SEQUENCE LISTING

<110> ONCOTHERAPY SCIENCE, INC

<120> PEPTIDE VACCINES FOR CANCERS EXPRESSING TUMOR-ASSOCIATED ANTIGENS

<130> ONC-A0704P

<150> US 60/902,949
<151> 2007-02-21

<160> 434

<170> PatentIn version 3.4

<210> 1
<211> 3649
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (508)..(2997)

<400> 1
cccgctgtag ccgcgtgtgg gaggacgcac gggcctgctt caaagctttg ggataacagc 60

gcctccgggg gataatgaat gcggagcctc cgttttcagt cgacttcaga tgtgtctcca 120

ctttttttccg ctgtagccgc aaggcaagga aacatttctc ttcccgtact gaggaggctg 180

aggagtgcac tgggtgttct tttctcctct aacccagaac tgcgagacag aggctgagtc 240

cctgtaaaga acagctccag aaaagccagg agagcgcagg agggcatccg ggaggccagg 300

aggggttcgc tggggcctca accgcaccca catcggtccc acctgcgagg gggcgggacc 360

tcgtggcgct ggaccaatca gcacccacct gcgctcacct ggcctcctcc cgctggctcc 420

cgggggctgc ggtgctcaaa ggggcaagag ctgagcggaa caccggcccg ccgtcgcggc 480

agctgcttca cccctctctc tgcagcc atg ggg ctc cct cgt gga cct ctc gcg 534
Met Gly Leu Pro Arg Gly Pro Leu Ala
1 5

tct ctc ctc ctt ctc cag gtt tgc tgg ctg cag tgc gcg gcc tcc gag 582
Ser Leu Leu Leu Leu Gln Val Cys Trp Leu Gln Cys Ala Ala Ser Glu
10 15 20 25

ccg tgc cgg gcg gtc ttc agg gag gct gaa gtg acc ttg gag gcg gga 630
Pro Cys Arg Ala Val Phe Arg Glu Ala Glu Val Thr Leu Glu Ala Gly
30 35 40

ggc gcg gag cag gag ccc ggc cag gcg ctg ggg aaa gta ttc atg ggc 678
Gly Ala Glu Gln Glu Pro Gly Gln Ala Leu Gly Lys Val Phe Met Gly
45 50 55

