaa ttgtacattt gtataacctgt aatgtaaatg tggagaagtt	4680
tgaatcaaca taaacacgtt ttttggtaag aaaagagaat tagccagccc tgtgcattca	4740
gtgtatattc tcacctttta tggtcgtagc atatagtgtt gtatattgta aattgtaatt	4800
tcaaccagaa gtaaattttt tttctttgaa ggaataaatg tttctttatac agcctagtta	4860
atgtttaaaa agaaaaaat agcttgggtt tatttgtcat ctagtctcaa gtatagcgag	4920
attctttcta aatgttattc aagattgagt tctcactagt gtttttttaa tcctaaaaaa	4980
gtaatgtttt gatttttga cagtcaaaag gacgtgcaaa agtctagcct tgcccagact	5040
ttccttacia tcagagcccc tctcaccttg taaagtgtga atcgcccttc cttttgtac	5100
agaagatgaa ctgtattttg cattttgtct acttgttaagt gaatgtaaca tactgtcaat	5160
tttcttgtt tgaatataga attgtaacac tacacggtgt acatttcag agccttgtgt	5220
atatttccaa tgaacttttt tgcaagcaca ctgtgaacca tatgtgtata attaacaac	5280
ctgtgtatgc ttatgcctgg gcaactattt ttgttaactc ttgtgtagat tgtctctaaa	5340
caatgtgtga tctttatttt gaaaaataca gaactttgga atctgaaaaa aaaaaaaaaa	5400
aaaaaaaaa aaaaaa	5416
<210> 44	
<211> 1940	
<212> DNA	
<213> Homo sapiens	
<400> 44	
gagtgagcgg cgcggggcca atcagcgtgc gccgttccga aagttgcctt ttatggctcg	60
agcggccgcg gcggcgccct ataaaacca gcggcgcgac gcgccaccac cgccgagacc	120
gcgtccgccc cgcgagcaca gacctcgc tttgccgatc cgccgccgt ccacaccgc	180
cgccagctca ccatggatga tgatatgcc gcgctcgtcg tcgacaacgg ctccggcatg	240
tgcaaggcgg gcttcgctgg cgacgatgcc ccccgggccg tcttccctc catcgtgggg	300
cgccccaggc accaggcggt gatgtgggc atgggtcaga aggattccta tgtgggcgac	360
gaggccaga gcaagagagg catctcacc ctgaagtacc ccatcgagca cggcatcgtc	420
accaactggg acgacatgga gaaaatctgg caccacacct tctacaatga gctgcgtgtg	480
gctcccgagg agcaccctgt gctgtgacc gagggcccc tgaacccaa ggccaaccgc	540
gagaagatga cccagatcat gtttgagacc ttcaacaccc cagccatgta cgttgctatc	600

caggctgtgc tatccctgta cgcctctggc cgtaccactg gcatcgtgat ggactccggt 660
gacggggtca cccacactgt gcccatctac gaggggtatg cctccccca tgccatcctg 720
cgtctggacc tggttggccg ggacctgact gactacctca tgaagatcct caccgagcgc 780
ggctacagct tcaccaccac ggccgagcgg gaaatcgtgc gtgacattaa ggagaagctg 840
tgctacgtcg ccttggactt cgagcaagag atggccacgg ctgcttcag ctctccctg 900

gagaagagct acgagctgcc tgacggccag gtcattacca ttggcaatga gcggttccgc 960
tgccctgagg cactcttcca gccttcttc ctgggcatgg agtcctgtgg catccacgaa 1020
actaccttca actccatcat gaagtgtgac gtggacatcc gcaaagacct gtacccaac 1080
acagtgtgt ctggcggcac caccatgtac cctggcattg ccgacaggat gcagaaggag 1140
atcactgccc tggcaccag cacaatgaag atcaagatca ttgctctcc tgagcgcaag 1200
tactcgtgt ggatcggcgg ctccatctg gcctcgtgt ccaccttcca gcagatgtgg 1260
atcagcaagc aggagtatga cgagtcggc cctccatcg tccaccgaa atgcttctag 1320

gcggactatg acttagttgc gttacacct tcttgacaa aacctactt gcgcagaaaa 1380
caagatgaga ttggcatggc tttatttgt tttttgttt tgttttggt ttttttttt 1440
ttttggcttg actcaggatt taaaaactgg aacggtgaag gtgacagcag tcggttggag 1500
cgagcatccc ccaaagtcca caatgtggc gaggacttg attgcacatt gttgttttt 1560
taatagtcat tccaaatatg agatgcgttg ttacaggaag tcccttgcca tcctaaaagc 1620
caccctactt ctctctaagg agaatggccc agtcctctcc caagtcaca caggggaggt 1680
gatagcattg ctttcgtgta aattatgtaa tgcaaaattt ttttaattt cgccttaata 1740

cttttttatt ttgttttatt ttgaatgat agccttcgtg ccccccttc ccccttttt 1800
gtcccccaac ttgagatgta tgaaggcttt tggctctcct gggagtgggt ggaggcagcc 1860
agggttacc tgtacctga cttgagacca gttgaataaa agtgcacacc ttaaaaatga 1920
ggaaaaaaaa aaaaaaaaaa 1940

<210> 45
<211> 1309
<212> DNA
<213> Homo sapiens
<400> 45

gctctctgct cctcctgttc gacagtcagc cgcattctt tttgcgtcgc cagccgagcc 60
acatcgctca gacaccatgg ggaaggtgaa ggtcggagtc aacggatttg gtcgtattgg 120

gcgcctggtc accagggtcg cttttaactc tggtaaagtg gatattgttg ccatcaatga 180

cccccttcatt gacctcaact acatgggttta catgttccaa tatgattcca cccatggcaa 240
attccatggc accgtcaagg ctgagaacgg gaagcttgtc atcaatggaa atcccatcac 300
catcttccag gagcgagatc cctccaaaat caagtggggc gatgctggcg ctgagtacgt 360
cgtggagtcc acitggcgtct tcaccacat ggagaaggct ggggctcatt tgcagggggg 420
agccaaaagg gtcatcatct ctgccccctc tgctgatgcc cccatgttcg tcatgggtgt 480
gaaccatgag aagtatgaca acagcctcaa gatcatcagc aatgcctcct gcaccaccaa 540

ctgcttagca cccctggcca aggtcatcca tgacaacttt ggtatcgtgg aaggactcat 600
gaccacagtc catgccatca ctgccacca gaagactgtg gatggcccct ccgggaaact 660
gtggcgtgat ggccgcgggg ctctccagaa catcatccct gcctctactg gcgctgcaa 720
ggctgtgggc aaggtcatcc ctgagctgaa cgggaagctc actggcatgg ctttccgtgt 780
ccccactgcc aacgtgtcag tgggtggacct gacctgccgt ctagaaaaac ctgcaaata 840
tgatgacatc aagaaggtgg tgaagcaggc gtcggagggc cccctcaagg gcatcctggg 900
ctacactgag caccaggtgg tctcctctga cttcaacagc gacaccact cctccacctt 960

tgacgtggg gctggcattg cctcaacga ccactttgtc aagtcattt cctggtatga 1020
caacgaattt ggctacagca acaggttgg ggacctcatg gccacatgg cctcaagga 1080
gtaagacccc tggaccacca gcccagcaa gagcacaaga ggaagagaga gacctcact 1140
gttggggagt cctgccaca ctcagtcacc caccacactg aatctccct cctcacagt 1200
gccatgtaga ccccttgaag aggggagggg cctagggagc cgcaccttgt catgtacat 1260
caataaagta cctgtgctc aaccagttaa aaaaaaaaaa aaaaaaaaaa 1309