tgc cct ggg caa gag cca gct ctg ttt agc act gat aat gat gac ttc 726
Cys Pro Gly Gln Glu Pro Ala Leu Phe Ser Thr Asp Asn Asp Asp Phe
60 65 70

```
act gtg cgg aat ggc gag aca gtc cag gaa aga agg tca ctg aag gaa      774
Thr Val Arg Asn Gly Glu Thr Val Gln Glu Arg Arg Ser Leu Lys Glu
    75                  80                  85

agg aat cca ttg aag atc ttc cca tcc aaa cgt atc tta cga aga cac      822
Arg Asn Pro Leu Lys Ile Phe Pro Ser Lys Arg Ile Leu Arg Arg His
90                  95                  100                 105

aag aga gat tgg gtg gtt gct cca ata tct gtc cct gaa aat ggc aag      870
Lys Arg Asp Trp Val Val Ala Pro Ile Ser Val Pro Glu Asn Gly Lys
                110                 115                 120

ggt ccc ttc ccc cag aga ctg aat cag ctc aag tct aat aaa gat aga      918
Gly Pro Phe Pro Gln Arg Leu Asn Gln Leu Lys Ser Asn Lys Asp Arg
            125                 130                 135

gac acc aag att ttc tac agc atc acg ggg ccg ggg gca gac agc ccc      966
Asp Thr Lys Ile Phe Tyr Ser Ile Thr Gly Pro Gly Ala Asp Ser Pro
        140                 145                 150

cct gag ggt gtc ttc gct gta gag aag gag aca ggc tgg ttg ttg ttg     1014
Pro Glu Gly Val Phe Ala Val Glu Lys Glu Thr Gly Trp Leu Leu Leu
    155                 160                 165

aat aag cca ctg gac cgg gag gag att gcc aag tat gag ctc ttt ggc     1062
Asn Lys Pro Leu Asp Arg Glu Glu Ile Ala Lys Tyr Glu Leu Phe Gly
170                 175                 180                 185

cac gct gtg tca gag aat ggt gcc tca gtg gag gac ccc atg aac atc     1110
His Ala Val Ser Glu Asn Gly Ala Ser Val Glu Asp Pro Met Asn Ile
                190                 195                 200

tcc atc atc gtg acc gac cag aat gac cac aag ccc aag ttt acc cag     1158
Ser Ile Ile Val Thr Asp Gln Asn Asp His Lys Pro Lys Phe Thr Gln
            205                 210                 215

gac acc ttc cga ggg agt gtc tta gag gga gtc cta cca ggt act tct     1206
Asp Thr Phe Arg Gly Ser Val Leu Glu Gly Val Leu Pro Gly Thr Ser
        220                 225                 230

gtg atg cag gtg aca gcc acg gat gag gat gat gcc atc tac acc tac     1254
Val Met Gln Val Thr Ala Thr Asp Glu Asp Asp Ala Ile Tyr Thr Tyr
    235                 240                 245

aat ggg gtg gtt gct tac tcc atc cat agc caa gaa cca aag gac cca     1302
Asn Gly Val Val Ala Tyr Ser Ile His Ser Gln Glu Pro Lys Asp Pro
250                 255                 260                 265

cac gac ctc atg ttc acc att cac cgg agc aca ggc acc atc agc gtc     1350
His Asp Leu Met Phe Thr Ile His Arg Ser Thr Gly Thr Ile Ser Val
                270                 275                 280

atc tcc agt ggc ctg gac cgg gaa aaa gtc cct gag tac aca ctg acc     1398
Ile Ser Ser Gly Leu Asp Arg Glu Lys Val Pro Glu Tyr Thr Leu Thr
            285                 290                 295

atc cag gcc aca gac atg gat ggg gac ggc tcc acc acc acg gca gtg     1446
Ile Gln Ala Thr Asp Met Asp Gly Asp Gly Ser Thr Thr Thr Ala Val
        300                 305                 310
```

```
gca gta gtg gag atc ctt gat gcc aat gac aat gct ccc atg ttt gac     1494
Ala Val Val Glu Ile Leu Asp Ala Asn Asp Asn Ala Pro Met Phe Asp
    315                 320                 325

ccc cag aag tac gag gcc cat gtg cct gag aat gca gtg ggc cat gag     1542
Pro Gln Lys Tyr Glu Ala His Val Pro Glu Asn Ala Val Gly His Glu
330                 335                 340                 345

gtg cag agg ctg acg gtc act gat ctg gac gcc ccc aac tca cca gcg     1590
Val Gln Arg Leu Thr Val Thr Asp Leu Asp Ala Pro Asn Ser Pro Ala
                350                 355                 360

tgg cgt gcc acc tac ctt atc atg ggc ggt gac gac ggg gac cat ttt     1638
Trp Arg Ala Thr Tyr Leu Ile Met Gly Gly Asp Asp Gly Asp His Phe
            365                 370                 375

acc atc acc acc cac cct gag agc aac cag ggc atc ctg aca acc agg     1686
Thr Ile Thr Thr His Pro Glu Ser Asn Gln Gly Ile Leu Thr Thr Arg
        380                 385                 390

aag ggt ttg gat ttt gag gcc aaa aac cag cac acc ctg tac gtt gaa     1734
Lys Gly Leu Asp Phe Glu Ala Lys Asn Gln His Thr Leu Tyr Val Glu
    395                 400                 405

gtg acc aac gag gcc cct ttt gtg ctg aag ctc cca acc tcc aca gcc     1782
Val Thr Asn Glu Ala Pro Phe Val Leu Lys Leu Pro Thr Ser Thr Ala
410                 415                 420                 425

acc ata gtg gtc cac gtg gag gat gtg aat gag gca cct gtg ttt gtc     1830
Thr Ile Val Val His Val Glu Asp Val Asn Glu Ala Pro Val Phe Val
                430                 435                 440

cca ccc tcc aaa gtc gtt gag gtc cag gag ggc atc ccc act ggg gag     1878
Pro Pro Ser Lys Val Val Glu Val Gln Glu Gly Ile Pro Thr Gly Glu
            445                 450                 455

cct gtg tgt gtc tac act gca gaa gac cct gac aag gag aat caa aag     1926
Pro Val Cys Val Tyr Thr Ala Glu Asp Pro Asp Lys Glu Asn Gln Lys
        460                 465                 470

atc agc tac cgc atc ctg aga gac cca gca ggg tgg cta gcc atg gac     1974
Ile Ser Tyr Arg Ile Leu Arg Asp Pro Ala Gly Trp Leu Ala Met Asp
    475                 480                 485

cca gac agt ggg cag gtc aca gct gtg ggc acc ctc gac cgt gag gat     2022
Pro Asp Ser Gly Gln Val Thr Ala Val Gly Thr Leu Asp Arg Glu Asp
490                 495                 500                 505

gag cag ttt gtg agg aac aac atc tat gaa gtc atg gtc ttg gcc atg     2070
Glu Gln Phe Val Arg Asn Asn Ile Tyr Glu Val Met Val Leu Ala Met
                510                 515                 520

gac aat gga agc cct ccc acc act ggc acg gga acc ctt ctg cta aca     2118
Asp Asn Gly Ser Pro Pro Thr Thr Gly Thr Gly Thr Leu Leu Leu Thr
            525                 530                 535

ctg att gat gtc aat gac cat ggc cca gtc cct gag ccc cgt cag atc     2166
Leu Ile Asp Val Asn Asp His Gly Pro Val Pro Glu Pro Arg Gln Ile
        540                 545                 550

acc atc tgc aac caa agc cct gtg cgc cag gtg ctg aac atc acg gac     2214
```

```
Thr Ile Cys Asn Gln Ser Pro Val Arg Gln Val Leu Asn Ile Thr Asp
    555                 560                 565

aag gac ctg tct ccc cac acc tcc cct ttc cag gcc cag ctc aca gat     2262
Lys Asp Leu Ser Pro His Thr Ser Pro Phe Gln Ala Gln Leu Thr Asp
570                 575                 580                 585

gac tca gac atc tac tgg acg gca gag gtc aac gag gaa ggt gac aca     2310
Asp Ser Asp Ile Tyr Trp Thr Ala Glu Val Asn Glu Glu Gly Asp Thr
                590                 595                 600

gtg gtc ttg tcc ctg aag aag ttc ctg aag cag gat aca tat gac gtg     2358
Val Val Leu Ser Leu Lys Lys Phe Leu Lys Gln Asp Thr Tyr Asp Val
            605                 610                 615

cac ctt tct ctg tct gac cat ggc aac aaa gag cag ctg acg gtg atc     2406
His Leu Ser Leu Ser Asp His Gly Asn Lys Glu Gln Leu Thr Val Ile
        620                 625                 630

agg gcc act gtg tgc gac tgc cat ggc cat gtc gaa acc tgc cct gga     2454
Arg Ala Thr Val Cys Asp Cys His Gly His Val Glu Thr Cys Pro Gly
    635                 640                 645

ccc tgg aag gga ggt ttc atc ctc cct gtg ctg ggg gct gtc ctg gct     2502
Pro Trp Lys Gly Gly Phe Ile Leu Pro Val Leu Gly Ala Val Leu Ala
650                 655                 660                 665

ctg ctg ttc ctc ctg ctg gtg ctg ctt ttg ttg gtg aga aag aag cgg     2550
Leu Leu Phe Leu Leu Leu Val Leu Leu Leu Leu Val Arg Lys Lys Arg
                670                 675                 680

aag atc aag gag ccc ctc cta ctc cca gaa gat gac acc cgt gac aac     2598
Lys Ile Lys Glu Pro Leu Leu Leu Pro Glu Asp Asp Thr Arg Asp Asn
            685                 690                 695

gtc ttc tac tat ggc gaa gag ggg ggt ggc gaa gag gac cag gac tat     2646
Val Phe Tyr Tyr Gly Glu Glu Gly Gly Gly Glu Glu Asp Gln Asp Tyr
        700                 705                 710

gac atc acc cag ctc cac cga ggt ctg gag gcc agg ccg gag gtg gtt     2694
Asp Ile Thr Gln Leu His Arg Gly Leu Glu Ala Arg Pro Glu Val Val
    715                 720                 725

ctc cgc aat gac gtg gca cca acc atc atc ccg aca ccc atg tac cgt     2742
Leu Arg Asn Asp Val Ala Pro Thr Ile Ile Pro Thr Pro Met Tyr Arg