<210> 46

<211> 2321

<212> DNA

<213> Homo sapiens

<400> 46

gtcctcaacc aagatggcgc ggatggcttc aggcgcatca cgacaccggc gcgtcacgcg 60
accgcacctc cgggcacctc ccgcgtttt cttagcgccg cagacggtgg ccgagcgggg 120
gaccgggaag catggccccg gggtcggcgg ttgcctgggc ggcgctcggg ccgttgttgt 180
ggggctgcgc gctggggctg caggcgggga tgctgtaccc ccaggagagc ccgtcgcggg 240
agtgaagga gctggacggc ctctggagct tccgcgccga cttctctgac aaccgacgcc 300
ggggcttcga ggagcagtgg taccggcggc cgtgtggga gtcaggcccc accgtggaca 360
tgccagtacc ctccagcttc aatgacatca gccaggactg gcgtctgcgg cattttgtcg 420

gctgggtgtg gtacgaacgg gaggtgatcc tgccggagcg atggaccag gacctgcgca 480
caagagtgtg gctgaggatt ggcagtgtcc attcctatgc catcgtgtgg gtgaatgggg 540
tcgacacgct agagcatgag gggggctacc tccccctcga ggccgacatc agcaacctgg 600
tccaggtggg gccctgtccc tcccggtccc gaatactat cgccatcaac aacacactca 660
ccccaccac cctgccacca gggaccatcc aatactgac tgacacctcc aagtatcca 720
agggttactt tgtccagaac acataatttg actttttcaa ctacgttgga ctgcagcgg 780
ctgtacttct gtacacgaca cccaccacct acatcgatga catcaccgtc accaccagcg 840

tggagcaaga cagtgggctg gtgaattacc agatctctgt caagggcagt aacctgttca 900
agttggaagt gcgtcttttg gatgcagaaa acaaatgctg ggcaatggg actgggaccc 960
aggccaact taagggtcca ggtgtcagcc tctggtggcc gtacctgatg cacgaacgcc 1020
ctgcctatct gtattcattg gaggtgcagc tgactgcaca gacgtcactg gggcctgtgt 1080
ctgacttcta cacactccct gtggggatcc gcactgtggc tgtaccaag agccagttcc 1140
tcatcaatgg gaaacctttc tattccacg gtgtcaaca gcatgaggat gcggacatcc 1200
gagggaaggg ctctgactgg ccgctgctgg tgaaggactt caacctgtt cgctggcttg 1260

gtgccaacgc ttccgtacc agccactacc cctatgcaga ggaagtgatg cagatgtgtg 1320
accgctatgg gattgtggc atcgatgagt gtcccggcgt gggcctggcg ctgccgagt 1380
tcttcaaca cgtttctctg catcaccaca tgcaggtgat ggaagaagtg gtgcgtaggg 1440
acaagaacca ccccgcgctg gtgatgtgtt ctgtggccaa cgagcctgcg tcccacntag 1500
aatctgctgg ctactacttg aagatggtga tcgctcacac caaatccttg gacctctcc 1560
ggcctgtgac ctttgtgagc aactctaact atgcagcaga caagggggct ccgtatgtgg 1620
atgtgatctg tttaacagc tactactctt ggtatcacga ctacgggcac ctggagtga 1680

ttcagctgca gctggccacc cagtttgaga actggtataa gaagtatcag aagccatta 1740
ttcagagcga gtatggagca gaaacgattg cagggtttca ccaggatcca cctctgatgt 1800
tactgaaga gtaccagaaa agtctgctag agcagtacca tctgggtctg gatcaaaaac 1860
gcagaaaata cgtggttga gagtcattt ggaattttgc cgatttcag actgaacagt 1920
caccgacgag agtgctgggg aataaaaagg ggtatctcac tcggcagaga caacaaaaa 1980
gtgcagcgtt ctttttcga gagagatact ggaagattgc caatgaaacc aggtatcccc 2040
actcagtagc caagtcaca tgtttgaaa acagcctgtt tacttgagca agactgatac 2100

cacctgcgtg tcccttctc cccgagtcag ggcgacttcc acagcagcag aacaagtgcc 2160
tcctggactg ttcacggcag accagaacgt ttctggcctg ggttttgttg tcatctattc 2220
tagcagggaa cactaaaggt ggaaataaaa gatcttctat tatggaaata aagagttggc 2280