730                 735                 740                 745

cct cgg cca gcc aac cca gat gaa atc ggc aac ttt ata att gag aac     2790
Pro Arg Pro Ala Asn Pro Asp Glu Ile Gly Asn Phe Ile Ile Glu Asn
                750                 755                 760

ctg aag gcg gct aac aca gac ccc aca gcc ccg ccc tac gac acc ctc     2838
Leu Lys Ala Ala Asn Thr Asp Pro Thr Ala Pro Pro Tyr Asp Thr Leu
            765                 770                 775

ttg gtg ttc gac tat gag ggc agc ggc tcc gac gcc gcg tcc ctg agc     2886
Leu Val Phe Asp Tyr Glu Gly Ser Gly Ser Asp Ala Ala Ser Leu Ser
        780                 785                 790

tcc ctc acc tcc tcc gcc tcc gac caa gac caa gat tac gat tat ctg     2934
Ser Leu Thr Ser Ser Ala Ser Asp Gln Asp Gln Asp Tyr Asp Tyr Leu
```

```
    795                 800                 805

aac gag tgg ggc agc cgc ttc aag aag ctg gca gac atg tac ggt ggc     2982
Asn Glu Trp Gly Ser Arg Phe Lys Lys Leu Ala Asp Met Tyr Gly Gly
810                 815                 820                 825

ggg gag gac gac tag gcggcctgcc tgcagggctg gggaccaaac gtcaggccac     3037
Gly Glu Asp Asp

agagcatctc caaggggtct cagttccccc ttcagctgag gacttcggag cttgtcagga   3097

agtggccgta gcaacttggc ggagacaggc tatgagtctg acgttagagt ggtggcttcc   3157

ttagcctttc aggatggagg aatgtgggca gtttgacttc agcactgaaa acctctccac   3217

ctgggccagg gttgcctcag aggccaagtt tccagaagcc tcttacctgc cgtaaaatgc   3277

tcaaccctgt gtcctgggcc tgggcctgct gtgactgacc tacagtggac tttctctctg   3337

gaatggaacc ttcttaggcc tcctggtgca acttaatttt ttttttaat gctatcttca   3397

aaacgttaga gaaagttctt caaaagtgca gcccagagct gctgggccca ctggccgtcc   3457

tgcatttctg gtttccagac cccaatgcct cccattcgga tggatctctg cgtttttata   3517

ctgagtgtgc ctaggttgcc ccttattttt tattttccct gttgcgttgc tatagatgaa   3577

gggtgaggac aatcgtgtat atgtactaga acttttttat taaagaaact tttcccagaa   3637

aaaaaaaaaa aa                                                       3649


<210>  2
<211>  829
<212>  PRT
<213>  Homo sapiens

<400>  2

Met Gly Leu Pro Arg Gly Pro Leu Ala Ser Leu Leu Leu Leu Gln Val
1               5                   10                  15


Cys Trp Leu Gln Cys Ala Ala Ser Glu Pro Cys Arg Ala Val Phe Arg
            20                  25                  30


Glu Ala Glu Val Thr Leu Glu Ala Gly Gly Ala Glu Gln Glu Pro Gly
        35                  40                  45


Gln Ala Leu Gly Lys Val Phe Met Gly Cys Pro Gly Gln Glu Pro Ala
    50                  55                  60


Leu Phe Ser Thr Asp Asn Asp Asp Phe Thr Val Arg Asn Gly Glu Thr
65                  70                  75                  80


Val Gln Glu Arg Arg Ser Leu Lys Glu Arg Asn Pro Leu Lys Ile Phe
```

```
                85                  90                  95

Pro Ser Lys Arg Ile Leu Arg Arg His Lys Arg Asp Trp Val Val Ala
            100                 105                 110

Pro Ile Ser Val Pro Glu Asn Gly Lys Gly Pro Phe Pro Gln Arg Leu
        115                 120                 125

Asn Gln Leu Lys Ser Asn Lys Asp Arg Asp Thr Lys Ile Phe Tyr Ser
    130                 135                 140

Ile Thr Gly Pro Gly Ala Asp Ser Pro Pro Glu Gly Val Phe Ala Val
145                 150                 155                 160

Glu Lys Glu Thr Gly Trp Leu Leu Leu Asn Lys Pro Leu Asp Arg Glu
                165                 170                 175

Glu Ile Ala Lys Tyr Glu Leu Phe Gly His Ala Val Ser Glu Asn Gly
            180                 185                 190

Ala Ser Val Glu Asp Pro Met Asn Ile Ser Ile Ile Val Thr Asp Gln
        195                 200                 205

Asn Asp His Lys Pro Lys Phe Thr Gln Asp Thr Phe Arg Gly Ser Val
    210                 215                 220

Leu Glu Gly Val Leu Pro Gly Thr Ser Val Met Gln Val Thr Ala Thr
225                 230                 235                 240

Asp Glu Asp Asp Ala Ile Tyr Thr Tyr Asn Gly Val Val Ala Tyr Ser
                245                 250                 255

Ile His Ser Gln Glu Pro Lys Asp Pro His Asp Leu Met Phe Thr Ile
            260                 265                 270

His Arg Ser Thr Gly Thr Ile Ser Val Ile Ser Ser Gly Leu Asp Arg
        275                 280                 285

Glu Lys Val Pro Glu Tyr Thr Leu Thr Ile Gln Ala Thr Asp Met Asp
    290                 295                 300

Gly Asp Gly Ser Thr Thr Thr Ala Val Ala Val Val Glu Ile Leu Asp
305                 310                 315                 320

Ala Asn Asp Asn Ala Pro Met Phe Asp Pro Gln Lys Tyr Glu Ala His
                325                 330                 335
```

```
Val Pro Glu Asn Ala Val Gly His Glu Val Gln Arg Leu Thr Val Thr
            340                 345                 350

Asp Leu Asp Ala Pro Asn Ser Pro Ala Trp Arg Ala Thr Tyr Leu Ile
        355                 360                 365

Met Gly Gly Asp Asp Gly Asp His Phe Thr Ile Thr Thr His Pro Glu
    370                 375                 380

Ser Asn Gln Gly Ile Leu Thr Thr Arg Lys Gly Leu Asp Phe Glu Ala
385                 390                 395                 400

Lys Asn Gln His Thr Leu Tyr Val Glu Val Thr Asn Glu Ala Pro Phe
                405                 410                 415

Val Leu Lys Leu Pro Thr Ser Thr Ala Thr Ile Val Val His Val Glu
            420                 425                 430

Asp Val Asn Glu Ala Pro Val Phe Val Pro Pro Ser Lys Val Val Glu
        435                 440                 445

Val Gln Glu Gly Ile Pro Thr Gly Glu Pro Val Cys Val Tyr Thr Ala
    450                 455                 460

Glu Asp Pro Asp Lys Glu Asn Gln Lys Ile Ser Tyr Arg Ile Leu Arg
465                 470                 475                 480

Asp Pro Ala Gly Trp Leu Ala Met Asp Pro Asp Ser Gly Gln Val Thr
                485                 490                 495

Ala Val Gly Thr Leu Asp Arg Glu Asp Glu Gln Phe Val Arg Asn Asn
            500                 505                 510

Ile Tyr Glu Val Met Val Leu Ala Met Asp Asn Gly Ser Pro Pro Thr
        515                 520                 525

Thr Gly Thr Gly Thr Leu Leu Leu Thr Leu Ile Asp Val Asn Asp His
    530                 535                 540

Gly Pro Val Pro Glu Pro Arg Gln Ile Thr Ile Cys Asn Gln Ser Pro
545                 550                 555                 560

Val Arg Gln Val Leu Asn Ile Thr Asp Lys Asp Leu Ser Pro His Thr
                565                 570                 575
```

```
Ser Pro Phe Gln Ala Gln Leu Thr Asp Asp Ser Asp Ile Tyr Trp Thr
            580                 585                 590

Ala Glu Val Asn Glu Glu Gly Asp Thr Val Val Leu Ser Leu Lys Lys
        595                 600                 605

Phe Leu Lys Gln Asp Thr Tyr Asp Val His Leu Ser Leu Ser Asp His
    610                 615                 620

Gly Asn Lys Glu Gln Leu Thr Val Ile Arg Ala Thr Val Cys Asp Cys
625                 630                 635                 640

His Gly His Val Glu Thr Cys Pro Gly Pro Trp Lys Gly Gly Phe Ile
                645                 650                 655

Leu Pro Val Leu Gly Ala Val Leu Ala Leu Leu Phe Leu Leu Leu Val
            660                 665                 670

Leu Leu Leu Leu Val Arg Lys Lys Arg Lys Ile Lys Glu Pro Leu Leu
        675                 680                 685

Leu Pro Glu Asp Asp Thr Arg Asp Asn Val Phe Tyr Tyr Gly Glu Glu
    690                 695                 700

Gly Gly Gly Glu Glu Asp Gln Asp Tyr Asp Ile Thr Gln Leu His Arg
705                 710                 715                 720

Gly Leu Glu Ala Arg Pro Glu Val Val Leu Arg Asn Asp Val Ala Pro
                725                 730                 735

Thr Ile Ile Pro Thr Pro Met Tyr Arg Pro Arg Pro Ala Asn Pro Asp
            740                 745                 750

Glu Ile Gly Asn Phe Ile Ile Glu Asn Leu Lys Ala Ala Asn Thr Asp
        755                 760                 765

Pro Thr Ala Pro Pro Tyr Asp Thr Leu Leu Val Phe Asp Tyr Glu Gly
    770                 775                 780

Ser Gly Ser Asp Ala Ala Ser Leu Ser Ser Leu Thr Ser Ser Ala Ser
785                 790                 795                 800

Asp Gln Asp Gln Asp Tyr Asp Tyr Leu Asn Glu Trp Gly Ser Arg Phe
                805                 810                 815
```

```
Lys Lys Leu Ala Asp Met Tyr Gly Gly Gly Glu Asp Asp