atgaaagtgg ctactgaaaa aaaaaaaaaa aaaaaaaaaa a 2321

<210> 47

<211> 1229

<212> DNA

<213> Homo sapiens

<400> 47

gtctgacggg cgatggcgca gccaatagac aggagcgcta tccgcggttt ctgattggct 60

actttgttcg cattataaaa ggcacgcgcg ggcgcgaggc ccttctctcg ccaggcgctc 120

tcgtggaagt gacatcgctt ttaaaccttg cgtggcaatc cctgacgcac cgccgtgatg 180

cccaggaag acagggcgac ctggaagtcc aactacttcc ttaagatcat ccaactattg 240

gatgattatc cgaatgttt cattgtggga gcagacaatg tgggctccaa gcagatgcag 300

cagatccgca tgtcccttcg cgggaaggct gtggtgctga tgggcaagaa caccatgatg 360

cgcaaggcca tccgagggca cctggaaaac aaccagctc tggagaaact gctgcctcat 420

atccggggga atgtgggctt tgtgttcacc aaggaggacc tcaatgagat cagggcacatg 480

ttgctggcca ataaggtgcc agctgctgcc cgtgctggtg ccattgcccc atgtgaagtc 540

actgtgccag ccagaacac tggctcggg cccgagaaga cctccttttt ccaggcttta 600

ggtatcacca ctaaatctc caggggcacc attgaaatcc tgagtgatgt gcagctgac 660

aagactggag acaaagtggg agccagcgaa gccacgctgc tgaacatgct caacatctcc 720

cccttctcct ttgggctggt catccagcag gtgttcgaca atggcagcat ctacaacct 780

gaagtgcttg atatcacaga ggaaactctg cattctcgct tcctggaggg tgtccgcaat 840

gttgccagtg tctgtctgca gattggctac ccaactgttg catcagtacc ccattctatc 900

atcaacgggt acaaacgagt cctggccttg tctgtggaga cggattacac ctteccactt 960

gctgaaaagg tcaaggcctt cttggctgat ccatctgcct ttgtggctgc tgcccctgtg 1020

gctgtgccca ccacagctgc tctgtctgct gctgcagccc cagctaaggt tgaagccaag 1080

gaagagtccg aggagtccga cgaggatatg ggatttggtc tctttgacta atcaccaaaa 1140

agcaaccaac ttagccagtt ttatttgcaa aacaaggaaa taaaggctta cttctttaa 1200

aagtaaaaaa aaaaaaaaaa aaaaaaaaaa 1229

<210> 48

<211> 5234

<212> DNA

<213> Homo sapiens

<400> 48

agagcgtcgg gatatcgggt ggcggctcgg gacggaggac gcgctagtgt gagtgcgggc 60

ttctagaact acaccgaccc tcgtgtcctc ccttcacct gcggggctgg ctggagcggc 120

cgctccggtg ctgtccagca gccataggga gccgcacggg gagcgggaaa gcggtcgagg 180

ccccaggcgg ggcggccggg atggagcggg gccgcagacc tgtggggaag gggctgtggc 240

ggcgctcga gcggctgcag gttcttctgt gtggcagttc agaatgatgg atcaagctag 300

atcagcattc tctaacttgt ttggtggaga accattgtca tatacccggt tcagcctggc 360

tcggcaagta gatggcgata acagtcattg ggagatgaaa cttgctgtag atgaagaaga 420

aaatgctgac aataacacaa agccaatgt cacaaaacca aaaagggtga gtggaagtat 480

ctgctatggg actattgctg tgatcgtctt tttcttgatt ggatttatga ttggctactt 540

gggctattgt aaaggggtag aacaaaaaac tgagtgtgag agactggcag gaaccgagtc 600

tccagtggag gaggagccag gagaggactt cctgcagca cgtcgcttat attgggatga 660

cctgaagaga aagtgtcgg agaaactgga cagcacagac ttaccggca ccatcaagct 720

gctgaatgaa aattcatatg tccctcgtga ggctggatct caaaaagatg aaaatcttgc 780

gttgtatgtt gaaaatcaat ttctgaatt taaactcagc aaagtctggc gtgatcaaca 840

ttttgttaag attcaggta aagacagcgc taaaactcg gtgatcatag ttgataagaa 900

cggtagactt gtttacctgg tggagaatcc tgggggttat gtggcgtata gtaaggctgc 960

aacagttact ggtaaaactgg tccatgctaa ttttggctact aaaaaagatt ttgaggattt 1020

atacactcct gtgaatggat ctatagtatg tgcagagca gggaaaatca ctttgcaga 1080

aaaggttgca aatgctgaaa gcttaaatgc aattgggtgtg ttgatataca tggaccagac 1140

taaatttccc atgtttaacg cagaactttc attctttgga catgctcctc tggggacagg 1200

tgacccttac acacctggat tcccttctt caatcacact cagtttcac catctcggtc 1260

atcaggattg cctaataaac ctgtccagac aatctccaga gctgctgcag aaaagctgtt 1320

tgggaatatg gaaggagact gtcctctga ctggaaaaca gactctacat gtaggatggt 1380

aacctcagaa agcaagaatg tgaagctcac tgtgagcaat gtgctgaaag agataaaaat 1440

tcttaacatc ttggagttta ttaaaggctt tglagaacca gatcactatg ttgtagtgg 1500

ggcccagaga gatgcatggg gccctggagc tgcaaaatcc ggtgtaggca cagctctcct 1560

attgaaactt gccagatgt tctcagatat ggtcttaaaa gatgggtttc agcccagcag 1620

aagcattatc ttigccagtt ggagtgtgag agactttgga tcggttggtg ccactgaatg 1680

gctagaggga tacctttcgt cctgcattt aaaggctttc acttatatta atctggataa 1740

agcggttctt ggiaccagca acttcaaggt ttctgccagc cactgttgt atacgttat	1800
tgagaaaaca atgcaaaatg tgaagcatcc ggttactggg caatttctat atcaggacag	1860
caactgggcc agcaaagtg agaaactcac tttagacaat gctgctttcc ctttccttgc	1920
atattctgga atcccagcag tttctttctg tttttgcgag gacacagatt atccttattt	1980
gggtaccacc atggacacct ataaggaact gattgagagg attcctgagt tgaacaaagt	2040
ggcacgagca gctgcagagg tcgctggtca gttcgtgatt aaactaaccc atgatgttga	2100
attgaacctg gactatgaga ggtacaacag ccaactgctt tcatttgtga gggatctgaa	2160
ccaatacaga gcagacataa aggaaatggg cctgagttaa cagtggctgt attctgctcg	2220
tggagacttc ttccgtgcta cttccagact aacaacagat ttcgggaatg ctgagaaaac	2280
agacagattt gtcatgaaga aactcaatga tcgtgtcatg agagtggagt atcacttctt	2340
ctctccctac gtatctcaa aagagtctcc tttccgacat gtcttctggg gctccggctc	2400
tcacacgctg ccagctttac tggagaactt gaaactgcgt aaacaaaata acggtgcttt	2460
taatgaaacg ctgttcagaa accagttggc tctagctact tggactattc agggagctgc	2520
aaatgccctc tctggtgacg ttgaggacat tgacaatgag ttttaaatgt gatacccata	2580
gcttccatga gaacagcagg gtagtctggi ttctagactt gtgctgatcg tgctaaattt	2640
tcagtagggc taaaaacct gatgttaaaa ttccatccca tcactttggg actactagat	2700
gtcttttaggc agcagctttt aatacagggt agataacctg tacttcaagt taaagtgaat	2760
aaccacttaa aaaaagtcca tgatggaata ttccctatc tctagaattt taagtgcttt	2820
gtaatgggaa ctgcctcttt cctgttgttg ttaatgaaaa tgtcagaaac cagttatgtg	2880
aatgatctct ctgaatccta agggctggtc tctgctgaag gttgtlaagtg gtcgcttact	2940
ttgagtgatc ctccaacttc atttgatgct aaataggaga taccaggttg aaagaccttc	3000
tccaaatgag atctaagcct ttccataagg aatgtagctg gtttctcat tctgaaaga	3060
aacagttaac tticagaaga gatgggcttg ttttcttgc aatgaggtct gaaatggagg	3120
tccttctgct ggataaaatg aggttcaact gttgattgca ggaataagge cttaatatgt	3180
taacctcagt gtcatttatg aaaagagggg accagaagcc aaagacttag tatattttct	3240
tttctctgt ccttccccc ataagcctcc atttagttct ttgtatttt tgtttcttcc	3300
aaagcacatt gaaagagaac cagtttcagg tgtttagttg cagactcagt ttgtcagact	3360
ttaaagaata atatgctgcc aaattttggc caaagtgtta atcttagggg agagctttct	3420
gtccttttgg cactgagata tttattgttt atttatcagt gacagagttc actataaatg	3480
gtgttttttt aatagaatat aattatcgga agcagtgctt tccataatta tgacagttat	3540
actgtcgggt ttttttaaat aaaagcagca tctgctaata aaaccaaca gatactggaa	3600

gttttgatt taigtcaac acttaagggt tttagaaaac agccgtcagc caaatgtaat 3660
tgaataaagt tgaagctaag atttagagat gaattaaatt taattagggg ttgctaagaa 3720
gcgagcactg accagataag aatgctgggt ttcctaaatg cagtgaattg tgaccaagtt 3780
ataaatcaat gtcacttaaa ggctgtggta gtactcctgc aaaattttat agctcagttt 3840

atccaagggtg taactctaata tcccatTTTg caaaatttcc agtacctttg tcacaatcct 3900
aacacattat cgggagcagt gtcttcata atgtataaag aacaaggtag tttttaccta 3960
ccacagtgtc tgtatcggag acagtgatct ccatatgtta cactaagggt gtaagtaatt 4020
atcgggaaca gtgtttccca taattttctt catgcaatga catcttcaa gcttgaagat 4080
cgtagtatc taacatgtat cccaactcct ataattccct atcttttagt ttagttgca 4140
gaaacatTTT gtggtcatta agcattgggt gggtaaattc aaccactgta aaatgaaatt 4200
actacaaaat ttgaaattta gcttgggttt ttgttacctt tatggtttct ccaggtcctc 4260

tacttaatga gatagtagca tacatttata atgtttgcta ttgacaagtc attttaactt 4320
tatcacatta ttgcatgtt acctcctata aacttagtgc ggacaagttt taatccagaa 4380
ttgacctttt gacttaaagc agagggactt tgtatagaag gtttgggggc tgtggggaag 4440
gagagtcccc tgaaggctcgt acacgtctgc ctaccattc gtggtgatca attaaatgta 4500
ggtagaata agttcgaagc tccgtgagt aaccatcatt ataaactgta tgatcagctg 4560
tttgtcatag ggcagttgga aacggcctcc tagggaaaag ttcattagggt ctcttcaggt 4620
tcttagtgct acttacctag atttacagcc tcacttgaat gtgtcactac tcacagtctc 4680

tttaatcttc agttttatct ttaatctcct cttttatctt ggactgacat ttagcgtagc 4740
taagtgaaaa ggcatagct gagattcctg gttcgggtgt tacgcacacg tacttaaatg 4800
aaagcatgtg gcatgttcat cgtataacac aatatgaata cagggcagtc attttgcagc 4860
agtgagtctc ttcagaaaac cttttctac agttagggtt gagttacttc ctatcaagcc 4920
agtacgtgct aacaggctca atattcctga atgaaatc agactagtga caagctcctg 4980
gtcttgagat gtcttctcgt taaggagatg ggccttttgg aggtaaagga taaaatgaat 5040
gagttctgct atgattcact attctagaac ttgcatgacc tttactgtgt tagctctttg 5100

aatgttcttg aaatTTTtaga ctttctttgt aaacaaatga tatgtcctta tcattgtata 5160
aaagctgtta tgtgcaacag tgtggagatt ccttgtctga ttttaataaaa tacttaaaaa 5220
ctgaaaaaaaa aaaa 5234

<210> 49
<211> 1869
<212> DNA

<213> Homo sapiens

<400> 49

tacctggttg atcctgccag tagcatatgc ttgtctcaaa gattaagcca tgcattgtcta	60
agtacgcacg gccggtacag tgaaactgcg aatggctcat taaatcagtt atgggttcctt	120
tggctgctcg ctctctccc acttggataa ctgttgtaat tctagagcta atacatgccg	180
acgggcgctg acccccttcg cgggggggat gcgtgcattt atcagatcaa aaccaaccg	240
gtcagccctt ctccggcccc ggccgggggg cgggcgcg cggttttgg gactctagat	300
aacctcgggc cgatgcacg cccccgtgg cggcgacgac ccattcgaac gtctgccta	360
tcaactttcg atggtatcg ccgtgcctac catggtgacc acgggtgacg gggaatcagg	420
gttcgattcc ggagaggagg cctgagaaac ggctaccaca tccaaggaag gcagcaggcg	480
cgaaattac ccactcccga cccggggagg tagtgacgaa aaataacaat acaggactct	540
ttcgaggccc tgtaattgga atgagtccac tttaaatcct ttaacgagga tccattggag	600
ggcaagtctg gtgccagcag ccgcggtaat tccagctcca atagcgtata ttaaagttgc	660
tgcatgtaaa aagctcgtag ttggatcttg ggagcggg cgcggtccgc cgcgaggcga	720
gccaccgccc gtccccgcc cttgcctctc ggcccccct cgatgctctt agctgagtgt	780
cccgcggggc ccgaagcgtt tactttgaaa aaattagagt gttcaaagca ggcccagacc	840
gcctggatac cgcagctagg aataatggaa taggaccgcg gttctatttt gttggttttc	900
ggaactgagg ccatgattaa gagggacggc cgggggcatt cgtattgcgc cgctagaggt	960
gaaattcttg gaccggcgca agacggacca gagcgaaagc atttgccaag aatgttttca	1020
ttaatcaaga acgaaagtcg gaggttcgaa gacgatcaga taccgtcgta gttccgacca	1080
taaacgatgc cgaccggcga tgcggcgcg ttattcccat gaccgcgg gcagcttcg	1140
ggaaacaaaa gtctttgggt tccgggggga gtatggttgc aaagctgaaa cttaaaggaa	1200
ttgacggaag ggcaccacca ggagtggagc ctgcggctta atttgactca acacgggaaa	1260
cctcaccgg cccggacacg gacaggattg acagattgat agctctttct cgattccgtg	1320
ggtggtggtg catggccgtt cttagttagt ggagcgattt gtctggttaa ttccgataac	1380
gaacgagact ctggcatgct aactagttac gcgaccccc agcggtcggc gtcccccaac	1440
ttcttagagg gacaagtggc gttcagccac ccgagattga gcaataacag gtctgtgatg	1500
cccttagatg tccggggctg cacgcgcgt acactgactg gctcagcgtg tgcctaccct	1560
acgccggcag gcgcgggtaa cccgttgaac ccattcgtg atggggatcg gggattgcaa	1620
ttattcccca tgaacgagga attccagta agtgcgggtc ataagcttgc gttgattaag	1680
tccttgcctt ttgtacacac cgcccgtcgc tactaccgat tggatggttt agtgaggccc	1740