            820                 825


<210>  3
<211>  3107
<212>  DNA
<213>  Homo sapiens


<220>
<221>  CDS
<222>  (34)..(2994)

<400>  3
aagcggcagg agcagcgttg gcaccggcga acc atg gct ggg att ttc tat ttc      54
                                      Met Ala Gly Ile Phe Tyr Phe
                                      1               5

gcc cta ttt tcg tgt ctc ttc ggg att tgc gac gct gtc aca ggt tcc      102
Ala Leu Phe Ser Cys Leu Phe Gly Ile Cys Asp Ala Val Thr Gly Ser
        10                  15                  20

agg gta tac ccc gcg aat gaa gtt acc tta ttg gat tcc aga tct gtt      150
Arg Val Tyr Pro Ala Asn Glu Val Thr Leu Leu Asp Ser Arg Ser Val
    25                  30                  35

cag gga gaa ctt ggg tgg ata gca agc cct ctg gaa gga ggg tgg gag      198
Gln Gly Glu Leu Gly Trp Ile Ala Ser Pro Leu Glu Gly Gly Trp Glu
40                  45                  50                  55

gaa gtg agt atc atg gat gaa aaa aat aca cca atc cga acc tac caa      246
Glu Val Ser Ile Met Asp Glu Lys Asn Thr Pro Ile Arg Thr Tyr Gln
                60                  65                  70

gtg tgc aat gtg atg gaa ccc agc cag aat aac tgg cta cga act gat      294
Val Cys Asn Val Met Glu Pro Ser Gln Asn Asn Trp Leu Arg Thr Asp
            75                  80                  85

tgg atc acc cga gaa ggg gct cag agg gtg tat att gag att aaa ttc      342
Trp Ile Thr Arg Glu Gly Ala Gln Arg Val Tyr Ile Glu Ile Lys Phe
        90                  95                  100

acc ttg agg gac tgc aat agt ctt ccg ggc gtc atg ggg act tgc aag      390
Thr Leu Arg Asp Cys Asn Ser Leu Pro Gly Val Met Gly Thr Cys Lys
    105                 110                 115

gag acg ttt aac ctg tac tac tat gaa tca gac aac gac aaa gag cgt      438
Glu Thr Phe Asn Leu Tyr Tyr Tyr Glu Ser Asp Asn Asp Lys Glu Arg
120                 125                 130                 135

ttc atc aga gag aac cag ttt gtc aaa att gac acc att gct gct gat      486
Phe Ile Arg Glu Asn Gln Phe Val Lys Ile Asp Thr Ile Ala Ala Asp
                140                 145                 150

gag agc ttc acc caa gtg gac att ggt gac aga atc atg aag ctg aac      534
Glu Ser Phe Thr Gln Val Asp Ile Gly Asp Arg Ile Met Lys Leu Asn
            155                 160                 165

acc gag atc cgg gat gta ggg cca tta agc aaa aag ggg ttt tac ctg      582
Thr Glu Ile Arg Asp Val Gly Pro Leu Ser Lys Lys Gly Phe Tyr Leu
```

```
        170                 175                 180

gct ttt cag gat gtg ggg gcc tgc atc gcc ctg gta tca gtc cgt gtg      630
Ala Phe Gln Asp Val Gly Ala Cys Ile Ala Leu Val Ser Val Arg Val
    185                 190                 195

ttc tat aaa aag tgt cca ctc aca gtc cgc aat ctg gcc cag ttt cct      678
Phe Tyr Lys Lys Cys Pro Leu Thr Val Arg Asn Leu Ala Gln Phe Pro
200                 205                 210                 215

gac acc atc aca ggg gct gat acg tct tcc ctg gtg gaa gtt cga ggc      726
Asp Thr Ile Thr Gly Ala Asp Thr Ser Ser Leu Val Glu Val Arg Gly
                220                 225                 230

tcc tgt gtc aac aac tca gaa gag aaa gat gtg cca aaa atg tac tgt      774
Ser Cys Val Asn Asn Ser Glu Glu Lys Asp Val Pro Lys Met Tyr Cys
            235                 240                 245

ggg gca gat ggt gaa tgg ctg gta ccc att ggc aac tgc cta tgc aac      822
Gly Ala Asp Gly Glu Trp Leu Val Pro Ile Gly Asn Cys Leu Cys Asn
        250                 255                 260

gct ggg cat gag gag cgg agc gga gaa tgc caa gct tgc aaa att gga      870
Ala Gly His Glu Glu Arg Ser Gly Glu Cys Gln Ala Cys Lys Ile Gly
    265                 270                 275

tat tac aag gct ctc tcc acg gat gcc acc tgt gcc aag tgc cca ccc      918
Tyr Tyr Lys Ala Leu Ser Thr Asp Ala Thr Cys Ala Lys Cys Pro Pro
280                 285                 290                 295

cac agc tac tct gtc tgg gaa gga gcc acc tcg tgc acc tgt gac cga      966
His Ser Tyr Ser Val Trp Glu Gly Ala Thr Ser Cys Thr Cys Asp Arg
                300                 305                 310

ggc ttt ttc aga gct gac aac gat gct gcc tct atg ccc tgc acc cgt     1014
Gly Phe Phe Arg Ala Asp Asn Asp Ala Ala Ser Met Pro Cys Thr Arg
            315                 320                 325

cca cca tct gct ccc ctg aac ttg att tca aat gtc aac gag aca tct     1062
Pro Pro Ser Ala Pro Leu Asn Leu Ile Ser Asn Val Asn Glu Thr Ser
        330                 335                 340

gtg aac ttg gaa tgg agt agc cct cag aat aca ggt ggc cgc cag gac     1110
Val Asn Leu Glu Trp Ser Ser Pro Gln Asn Thr Gly Gly Arg Gln Asp
    345                 350                 355

att tcc tat aat gtg gta tgc aag aaa tgt gga gct ggt gac ccc agc     1158
Ile Ser Tyr Asn Val Val Cys Lys Lys Cys Gly Ala Gly Asp Pro Ser
360                 365                 370                 375

aag tgc cga ccc tgt gga agt ggg gtc cac tac acc cca cag cag aat     1206
Lys Cys Arg Pro Cys Gly Ser Gly Val His Tyr Thr Pro Gln Gln Asn
                380                 385                 390

ggc ttg aag acc acc aaa gtc tcc atc act gac ctc cta gct cat acc     1254
Gly Leu Lys Thr Thr Lys Val Ser Ile Thr Asp Leu Leu Ala His Thr
            395                 400                 405

aat tac acc ttt gaa atc tgg gct gtg aat gga gtg tcc aaa tat aac     1302
Asn Tyr Thr Phe Glu Ile Trp Ala Val Asn Gly Val Ser Lys Tyr Asn
        410                 415                 420
```

```
cct aac cca gac caa tca gtt tct gtc act gtg acc acc aac caa gca     1350
Pro Asn Pro Asp Gln Ser Val Ser Val Thr Val Thr Thr Asn Gln Ala
    425                 430                 435

gca cca tca tcc att gct ttg gtc cag gct aaa gaa gtc aca aga tac     1398
Ala Pro Ser Ser Ile Ala Leu Val Gln Ala Lys Glu Val Thr Arg Tyr
440                 445                 450                 455

agt gtg gca ctg gct tgg ctg gaa cca gat cgg ccc aat ggg gta atc     1446
Ser Val Ala Leu Ala Trp Leu Glu Pro Asp Arg Pro Asn Gly Val Ile
                460                 465                 470

ctg gaa tat gaa gtc aag tat tat gag aag gat cag aat gag cga agc     1494
Leu Glu Tyr Glu Val Lys Tyr Tyr Glu Lys Asp Gln Asn Glu Arg Ser
            475                 480                 485

tat cgt ata gtt cgg aca gct gcc agg aac aca gat atc aaa ggc ctg     1542
Tyr Arg Ile Val Arg Thr Ala Ala Arg Asn Thr Asp Ile Lys Gly Leu
        490                 495                 500

aac cct ctc act tcc tat gtt ttc cac gtg cga gcc agg aca gca gct     1590
Asn Pro Leu Thr Ser Tyr Val Phe His Val Arg Ala Arg Thr Ala Ala
    505                 510                 515

ggc tat gga gac ttc agt gag ccc ttg gag gtt aca acc aac aca gtg     1638
Gly Tyr Gly Asp Phe Ser Glu Pro Leu Glu Val Thr Thr Asn Thr Val
520                 525                 530                 535

cct tcc cgg atc att gga gat ggg gct aac tcc aca gtc ctt ctg gtc     1686
Pro Ser Arg Ile Ile Gly Asp Gly Ala Asn Ser Thr Val Leu Leu Val
                540                 545                 550

tct gtc tcg ggc agt gtg gtg ctg gtg gta att ctc att gca gct ttt     1734
Ser Val Ser Gly Ser Val Val Leu Val Val Ile Leu Ile Ala Ala Phe
            555                 560                 565

gtc atc agc cgg aga cgg agt aaa tac agt aaa gcc aaa caa gaa gcg     1782
Val Ile Ser Arg Arg Arg Ser Lys Tyr Ser Lys Ala Lys Gln Glu Ala
        570                 575                 580

gat gaa gag aaa cat ttg aat caa ggt gta aga aca tat gtg gac ccc     1830
Asp Glu Glu Lys His Leu Asn Gln Gly Val Arg Thr Tyr Val Asp Pro
    585                 590                 595

ttt acg tac gaa gat ccc aac caa gca gtg cga gag ttt gcc aaa gaa     1878
Phe Thr Tyr Glu Asp Pro Asn Gln Ala Val Arg Glu Phe Ala Lys Glu
600                 605                 610                 615

att gac gca tcc tgc att aag att gaa aaa gtt ata gga gtt ggt gaa     1926
Ile Asp Ala Ser Cys Ile Lys Ile Glu Lys Val Ile Gly Val Gly Glu
                620                 625                 630

ttt ggt gag gta tgc agt ggg cgt ctc aaa gtg cct ggc aag aga gag     1974
Phe Gly Glu Val Cys Ser Gly Arg Leu Lys Val Pro Gly Lys Arg Glu
            635                 640                 645

atc tgt gtg gct atc aag act ctg aaa gct ggt tat aca gac aaa cag     2022
Ile Cys Val Ala Ile Lys Thr Leu Lys Ala Gly Tyr Thr Asp Lys Gln