tcggatcggc cccgccgggg tcggccacg gccctggcgg agcgtgaga agacggtcga	1800
acttgactat ctagaggaag taaaagtcgt aacaaggttt ccgtaggtga acctgcggaa	1860
 ggatcatta	 1869
<210> 50	
<211> 2288	
<212> DNA	
<213> Homo sapiens	
<400> 50	
ggggccgaac gtggtataaa aggggccggga ggccaggctc gtgccgtttt gcagacgcca	60
ccgccgagga aaaccgtgta ctattagcca tggtaaccc caccgtgttc ttcgacattg	120
ccgtcgacgg cgagcccttg ggccgcgtct cttttgagct gtttcgacac aaggccccaa	180
agacagcaga aaatcttcgt gctctgagca ctggagagaa aggatttggt tataagggtt	240
cctgctttca cagaattatt ccagggttta tgtgtcaggg tgggtgacttc acacgccata	300
 atggcactgg tggcaagtcc atctatgggg agaaatttga agatgagaac ttcaccta	360
agcatacggg tcttggcatc ttgtccatgg caaatgctgg acccaacaca aatgggtccc	420
agtttttcat ctgcactgcc aagactgagt ggttggatgg caagcatgtg gtgtttggca	480
aagtgaagaa aggcataaat attgtggagg ccatggagcg ctttgggtcc aggaatggca	540
agaccagcaa gaagatcacc attgtgtact gtggacaact cgaataagtt tgacttgtgt	600
tttatcttaa ccaccagatc attccttctg tagctcagga gagcaccct ccacccatt	660
tgctcgagc atcctagaat ctttgtgtc tcgctgcagt tccctttggg ttccatgttt	720
 tccttgttcc ctcccatgcc tagctggatt gcagagttaa gtttatgatt atgaaataaa	780
aactaaataa caatgtcct cgtttgagtt aagagtgttg atgtaggctt tatitttaagc	840
agtaatgggt tacttctgaa acatcacttg tttgcttaat tctacacagt acttagattt	900
tttttacttt ccagtcccga gaagtgtcaa tgtttgtga gtggaatatt gaaaatgtag	960
gcagcaactg ggcatgggtg ctactgtct gtaatgtatt acctgaggca gaagaccacc	1020
tgagggtagg agtcaagatc agcctgggca acatagttag acgctgtctc tacaaaaaat	1080
aattagcctg gcctggtggt gcatgcctag tcctagctga tctggaggct gacgtgggag	1140
 gattgcttga gcctagagtg agctattatc atgccactgt acagcctggg tgttcacaga	1200
tcttgtgtct caaaggtagg cagaggcagg aaaagcaagg agccagaatt aagaggttgg	1260
gtcagctcgc agtgagtta tgcattttaga ggtgtttctc aagatgacta atgtcaaaaa	1320
ttgagacatc tgttgcggtt tttttttttt ttttttcccc tggaatgcag tggcgtgac	1380

tcagctcact gcagcctccg cctcctgggt tcaagtgatt ctagtgcctc agcctcctga	1440
gtagctggga taatgggcgt gtgccacat gccagctaa tttttgtatt tttagtatag	1500
atggggtttc atcattttga ccaggctggt ctcaaactct tgacctcagc tgatgcgcct	1560
gccttggcct cccaaactgc tgagattaca gatgtgagcc accgcaccct acctcathtt	1620
ctgtaacaaa gctaagcttg aacactgttg atgttcttga gggaagcata ttgggcttta	1680
ggctgtaggt caagtttata catcttaatt atggtggaat tcctatgtag agtctaaaaa	1740
gccaggtact tgggtgtaca gtcagtctcc ctgcagaggg ttaaggcgca gactacctgc	1800
agtgaggagg tactgcttgt agcatataga gcctctccct agctttggtt atggaggctt	1860
tgaggttttg caaacctgac caatttaagc cataagatct ggtcaaaggg atacccttcc	1920
cactaaggac ttggtttctc aggaaattat atgtacagtg cttgctggca gttagatgtc	1980
aggacaatct aagctgagaa aaccctttct ctgccacct taacagacct ctagggttct	2040
taaccagca atcaagtttg cctatcctag aggtggcgga tttgatcatt tgggtgtgtg	2100
ggcaattttt gttttactgt ctggttctt ctgcgtgaat taccaccacc accacttgtg	2160
catctcagtc ttgtgtgttg tctggttacg tatccctgg gtgataccat tcaatgtctt	2220
aatgtacttg tggctcagac ctgagtcaa ggtggaaata aacatcaaac atcttttcat	2280
tatcccta	2288
<210> 51	
<211> 2439	
<212> DNA	
<213> Homo sapiens	
<400> 51	
gagagcagcg gccgggaagg ggcggtgcgg gaggcggggt gtggggcggt agtgtgggcc	60
ctgttctctgc ccgcgcggtg ttccgcattc tgcaagcctc cggagcgcac gtcggcagtc	120
ggctccctcg ttgaccgaat caccgacctc tctccccagc tgtatttcca aaatgtcgt	180
ttctaacaag ctgacgtcgg acaagctgga cgttaaaggg aagcgggtcg ttatgagagt	240
cgacttcaat gttcctatga agaacaacca gataacaaac aaccagagga ttaaggctgc	300
tgtcccaagc atcaaatctt gcttggacaa tggagccaag tcggtagtcc ttatgagcca	360
cctaggccgg cctgatggtg tgcccatgcc tgacaagtac tccttagagc cagttgctgt	420
agaactcaaa tctctgctgg gcaaggatgt tctgttcttg aaggactgtg taggcccaga	480
agtggagaaa gcctgtgcca acccagctgc tgggtctgtc atctgctgg agaacctccg	540
ctttcatgtg gaggaagaag ggaagggaag agatgcttct gggaacaagg ttaaagccga	600

gccagccaaa atagaagctt tccgagcttc actttccaag ctaggggatg tctatgtcaa 660
 tgatgctttt ggcactgctc acagagccca cagctccatg gtaggagtca atctgccaca 720
 gaaggtcgtt gggtttttga tgaagaagga gctgaactac tttgcaaagg ccttggagag 780
 cccagagcga cccttcctgg ccatcctggg cggagctaaa gttgcagaca agatccagct 840