        650                 655                 660
```

```
agg aga gac ttc ctg agt gag gcc agc atc atg gga cag ttt gac cat     2070
Arg Arg Asp Phe Leu Ser Glu Ala Ser Ile Met Gly Gln Phe Asp His
    665                 670                 675

ccg aac atc att cac ttg gaa ggc gtg gtc act aaa tgt aaa cca gta     2118
Pro Asn Ile Ile His Leu Glu Gly Val Val Thr Lys Cys Lys Pro Val
680                 685                 690                 695

atg atc ata aca gag tac atg gag aat ggc tcc ttg gat gca ttc ctc     2166
Met Ile Ile Thr Glu Tyr Met Glu Asn Gly Ser Leu Asp Ala Phe Leu
                700                 705                 710

agg aaa aat gat ggc aga ttt aca gtc att cag ctg gtg ggc atg ctt     2214
Arg Lys Asn Asp Gly Arg Phe Thr Val Ile Gln Leu Val Gly Met Leu
            715                 720                 725

cgt ggc att ggg tct ggg atg aag tat tta tct gat atg agc tat gtg     2262
Arg Gly Ile Gly Ser Gly Met Lys Tyr Leu Ser Asp Met Ser Tyr Val
        730                 735                 740

cat cgt gat ctg gcc gca cgg aac atc ctg gtg aac agc aac ttg gtc     2310
His Arg Asp Leu Ala Ala Arg Asn Ile Leu Val Asn Ser Asn Leu Val
    745                 750                 755

tgc aaa gtg tct gat ttt ggc atg tcc cga gtg ctt gag gat gat ccg     2358
Cys Lys Val Ser Asp Phe Gly Met Ser Arg Val Leu Glu Asp Asp Pro
760                 765                 770                 775

gaa gca gct tac acc acc agg ggt ggc aag att cct atc cgg tgg act     2406
Glu Ala Ala Tyr Thr Thr Arg Gly Gly Lys Ile Pro Ile Arg Trp Thr
                780                 785                 790

gcg cca gaa gca att gcc tat cgt aaa ttc aca tca gca agt gat gta     2454
Ala Pro Glu Ala Ile Ala Tyr Arg Lys Phe Thr Ser Ala Ser Asp Val
            795                 800                 805

tgg agc tat gga atc gtt atg tgg gaa gtg atg tcg tac ggg gag agg     2502
Trp Ser Tyr Gly Ile Val Met Trp Glu Val Met Ser Tyr Gly Glu Arg
        810                 815                 820

ccc tat tgg gat atg tcc aat caa gat gtg att aaa gcc att gag gaa     2550
Pro Tyr Trp Asp Met Ser Asn Gln Asp Val Ile Lys Ala Ile Glu Glu
    825                 830                 835

ggc tat cgg tta ccc cct cca atg gac tgc ccc att gcg ctc cac cag     2598
Gly Tyr Arg Leu Pro Pro Pro Met Asp Cys Pro Ile Ala Leu His Gln
840                 845                 850                 855

ctg atg cta gac tgc tgg cag aag gag agg agc gac agg cct aaa ttt     2646
Leu Met Leu Asp Cys Trp Gln Lys Glu Arg Ser Asp Arg Pro Lys Phe
                860                 865                 870

ggg cag att gtc aac atg ttg gac aaa ctc atc cgc aac ccc aac agc     2694
Gly Gln Ile Val Asn Met Leu Asp Lys Leu Ile Arg Asn Pro Asn Ser
            875                 880                 885

ttg aag agg aca ggg acg gag agc tcc aga cct aac act gcc ttg ttg     2742
Leu Lys Arg Thr Gly Thr Glu Ser Ser Arg Pro Asn Thr Ala Leu Leu
        890                 895                 900

gat cca agc tcc cct gaa ttc tct gct gtg gta tca gtg ggc gat tgg     2790
```

```
Asp Pro Ser Ser Pro Glu Phe Ser Ala Val Val Ser Val Gly Asp Trp
    905                 910                 915

ctc cag gcc att aaa atg gac cgg tat aag gat aac ttc aca gct gct     2838
Leu Gln Ala Ile Lys Met Asp Arg Tyr Lys Asp Asn Phe Thr Ala Ala
920                 925                 930                 935

ggt tat acc aca cta gag gct gtg gtg cac gtg aac cag gag gac ctg     2886
Gly Tyr Thr Thr Leu Glu Ala Val Val His Val Asn Gln Glu Asp Leu
                940                 945                 950

gca aga att ggt atc aca gcc atc acg cac cag aat aag att ttg agc     2934
Ala Arg Ile Gly Ile Thr Ala Ile Thr His Gln Asn Lys Ile Leu Ser
            955                 960                 965

agt gtc cag gca atg cga acc caa atg cag cag atg cac ggc aga atg     2982
Ser Val Gln Ala Met Arg Thr Gln Met Gln Gln Met His Gly Arg Met
        970                 975                 980

gtt ccc gtc tga gccagtactg aataaactca aaactcttga aattagttta         3034
Val Pro Val
    985

cctcatccat gcactttaat tgaagaactg cacttttttt acttcgtctt cgccctctga   3094

aattaaagaa atg                                                      3107


<210>  4
<211>  986
<212>  PRT
<213>  Homo sapiens

<400>  4

Met Ala Gly Ile Phe Tyr Phe Ala Leu Phe Ser Cys Leu Phe Gly Ile
1               5                   10                  15


Cys Asp Ala Val Thr Gly Ser Arg Val Tyr Pro Ala Asn Glu Val Thr
            20                  25                  30


Leu Leu Asp Ser Arg Ser Val Gln Gly Glu Leu Gly Trp Ile Ala Ser
        35                  40                  45


Pro Leu Glu Gly Gly Trp Glu Glu Val Ser Ile Met Asp Glu Lys Asn
    50                  55                  60


Thr Pro Ile Arg Thr Tyr Gln Val Cys Asn Val Met Glu Pro Ser Gln
65                  70                  75                  80


Asn Asn Trp Leu Arg Thr Asp Trp Ile Thr Arg Glu Gly Ala Gln Arg
                85                  90                  95


Val Tyr Ile Glu Ile Lys Phe Thr Leu Arg Asp Cys Asn Ser Leu Pro
            100                 105                 110
```

```
Gly Val Met Gly Thr Cys Lys Glu Thr Phe Asn Leu Tyr Tyr Tyr Glu
        115                 120                 125

Ser Asp Asn Asp Lys Glu Arg Phe Ile Arg Glu Asn Gln Phe Val Lys
    130                 135                 140

Ile Asp Thr Ile Ala Ala Asp Glu Ser Phe Thr Gln Val Asp Ile Gly
145                 150                 155                 160

Asp Arg Ile Met Lys Leu Asn Thr Glu Ile Arg Asp Val Gly Pro Leu
                165                 170                 175

Ser Lys Lys Gly Phe Tyr Leu Ala Phe Gln Asp Val Gly Ala Cys Ile
            180                 185                 190

Ala Leu Val Ser Val Arg Val Phe Tyr Lys Lys Cys Pro Leu Thr Val
        195                 200                 205

Arg Asn Leu Ala Gln Phe Pro Asp Thr Ile Thr Gly Ala Asp Thr Ser
    210                 215                 220

Ser Leu Val Glu Val Arg Gly Ser Cys Val Asn Asn Ser Glu Glu Lys
225                 230                 235                 240

Asp Val Pro Lys Met Tyr Cys Gly Ala Asp Gly Glu Trp Leu Val Pro
                245                 250                 255

Ile Gly Asn Cys Leu Cys Asn Ala Gly His Glu Glu Arg Ser Gly Glu
            260                 265                 270

Cys Gln Ala Cys Lys Ile Gly Tyr Tyr Lys Ala Leu Ser Thr Asp Ala
        275                 280                 285

Thr Cys Ala Lys Cys Pro Pro His Ser Tyr Ser Val Trp Glu Gly Ala
    290                 295                 300

Thr Ser Cys Thr Cys Asp Arg Gly Phe Phe Arg Ala Asp Asn Asp Ala
305                 310                 315                 320

Ala Ser Met Pro Cys Thr Arg Pro Pro Ser Ala Pro Leu Asn Leu Ile
                325                 330                 335

Ser Asn Val Asn Glu Thr Ser Val Asn Leu Glu Trp Ser Ser Pro Gln
            340                 345                 350
```

```
Asn Thr Gly Gly Arg Gln Asp Ile Ser Tyr Asn Val Val Cys Lys Lys
        355                 360                 365

Cys Gly Ala Gly Asp Pro Ser Lys Cys Arg Pro Cys Gly Ser Gly Val
    370                 375                 380

His Tyr Thr Pro Gln Gln Asn Gly Leu Lys Thr Thr Lys Val Ser Ile
385                 390                 395                 400

Thr Asp Leu Leu Ala His Thr Asn Tyr Thr Phe Glu Ile Trp Ala Val
                405                 410                 415

Asn Gly Val Ser Lys Tyr Asn Pro Asn Pro Asp Gln Ser Val Ser Val
            420                 425                 430

Thr Val Thr Thr Asn Gln Ala Ala Pro Ser Ser Ile Ala Leu Val Gln
        435                 440                 445

Ala Lys Glu Val Thr Arg Tyr Ser Val Ala Leu Ala Trp Leu Glu Pro
    450                 455                 460

Asp Arg Pro Asn Gly Val Ile Leu Glu Tyr Glu Val Lys Tyr Tyr Glu
465                 470                 475                 480

Lys Asp Gln Asn Glu Arg Ser Tyr Arg Ile Val Arg Thr Ala Ala Arg
                485                 490                 495

Asn Thr Asp Ile Lys Gly Leu Asn Pro Leu Thr Ser Tyr Val Phe His
            500                 505                 510

Val Arg Ala Arg Thr Ala Ala Gly Tyr Gly Asp Phe Ser Glu Pro Leu
        515                 520                 525