catcaataat atgctggaca aagtcaatga gatgattatt ggtggtggaa tggcttttac 900
 cticcttaag gtgctcaaca acatggagat tggcacttct ctgtttgatg aagagggagc 960
 caagattgtc aaagacctaa tgtccaaagc tgagaagaat ggtgtgaaga ttaccttgcc 1020
 tgttgacttt gtcactgctg acaagtttga tgagaatgcc aagactggcc aagccactgt 1080
 ggcttctggc atacctgctg gctggatggg cttggactgt ggtcctgaaa gcagcaagaa 1140
 gtagtctgag gctgtcactc gggctaagca gattgtgtgg aatggtcctg tgggggtatt 1200
 tgaatgggaa gcttttgccc ggggaaccaa agctctcatg gatgaggtgg tgaaagccac 1260

ttctaggggc tgcatacca tcataggtgg tggagacact gccacttgct gtgccaatg 1320
 gaacacggag gataaagtc gccatgtgag cactgggggt ggtgccagt tggagctcct 1380
 ggaaggtaaa gtcttctctg ggggtggatgc tctcagcaat atttagtact ttcctgcctt 1440
 ttagttcctg tgcacagccc ctaagtcaac ttagcatttt ctgcatctcc acttggcatt 1500
 agctaaaacc ttccatgtca agattcagct agtggccaag agatgcagt ccaggaaccc 1560
 ttaaacagtt gcacagcatc tcagctcatc ttactgcac cctggatttg cataattct 1620
 tcaagatccc atttgaattt ttagtgact aaaccattgt gcattctaga gtgcatatat 1680

ttatatittg cctgttaaaa agaaagttag cagtgttagc ttagttctct tttgatgtag 1740
 gtattatga ttagctttgt cactgtttca ctactcagca tggaaacaag atgaaattcc 1800
 attttaggt agtgagacaa aattgatgat ccattaagta aacaataaaa gtgtccattg 1860
 aaaccgtgat tttttttttt ttctgtcat actttgttag gaagggtgag aatagaatct 1920
 tgaggaacgg atcagatgtc tataattgctg aatgcaagaa gtggggcagc agcagtggag 1980
 agatgggaca attagataaa tgtccattct ttatcaaggg cctactttat ggcagacatt 2040
 gtgctagtgc ttttattcta acttttattt ttatcagtta cacatgatca taatttaaaa 2100

agtcaaggct tataacaaaa aagccccagc ccattcctcc cattcaagat tcccactccc 2160
 cagaggtgac cactttcaac tcttgagttt ttcaggtata tacctccatg tttctaagta 2220
 atatgcttat atgttccact tctttttttt ttatttttta aagaaatcta tttcatacca 2280
 tggaggaagg ctctgttcca catatatttc cacttcttca ttctctcggt atagttttgt 2340
 cacaattata gattagatca aaagtctaca taactaatac agctgagcta tgtagtatgc 2400
 tatgattaaa ttacttatg taaaaaaaaa aaaaaaaaaa 2439

<210> 52
 <211> 1196
 <212> DNA
 <213> Homo sapiens

<400> 52
 cacttctgcc gccctgttt caaggataa gaaacctgc gacaaaacct cctccttttc 60
 caagcggctg ccgaagatgg cggaggtgca ggtcctggtg cttgatggtc gaggccatct 120
 cctgggccgc ctggcgcca tcttggttaa acaggtactg ctgggccgga aggtggtggt 180
 cgtacgtgt gaaggcatca acatttctgg caatttctac agaaacaagt tgaagtacct 240
 ggctttctc cgcaagcgga tgaacaccaa ccttcccgga ggccctacc acttccgggc 300
 cccagccgc atcttctggc ggacctgctg aggtatgctg cccacaaaa ccaagcgagg 360
 ccaggccgct ctggaccgtc tcaagtggtt tgacggcatc ccaccgcct acgacaagaa 420

 aaagcggatg gtggttcctg ctgccctcaa ggtcgtgctg ctgaagccta caagaaagt 480
 tgcctatctg gggcgcctgg ctcacgaggt tggctggaag taccaggcag tgacagccac 540
 cctggaggag aagaggaaa agaaagccaa gatccactac cggaagaaga aacagctcat 600
 gaggctacgg aaacaggccg agaagaacgt ggagaagaaa attgacaaat acacagaggt 660
 cctcaagacc cacggactcc tggctgagc ccaataaaga ctgttaattc ctcagtctgt 720
 gcctgccctt cctccattgt tgcctggaa tgtacgggac ccaggggcag cagcagtcca 780
 ggtgccacag gcagccctgg gacataggaa gctgggagca aggaagggt cttagtact 840

 gcctcccgaa gtigcttgaa agcactcgga gaattgtgca ggtgtcattt atctatgacc 900
 aataggaaga gcaaccagtt actatgagtg aaaggagacc agaagactga ttggagggcc 960
 ctatcttgtg agtggggcat ctgttggaact ttccacctgg tcatatactc tgcagctgtt 1020
 agaatgtgca agcacttggg gacagcatga gcttgctgtt gtacacaggg tatttctaga 1080
 agcagaaata gactgggaag atgcacaacc aagggttac aggcacgcc catgtctctc 1140
 acctgtattt tgtaatcaga aataaattgc ttttaaagaa aaaaaaaaa aaaaaa 1196

<210> 53
 <211> 987
 <212> DNA
 <213> Homo sapiens

<400> 53
 aatataagtg gaggcgtcgc gctggcgggc attcctgaag ctgacagcat tcgggccgag 60

atgtctcgct ccgtggcctt agctgtgctc gcgctactct ctctttctgg cctggaggct 120
atccagcgta ctccaaagat tcaggtttac tcacgtcatc cagcagagaa tggaaagtca 180
aatttcctga attgctatgt gtctgggttt catccatccg acattgaagt tgacttactg 240
aagaatggag agagaattga aaaagtggag cattcagact tgtctttcag caaggactgg 300
tctttctatc tcttgacta cactgaattc accccactg aaaaagatga gtatgcctgc 360
cgtgtgaacc atgtgacttt gtcacagccc aagatagtta agtgggatcg agacatgtaa 420

gcagcatcat ggaggtttga agatgccgca ttggattgg atgaattcca aattctgctt 480
gcttgctttt taatattgat atgcttatac acttacactt tatgcacaaa atgtagggtt 540
ataataatgt taacatggac atgatcttct ttataattct actttgagtg ctgtctccat 600
gtttgatgta tctgagcagg ttgctccaca ggtagctcta ggagggtgg caacttagag 660
gtggggagca gagaattctc ttatccaaca tcaacatctt ggtcagattt gaactcttca 720
atctcttgca ctcaaagctt gttaagatag ttaagcgtgc ataagttaac ttccaattta 780
catactctgc ttagaatttg ggggaaaatt tagaaatata attgacagga ttattggaaa 840

tttgttataa tgaatgaac attttgcct ataagattca tatttacttc ttatacattt 900
gataaagtaa ggcatgggtg tggttaatct gggtttatct tgttcacaa gttaaataaa 960
tcataaaact tgatgtgtta tctctta 987