Glu Val Thr Thr Asn Thr Val Pro Ser Arg Ile Ile Gly Asp Gly Ala
    530                 535                 540

Asn Ser Thr Val Leu Leu Val Ser Val Ser Gly Ser Val Val Leu Val
545                 550                 555                 560

Val Ile Leu Ile Ala Ala Phe Val Ile Ser Arg Arg Arg Ser Lys Tyr
                565                 570                 575

Ser Lys Ala Lys Gln Glu Ala Asp Glu Glu Lys His Leu Asn Gln Gly
            580                 585                 590
```

```
Val Arg Thr Tyr Val Asp Pro Phe Thr Tyr Glu Asp Pro Asn Gln Ala
        595                 600                 605

Val Arg Glu Phe Ala Lys Glu Ile Asp Ala Ser Cys Ile Lys Ile Glu
    610                 615                 620

Lys Val Ile Gly Val Gly Glu Phe Gly Glu Val Cys Ser Gly Arg Leu
625                 630                 635                 640

Lys Val Pro Gly Lys Arg Glu Ile Cys Val Ala Ile Lys Thr Leu Lys
                645                 650                 655

Ala Gly Tyr Thr Asp Lys Gln Arg Arg Asp Phe Leu Ser Glu Ala Ser
            660                 665                 670

Ile Met Gly Gln Phe Asp His Pro Asn Ile Ile His Leu Glu Gly Val
        675                 680                 685

Val Thr Lys Cys Lys Pro Val Met Ile Ile Thr Glu Tyr Met Glu Asn
    690                 695                 700

Gly Ser Leu Asp Ala Phe Leu Arg Lys Asn Asp Gly Arg Phe Thr Val
705                 710                 715                 720

Ile Gln Leu Val Gly Met Leu Arg Gly Ile Gly Ser Gly Met Lys Tyr
                725                 730                 735

Leu Ser Asp Met Ser Tyr Val His Arg Asp Leu Ala Ala Arg Asn Ile
            740                 745                 750

Leu Val Asn Ser Asn Leu Val Cys Lys Val Ser Asp Phe Gly Met Ser
        755                 760                 765

Arg Val Leu Glu Asp Asp Pro Glu Ala Ala Tyr Thr Thr Arg Gly Gly
    770                 775                 780

Lys Ile Pro Ile Arg Trp Thr Ala Pro Glu Ala Ile Ala Tyr Arg Lys
785                 790                 795                 800

Phe Thr Ser Ala Ser Asp Val Trp Ser Tyr Gly Ile Val Met Trp Glu
                805                 810                 815

Val Met Ser Tyr Gly Glu Arg Pro Tyr Trp Asp Met Ser Asn Gln Asp
            820                 825                 830

Val Ile Lys Ala Ile Glu Glu Gly Tyr Arg Leu Pro Pro Pro Met Asp
```

```
        835                 840                 845

Cys Pro Ile Ala Leu His Gln Leu Met Leu Asp Cys Trp Gln Lys Glu
    850                 855                 860

Arg Ser Asp Arg Pro Lys Phe Gly Gln Ile Val Asn Met Leu Asp Lys
865                 870                 875                 880

Leu Ile Arg Asn Pro Asn Ser Leu Lys Arg Thr Gly Thr Glu Ser Ser
                885                 890                 895

Arg Pro Asn Thr Ala Leu Leu Asp Pro Ser Ser Pro Glu Phe Ser Ala
            900                 905                 910

Val Val Ser Val Gly Asp Trp Leu Gln Ala Ile Lys Met Asp Arg Tyr
        915                 920                 925

Lys Asp Asn Phe Thr Ala Ala Gly Tyr Thr Thr Leu Glu Ala Val Val
    930                 935                 940

His Val Asn Gln Glu Asp Leu Ala Arg Ile Gly Ile Thr Ala Ile Thr
945                 950                 955                 960

His Gln Asn Lys Ile Leu Ser Ser Val Gln Ala Met Arg Thr Gln Met
                965                 970                 975

Gln Gln Met His Gly Arg Met Val Pro Val
            980                 985


<210>  5
<211>  4349
<212>  DNA
<213>  Homo sapiens


<220>
<221>  CDS
<222>  (445)..(3093)

<400>  5
tttttgaatc ggttgtggcg gccgcggcga ggaatggcgg tatttgtgag aggagtcggc     60

gtttgaagag gtggaactcc tagggctttt ttgagagtga cggagtctac ctcttgttac    120

ctagactgga gtgcagtggc acgatctcgg ctcactgcaa cctctgcctc ccgggttcaa    180

gcgattctcc tgcctcagcc tcctgagtag ctgggattac aggtgcctgc caccaagccc    240

agctaatttt tgtattttta gtagagatgg ggtttcattg tgttggccag gctggtctcg    300

aactcctgac ctcgtgatcc gcccgccttg gcctcccaaa gtgctaggat tacaagtgtg    360
```

```
agccaccgcg tccggccttt caaatggtat ttttgatttt cctcttccag tccttaaagc    420

agctgattta gaagaataca aatc atg gct gaa aat agt gta tta aca tcc       471
                           Met Ala Glu Asn Ser Val Leu Thr Ser
                           1               5

act act ggg agg act agc ttg gca gac tct tcc att ttt gat tct aaa      519
Thr Thr Gly Arg Thr Ser Leu Ala Asp Ser Ser Ile Phe Asp Ser Lys
10                  15                  20                  25

gtt act gag att tcc aag gaa aac tta ctt att gga tct act tca tat      567
Val Thr Glu Ile Ser Lys Glu Asn Leu Leu Ile Gly Ser Thr Ser Tyr
                30                  35                  40

gta gaa gag atg cct cag att gaa aca aga gtg ata ttg gtt caa gaa      615
Val Glu Glu Met Pro Gln Ile Glu Thr Arg Val Ile Leu Val Gln Glu
            45                  50                  55

gct gga aaa caa gaa gaa ctt ata aaa gcc tta aag gac att aaa gtg      663
Ala Gly Lys Gln Glu Glu Leu Ile Lys Ala Leu Lys Asp Ile Lys Val
        60                  65                  70

ggc ttt gta aag atg gag tca gtg gaa gaa ttt gaa ggt ttg gat tct      711
Gly Phe Val Lys Met Glu Ser Val Glu Glu Phe Glu Gly Leu Asp Ser
    75                  80                  85

ccg gaa ttt gaa aat gta ttt gta gtc acg gac ttt cag gat tct gtc      759
Pro Glu Phe Glu Asn Val Phe Val Val Thr Asp Phe Gln Asp Ser Val
90                  95                  100                 105

ttt aat gac ctc tac aag gct gat tgt aga gtt att gga cca cca gtt      807
Phe Asn Asp Leu Tyr Lys Ala Asp Cys Arg Val Ile Gly Pro Pro Val
                110                 115                 120

gta tta aat tgt tca caa aaa gga gag cct ttg cca ttt tca tgt cgc      855
Val Leu Asn Cys Ser Gln Lys Gly Glu Pro Leu Pro Phe Ser Cys Arg
            125                 130                 135

ccg ttg tat tgt aca agt atg atg aat cta gta cta tgc ttt act gga      903
Pro Leu Tyr Cys Thr Ser Met Met Asn Leu Val Leu Cys Phe Thr Gly
        140                 145                 150

ttt agg aaa aaa gaa gaa cta gtc agg ttg gtg aca ttg gtc cat cac      951
Phe Arg Lys Lys Glu Glu Leu Val Arg Leu Val Thr Leu Val His His
    155                 160                 165

atg ggt gga gtt att cga aaa gac ttt aat tca aaa gtt aca cat ttg      999
Met Gly Gly Val Ile Arg Lys Asp Phe Asn Ser Lys Val Thr His Leu
170                 175                 180                 185

gtg gca aat tgt aca caa gga gaa aaa ttc agg gtt gct gtg agt cta     1047
Val Ala Asn Cys Thr Gln Gly Glu Lys Phe Arg Val Ala Val Ser Leu
                190                 195                 200

ggt act cca att atg aag cca gaa tgg att tat aaa gct tgg gaa agg     1095
Gly Thr Pro Ile Met Lys Pro Glu Trp Ile Tyr Lys Ala Trp Glu Arg
            205                 210                 215

cgg aat gaa cag gat ttc tat gca gca gtt gat gac ttt aga aat gaa     1143
Arg Asn Glu Gln Asp Phe Tyr Ala Ala Val Asp Asp Phe Arg Asn Glu
```

```
        220                 225                 230

ttt aaa gtt cct cca ttt caa gat tgt att tta agt ttc ctg gga ttt     1191
Phe Lys Val Pro Pro Phe Gln Asp Cys Ile Leu Ser Phe Leu Gly Phe
    235                 240                 245

tca gat gaa gag aaa acc aat atg gaa gaa atg act gaa atg caa gga     1239
Ser Asp Glu Glu Lys Thr Asn Met Glu Glu Met Thr Glu Met Gln Gly
250                 255                 260                 265

ggt aaa tat tta ccg ctt gga gat gaa aga tgc act cac ctt gta gtt     1287
Gly Lys Tyr Leu Pro Leu Gly Asp Glu Arg Cys Thr His Leu Val Val
                270                 275                 280

gaa gag aat ata gta aaa gat ctt ccc ttt gaa cct tca aag aaa ctt     1335
Glu Glu Asn Ile Val Lys Asp Leu Pro Phe Glu Pro Ser Lys Lys Leu
            285                 290                 295

tat gtt gtc aag caa gag tgg ttc tgg gga agc att caa atg gat gcc     1383
Tyr Val Val Lys Gln Glu Trp Phe Trp Gly Ser Ile Gln Met Asp Ala
        300                 305                 310

cga gct gga gaa act atg tat tta tat gaa aag gca aat act cct gag     1431
Arg Ala Gly Glu Thr Met Tyr Leu Tyr Glu Lys Ala Asn Thr Pro Glu
    315                 320                 325

ctc aag aaa tca gtg tca atg ctt tct cta aat acc cct aac agc aat     1479