<210> 54

<211> 3003

<212> DNA

<213> Homo sapiens

<400> 54

ctttctcctt ccccttcttc cgggctcccg tcccggctca tcaccggcc tgtggccac 60
tcccaccgcc agctggaacc ctggggacta cgacgtccct caaaccttgc ttctaggaga 120
taaaaagaac atccagtcac ggataaaaat gagctggttc agaaggccaa actggccgag 180

caggctgagc gatatgatga catggcagcc tgcataaagt ctgtaactga gcaaggagct 240
gaattatcca atgaggagag gaatcttctc tcagttgctt ataaaaatgt tgtaggagcc 300
cgtaggtcat cttggagggt cgtctcaagt attgaacaaa agacggaagg tgctgagaaa 360
aaacagcaga tggctcgaga atacagagag aaaattgaga cggagctaag agatatctgc 420
aatgatgtac tgtctctttt ggaaaagttc ttgatcccca atgcttcaca agcagagagc 480
aaagtcttct atttgaaaa gaaaggagat tactaccgtt acttggtgta ggttgccgct 540
ggtagtgaca agaaagggat tgtcgatcag tcacaacaag cataccaaga agcttttgaa 600

atcagcaaaa aggaaatgca accaacacat cctatcagac tgggtctggc ccttaacttc 660
tctgtgttct attatgagat tctgaactcc ccagagaaag cctgctctct tgcaaagaca 720
gcttttgatg aagccattgc tgaacttgat acattaagtg aagagtcata caaagacagc 780
acgctaataa tgcaattact gagagacaac ttgacattgt ggacatcgga tacccaagga 840
gacgaagctg aagcaggaga aggaggggaa aattaaccgg ccttccaact tttgtctgcc 900
tcattctaaa atttacacag tagaccattt gtcacccatg ctgtcccaca aatagttttt 960
tgtttacgat ttatgacagg tttatgttac ttctatttga atttctatat ttcccatgtg 1020

gtttttatgt ttaatattag gggagtagag ccagttaaca tttaggaggat tatctgtttt 1080
catcttgagg tggccaatat ggggatgtgg aatttttata caagttataa gtgtttggca 1140
tagtactttt ggtacattgt ggcttcaaaa gggccagtgt aaaactgctt ccatgtctaa 1200
gcaaagaaaa ctgcctacat actggtttgt cctggcgggg aataaaaggg atcattgggt 1260
ccagtacag gtgtagtaat tgtgggtact ttaaggtttg gagcacttac aaggctgtgg 1320
tagaatcata ccccatggat accacatatt aaacctgta tatctgtgga atactcaatg 1380
tgtacacctt tgactacagc tgcagaagtg ttcccttaga caaagtgtg acccatttta 1440

ctctggataa gggcagaaac gggtcacatt ccattatttg taaagttacc tgctgttagc 1500
tttcattatt ttgtctacac tcattttatt tgtatttaa tgttttaggc aacctagaa 1560
caaatgtaa agtaaagatg caggaaaaat gaattgcttg gtattcatta ctcatgtat 1620
atcaagcaca gcagtaaaac aaaaacccat gtatttaact ttttttagg attttgctt 1680
ttgtgatttt ttttttttg atactgcct aacatgcatg tgctgtaaaa atagttaaca 1740
gggaaataac ttgagatgat ggctagcttt gtttaatgtc ttatgaaatt ttcatgaaca 1800
atccaagcat aattgttaag aacacgtgta ttaaattcat gtaagtggaa taaaagtttt 1860

atgaatggac ttttcaacta ctttctctac agcttttcat gtaaattagt ctgggttctg 1920
aaacttctct aaaggaaatt gtacattttt tgaaatttat tccttattcc ctcttggcag 1980
ctaattgggt cttaccaagt ttaaacacaa aatttatcat aacaaaaata ctactaatat 2040
aactactgtt tccatgtccc atgatccct ctcttctcc ccacctgaa aaaaatgagt 2100
tcctattttt tctgggagag ggggggattg attagaaaa aatglagtgt gttccattta 2160
aaattttggc atatggcatt ttctaactta ggaagccaca atgttcttgg cccatcatga 2220
cattgggtag cattaactgt aagttttgtg ctccaaatc actttttgtt ttttaagaat 2280

ttcttgatac tcttatagcc tgccttcaat ttgatcctt tattcttct atttgcagg 2340
tgacaagat taccttcttg ttttagcctt ctgtcttgtc accaaccatt ctacttgg 2400
ggccatgtac ttggaaaaag gccgcatgat ctttctggct ccaactcagt tctaaggcac 2460

cctgcttcc tttgttgcac cccacagact atttccctca tcctatttac tgcagcaaat 2520
ctctccttag ttgatgagac tgtgtttatc tccctttaa accctaccta tcctgaatgg 2580
tctgtcattg tctgccttta aaatccttcc tctttcttcc tctctattc tctaaataat 2640
gatggggcta agttataccc aaagctcact ttacaaaata tttcctcagt actttgcaga 2700

aaacacaaaa caaaaatgcc attttaaaaa aggtgtatit tttcttttag aatgtaagct 2760
cctcaagagc agggacaatg ttttctgtat gttctattgt gcctagtaca ctgtaaatgc 2820
tcaataaata ttgatgatgg gaggcagtga gtcttgatga taagggtgag aaactgaaat 2880
cccaaacact gttttgttgc ttgttttatt atgacctcag attaaattgg gaaatattgg 2940
cccttttgaa taattgtccc aaatattaca ttcaaataaa agtgcaatgg agaaaaaaaa 3000
aaa 3003

<210> 55
<211> 2803
<212> DNA
<213> Homo sapiens

<400> 55

actgcagccc cgctcgactc cggcgtggtg cgcaggcgcg gtatcccccc tcccccgcca 60
gtcgcacccc ggtgtggtgc gcaggcgagc tctgcgcagg gactggcggg actgcgcggc 120
ggcaacagca gacatgtcgg gggccggggg cctgtcgcgg ctgctgagcg ctgcgcgcct 180
ggcgtgccc aaggcgtggc caacagtgtt gcaaacagga acccgaggtt ttcacttcac 240
tgttgatggg aacaagaggg catctgctaa agtttcagat tccattttctg ctcagtatcc 300
agtagtggat catgaatttg atgcagtggg ggtaggcgct ggaggggcag gcttgcgagc 360
tgcatttggc ctttctgagg cagggtttta tacagcatgt gttaccaagc tgtttcctac 420