Leu Lys Lys Ser Val Ser Met Leu Ser Leu Asn Thr Pro Asn Ser Asn
330                 335                 340                 345

cgc aaa cga cgt cgt tta aaa gaa aca ctt gct cag ctt tca aga gag     1527
Arg Lys Arg Arg Arg Leu Lys Glu Thr Leu Ala Gln Leu Ser Arg Glu
                350                 355                 360

aca gac gtg tca cca ttt cca ccc cgt aag cgc cca tca gct gag cat     1575
Thr Asp Val Ser Pro Phe Pro Pro Arg Lys Arg Pro Ser Ala Glu His
            365                 370                 375

tcc ctt tcc ata ggg tca ctc cta gat atc tcc aac aca cca gag tct     1623
Ser Leu Ser Ile Gly Ser Leu Leu Asp Ile Ser Asn Thr Pro Glu Ser
        380                 385                 390

agc att aac tat gga gac acc cca aag tct tgt act aag tct tct aaa     1671
Ser Ile Asn Tyr Gly Asp Thr Pro Lys Ser Cys Thr Lys Ser Ser Lys
    395                 400                 405

agc tcc act cca gtt cct tca aag cag tca gca agg tgg caa gtt gca     1719
Ser Ser Thr Pro Val Pro Ser Lys Gln Ser Ala Arg Trp Gln Val Ala
410                 415                 420                 425

aaa gag ctt tat caa act gaa agt aat tat gtt aat ata ttg gca aca     1767
Lys Glu Leu Tyr Gln Thr Glu Ser Asn Tyr Val Asn Ile Leu Ala Thr
                430                 435                 440

att att cag tta ttt caa gta cca ttg gaa gag gaa gga caa cgt ggt     1815
Ile Ile Gln Leu Phe Gln Val Pro Leu Glu Glu Glu Gly Gln Arg Gly
            445                 450                 455

gga cct atc ctt gca cca gag gag att aag act att ttt ggt agc atc     1863
Gly Pro Ile Leu Ala Pro Glu Glu Ile Lys Thr Ile Phe Gly Ser Ile
        460                 465                 470
```

```
cca gat atc ttt gat gta cac act aag ata aag gat gat ctt gaa gac     1911
Pro Asp Ile Phe Asp Val His Thr Lys Ile Lys Asp Asp Leu Glu Asp
    475                 480                 485

ctt ata gtt aat tgg gat gag agc aaa agc att ggt gac att ttt ctg     1959
Leu Ile Val Asn Trp Asp Glu Ser Lys Ser Ile Gly Asp Ile Phe Leu
490                 495                 500                 505

aaa tat tca aaa gat ttg gta aaa acc tac cct ccc ttt gta aac ttc     2007
Lys Tyr Ser Lys Asp Leu Val Lys Thr Tyr Pro Pro Phe Val Asn Phe
                510                 515                 520

ttt gaa atg agc aag gaa aca att att aaa tgt gaa aaa cag aaa cca     2055
Phe Glu Met Ser Lys Glu Thr Ile Ile Lys Cys Glu Lys Gln Lys Pro
            525                 530                 535

aga ttt cat gct ttt ctc aag ata aac caa gca aaa cca gaa tgt gga     2103
Arg Phe His Ala Phe Leu Lys Ile Asn Gln Ala Lys Pro Glu Cys Gly
        540                 545                 550

cgg cag agc ctt gtt gaa ctt ctt atc cga cca gta cag agg tta ccc     2151
Arg Gln Ser Leu Val Glu Leu Leu Ile Arg Pro Val Gln Arg Leu Pro
    555                 560                 565

agt gtt gca tta ctt tta aat gat ctt aag aag cat aca gct gat gaa     2199
Ser Val Ala Leu Leu Leu Asn Asp Leu Lys Lys His Thr Ala Asp Glu
570                 575                 580                 585

aat cca gac aaa agc act tta gaa aaa gct att gga tca ctg aag gaa     2247
Asn Pro Asp Lys Ser Thr Leu Glu Lys Ala Ile Gly Ser Leu Lys Glu
                590                 595                 600

gta atg acg cat att aat gag gat aag aga aaa aca gaa gct caa aag     2295
Val Met Thr His Ile Asn Glu Asp Lys Arg Lys Thr Glu Ala Gln Lys
            605                 610                 615

caa att ttt gat gtt gtt tat gaa gta gat gga tgc cca gct aat ctt     2343
Gln Ile Phe Asp Val Val Tyr Glu Val Asp Gly Cys Pro Ala Asn Leu
        620                 625                 630

tta tct tct cac cga agc tta gta cag cgg gtt gaa aca att tct cta     2391
Leu Ser Ser His Arg Ser Leu Val Gln Arg Val Glu Thr Ile Ser Leu
    635                 640                 645

ggt gag cac ccc tgt gac aga gga gaa caa gta act ctc ttc ctc ttc     2439
Gly Glu His Pro Cys Asp Arg Gly Glu Gln Val Thr Leu Phe Leu Phe
650                 655                 660                 665

aat gat tgc cta gag ata gca aga aaa cgg cac aag gtt att ggc act     2487
Asn Asp Cys Leu Glu Ile Ala Arg Lys Arg His Lys Val Ile Gly Thr
                670                 675                 680

ttt agg agt cct cat ggc caa acc cga ccc cca gct tct ctt aag cat     2535
Phe Arg Ser Pro His Gly Gln Thr Arg Pro Pro Ala Ser Leu Lys His
            685                 690                 695

att cac cta atg cct ctt tct cag att aag aag gta ttg gac ata aga     2583
Ile His Leu Met Pro Leu Ser Gln Ile Lys Lys Val Leu Asp Ile Arg
        700                 705                 710
```

```
gag aca gaa gat tgc cat aat gct ttt gcc ttg ctt gtg agg cca cca     2631
Glu Thr Glu Asp Cys His Asn Ala Phe Ala Leu Leu Val Arg Pro Pro
    715                 720                 725

aca gag cag gca aat gtg cta ctc agt ttc cag atg aca tca gat gaa     2679
Thr Glu Gln Ala Asn Val Leu Leu Ser Phe Gln Met Thr Ser Asp Glu
730                 735                 740                 745

ctt cca aaa gaa aac tgg cta aag atg ctg tgt cga cat gta gct aac     2727
Leu Pro Lys Glu Asn Trp Leu Lys Met Leu Cys Arg His Val Ala Asn
                750                 755                 760

acc att tgt aaa gca gat gct gag aat ctt att tat act gct gat cca     2775
Thr Ile Cys Lys Ala Asp Ala Glu Asn Leu Ile Tyr Thr Ala Asp Pro
            765                 770                 775

gaa tcc ttt gaa gta aat aca aaa gat atg gac agt aca ttg agt aga     2823
Glu Ser Phe Glu Val Asn Thr Lys Asp Met Asp Ser Thr Leu Ser Arg
        780                 785                 790

gca tca aga gca ata aaa aag act tca aaa aag gtt aca aga gca ttc     2871
Ala Ser Arg Ala Ile Lys Lys Thr Ser Lys Lys Val Thr Arg Ala Phe
    795                 800                 805

tct ttc tcc aaa act cca aaa aga gct ctt cga agg gct ctt atg aca     2919
Ser Phe Ser Lys Thr Pro Lys Arg Ala Leu Arg Arg Ala Leu Met Thr
810                 815                 820                 825

tcc cac ggc tca gtg gag gga aga agt cct tcc agc aat gat aag cat     2967
Ser His Gly Ser Val Glu Gly Arg Ser Pro Ser Ser Asn Asp Lys His
                830                 835                 840

gta atg agt cgt ctt tct agc aca tca tca tta gca ggt atc cct tct     3015
Val Met Ser Arg Leu Ser Ser Thr Ser Ser Leu Ala Gly Ile Pro Ser
            845                 850                 855

ccc tcc ctt gtc agc ctt cct tcc ttc ttt gaa agg aga agt cat acg     3063
Pro Ser Leu Val Ser Leu Pro Ser Phe Phe Glu Arg Arg Ser His Thr
        860                 865                 870

tta agt aga tct aca act cat ttg ata tga agcgttacca aaatcttaaa       3113
Leu Ser Arg Ser Thr Thr His Leu Ile
    875                 880

ttatagaaat gtatagacac ctcatactca aataagaaac tgacttaaat ggtacttgta   3173

attagcacgt tggtgaaagc tggaaggaag ataaataaca ctaaactatg ctatttgatt   3233

tttcttcttg aaagagtaag gtttacctgt tacattttca agttaattca tgtaaaaaat   3293

gatagtgatt ttgatgtaat ttatctcttg tttgaatctg tcattcaaag gccaataatt   3353

taagttgcta tcagctgata ttagtagctt tgcaaccctg atagagtaaa taaatttttat  3413

gggtgggtgc caaatactgc tgtgaatcta tttgtatagt atccatgaat gaatttatgg   3473

aaatagatat ttgtgcagct caatttatgc agagattaaa tgacatcata atactggatg   3533

aaaacttgca tagaattctg attaaatagt gggtctgttt cacatgtgca gtttgaagta   3593

tttaaataac cactcctttc acagtttatt ttcttctcaa gcgttttcaa gatctagcat   3653
```

```
gtggatttta aaagatttgc cctcattaac aagaataaca tttaaaggag attgtttcaa   3713

aatatttttg caaattgaga taaggacaga aagattgaga aacattgtat attttgcaaa   3773

aacaagatgt ttgtagctgt ttcagagaga gtacggtata tttatggtaa ttttatccac   3833

tagcaaatct tgatttagtt tgatagtcgt cgtcggaatt ttattttgaa ggataagacc   3893

atgggaaaat tgtggtaaag actgtttgta cccttcatga aataattctg aagttgccat   3953

cagttttact aatcttctgt gaaatgcata gatatgcgca tgttcaactt tttattgtgg   4013

tcttataatt aaatgtaaaa ttgaaaattc atttgctgtt tcaaagtgtg atatctttca   4073

caatagcctt tttatagtca gtaattcaga ataatcaagt tcatatggat aaatgcattt   4133

ttatttccta tttctttagg gagtgctaca aatgtttgtc acttaaattt caagtttctg   4193

ttttaatagt taactgacta tagattgttt tctatgccat gtatgtgcca cttctgagag   4253

tagtaaatga ctctttgcta cattttaaaa gcaattgtat tagtaagaac tttgtaaata   4313

aatacctaaa acccaagtgt aaaaaaaaaa aaaaaa                             4349
```