caggtcacac acigtgtcag cacaggaggg aatcaatgct gctctgggga acatggagga 480
ggacaactgg aggtggcatt tctacgacac cgtgaagggc tccgactggc tgggggacca 540
ggatgccatc cactacatga cggagcaggc ccccgccgcc gtggtcgagc tagaaaatta 600
tggcatgccg tttagcagaa ctgaagatgg gaagatttat cagcgtgcat ttggtggaca 660
gagcctcaag tttggaaagg gcgggcaggc ccatcggtgc tgctgtgtgg ctgatcggac 720
tgccactcgt ctattgcaca ctttatatgg aaggctcttg cgatatgata ccagctattt 780
tgtggagtat tttgccttgg atctcctgat ggagaatggg gagtgccgtg gtgtcatcgc 840

actgtgcata gaggacgggt ccatccatcg cataagagca aagaacactg ttgttggcac 900
aggaggctac gggcgcacct acttcagctg cacgtctgcc cacaccagca ctggcgacgg 960

cacggccatg atcaccaggg caggccttcc ttgccaggac ctagagtttg ttcagttcca 1020
ccctacaggc atatatgggtg ctggttgtct cattacggaa ggaatgcgtg gagagggagg 1080
cattctcatt aacagtcaag gcgaaagggt tatggagcga tacgcccctg tcgcaagga 1140
cctggcgtct agagatgtgg tgtctcggtc catgactctg gagatccgag aaggaagagg 1200
ctgtggccct gagaaagatc acgtctacct gcagctgcac cacctacctc cagagcagct 1260

ggccacgcgc ctgcctggca tticagagac agccatgac ttcgctggcg tggacgtcac 1320
gaaggagccg atccctgtcc tccccaccgt gcattataac atgggcggca tccccacaa 1380
ctacaagggg caggtctcga ggcacgtgaa tggccaggat cagattgtgc ccggcctgta 1440
cgctgtggg gaggcgcct gtgcctcggc acatggtgcc aaccgcctcg gggcaaactc 1500
gctcttggac ctggttgtct ttggtcgggc atgtgccctg agcatcgaag agtcatgcag 1560
gcctggagat aaagtcctc caattaaacc aaacgtggg gaagaatctg tcatgaatct 1620
tgacaaattg agatttgtg atggaagcat aagaacatcg gaactgcgac tcagcatgca 1680

gaagtcaatg caaatcatg ctgccgtgtt ccgtgtggga agcgtgttgc aagaaggttg 1740
tgggaaaate agcaagctct atggagacct aaagcacctg aagacgttcg accggggaat 1800
ggtctggaac acggacctgg tggagacctt ggagctgcag aacctgatgc tgtgtgcgt 1860
gcagaccatc tacggagcag aggcacggaa ggagtcacgg ggcgcgcatg ccaggaaga 1920
ctacaaggtg cggattgatg agtacgatta ctccaagccc atccaggggc aacagaagaa 1980
gccctttgag gagcactgga ggaagcacac cctgtcctat gtggacgttg gcaactggaa 2040
ggtcactctg gaatatagac ccgtgatcga caaaactttg aacgaggctg actgtgccac 2100

cgcccccca gccattcgct cctactgatg agacaagatg tggtagtac agaatacagct 2160
tttgtaatga tgtataatag ctcatgcatg tgccatgtc ataactgtct tcatacgtt 2220
ctgcactctg gggaagaagg agtacattga agggagattg gcacctagt gctgggagct 2280
tgccaggaac ccagtggcca gggagcgtgg cacttacctt tgtcccttgc ttcattcttg 2340
tgagatgata aaactgggca cagctcttaa ataaaatata aatgaacaaa ctttctttta 2400
tttccaaatc catttgaaat attttactgt tgtgacttta gtcataattg ttgacctaaa 2460
aatcaaatgt aatctttgta ttgtgttaca tcaaatcca gatattttgt atagtttctt 2520

ttttctttt cttttctttt tttttttga gacaggatcg gtgcagtagt acaatcacag 2580
ctcactgcag cctcaaactc ctgggcagct caggtgatct tccgactca gccttctgag 2640
tagttggggc tacagggtgtg caccaccatg ccagctcat ttattttgta attgtaggga 2700
cagggtctca ctgtgttgcc taggtgtgtc tcaagtgate ctcctcctt ggccctccaa 2760
ggtgctggaa ttatagggtg gaacaaacca aaaaaaaaaa aaa 2803

<210> 56

<211> 1435

<212> DNA

<213> Homo sapiens

<400> 56

ggcggggcct gcttctctc agcttcaggc ggctgacg agccctcagg cgaacctctc 60

ggctttcccg cgcgggcccg cctcttctg cgctccgcc tctctctctg ctccgccacc 120

ggcttctcc tctgagcag tcagcccgcg cgcgggccgg ctccgttatg gcgaccgca 180

gccctggcgt cgtgattagt gatgatgaac caggttatga ccttgattta tttgcatac 240

ctaatcatta tgctgaggat ttggaaaggg tgtttattcc tcatggacta attatggaca 300

ggactgaacg tcttgctcga gatgtgatga aggagatggg aggccatcac attgtagccc 360

tctgtgtgct caaggggggc tataaattct ttgctgacct gctggattac atcaaagcac 420

tgaatagaaa tagtgataga tccattccta tgactgtaga tttatcaga ctgaagagct 480

attgtaatga ccagtcaaca ggggacataa aagtaattgg tggagatgat ctctcaactt 540

taactggaaa gaatgtcttg atttggaag atataattga cactggcaaa acaatgcaga 600

ctttgctttc cttggtcagg cagtataatc caaagatggg caaggtcgca agcttgctgg 660

tgaagaggac cccacgaagt gttggatata agccagactt tgttggattt gaaattccag 720

acaagtttgt ttaggatgat gcccttgact ataataataa cttcagggat ttgaatcatg 780

tttgtgtcat tagtgaaact ggaaaagcaa aatacaaacg ctaagatgag agttcaagtt 840

gagtttggaa acatctggag tcctattgac atcgccagta aaattatcaa tgttctagtt 900

ctgtggccat ctgcttagta gagctttttg catgtatctt ctaagaattt tatctgtttt 960

gtactttaga aatgtcagtt gctgcattcc taaactgttt atttgacta tgagcctata 1020

gactatcagt tccctttggg cggattgttg tttacttgt aaatgaaaaa attctcttaa 1080

accacagcac tattgagtga aacattgaac tcatatctgt aagaataaaa gagaagatat 1140

attagttttt taattggat ttttaatttt atatatgcag gaaagaatag aagtattga 1200

atattgttaa ttataccacc gtgtgttaga aaagtaagaa gcagtcaatt ttcacatcaa 1260

agacagcatc taagaagttt tgttctgtcc tggaattatt ttagtagtgt ttcagtaatg 1320

ttgactgtat tticcaactt gttcaaatia ttaccagtga atctttgtca gcagttccct 1380

tttaaatgca aatcaataaa ttcccaaaaa tttaaaaaaa aaaaaaaaaa aaaaa 1435