<210> 6
<211> 882
<212> PRT
<213> Homo sapiens

<400> 6

```
Met Ala Glu Asn Ser Val Leu Thr Ser Thr Thr Gly Arg Thr Ser Leu
1               5                   10                  15

Ala Asp Ser Ser Ile Phe Asp Ser Lys Val Thr Glu Ile Ser Lys Glu
            20                  25                  30

Asn Leu Leu Ile Gly Ser Thr Ser Tyr Val Glu Glu Met Pro Gln Ile
        35                  40                  45

Glu Thr Arg Val Ile Leu Val Gln Glu Ala Gly Lys Gln Glu Glu Leu
    50                  55                  60

Ile Lys Ala Leu Lys Asp Ile Lys Val Gly Phe Val Lys Met Glu Ser
65                  70                  75                  80

Val Glu Glu Phe Glu Gly Leu Asp Ser Pro Glu Phe Glu Asn Val Phe
                85                  90                  95

Val Val Thr Asp Phe Gln Asp Ser Val Phe Asn Asp Leu Tyr Lys Ala
            100                 105                 110
```

```
Asp Cys Arg Val Ile Gly Pro Pro Val Val Leu Asn Cys Ser Gln Lys
        115                 120                 125

Gly Glu Pro Leu Pro Phe Ser Cys Arg Pro Leu Tyr Cys Thr Ser Met
    130                 135                 140

Met Asn Leu Val Leu Cys Phe Thr Gly Phe Arg Lys Lys Glu Glu Leu
145                 150                 155                 160

Val Arg Leu Val Thr Leu Val His His Met Gly Gly Val Ile Arg Lys
                165                 170                 175

Asp Phe Asn Ser Lys Val Thr His Leu Val Ala Asn Cys Thr Gln Gly
            180                 185                 190

Glu Lys Phe Arg Val Ala Val Ser Leu Gly Thr Pro Ile Met Lys Pro
        195                 200                 205

Glu Trp Ile Tyr Lys Ala Trp Glu Arg Arg Asn Glu Gln Asp Phe Tyr
    210                 215                 220

Ala Ala Val Asp Asp Phe Arg Asn Glu Phe Lys Val Pro Pro Phe Gln
225                 230                 235                 240

Asp Cys Ile Leu Ser Phe Leu Gly Phe Ser Asp Glu Glu Lys Thr Asn
                245                 250                 255

Met Glu Glu Met Thr Glu Met Gln Gly Gly Lys Tyr Leu Pro Leu Gly
            260                 265                 270

Asp Glu Arg Cys Thr His Leu Val Val Glu Glu Asn Ile Val Lys Asp
        275                 280                 285

Leu Pro Phe Glu Pro Ser Lys Lys Leu Tyr Val Val Lys Gln Glu Trp
    290                 295                 300

Phe Trp Gly Ser Ile Gln Met Asp Ala Arg Ala Gly Glu Thr Met Tyr
305                 310                 315                 320

Leu Tyr Glu Lys Ala Asn Thr Pro Glu Leu Lys Lys Ser Val Ser Met
                325                 330                 335

Leu Ser Leu Asn Thr Pro Asn Ser Asn Arg Lys Arg Arg Arg Leu Lys
            340                 345                 350

Glu Thr Leu Ala Gln Leu Ser Arg Glu Thr Asp Val Ser Pro Phe Pro
```

```
        355                 360                 365

Pro Arg Lys Arg Pro Ser Ala Glu His Ser Leu Ser Ile Gly Ser Leu
    370                 375                 380

Leu Asp Ile Ser Asn Thr Pro Glu Ser Ser Ile Asn Tyr Gly Asp Thr
385                 390                 395                 400

Pro Lys Ser Cys Thr Lys Ser Ser Lys Ser Ser Thr Pro Val Pro Ser
                405                 410                 415

Lys Gln Ser Ala Arg Trp Gln Val Ala Lys Glu Leu Tyr Gln Thr Glu
            420                 425                 430

Ser Asn Tyr Val Asn Ile Leu Ala Thr Ile Ile Gln Leu Phe Gln Val
        435                 440                 445

Pro Leu Glu Glu Glu Gly Gln Arg Gly Gly Pro Ile Leu Ala Pro Glu
    450                 455                 460

Glu Ile Lys Thr Ile Phe Gly Ser Ile Pro Asp Ile Phe Asp Val His
465                 470                 475                 480

Thr Lys Ile Lys Asp Asp Leu Glu Asp Leu Ile Val Asn Trp Asp Glu
                485                 490                 495

Ser Lys Ser Ile Gly Asp Ile Phe Leu Lys Tyr Ser Lys Asp Leu Val
            500                 505                 510

Lys Thr Tyr Pro Pro Phe Val Asn Phe Phe Glu Met Ser Lys Glu Thr
        515                 520                 525

Ile Ile Lys Cys Glu Lys Gln Lys Pro Arg Phe His Ala Phe Leu Lys
    530                 535                 540

Ile Asn Gln Ala Lys Pro Glu Cys Gly Arg Gln Ser Leu Val Glu Leu
545                 550                 555                 560

Leu Ile Arg Pro Val Gln Arg Leu Pro Ser Val Ala Leu Leu Leu Asn
                565                 570                 575

Asp Leu Lys Lys His Thr Ala Asp Glu Asn Pro Asp Lys Ser Thr Leu
            580                 585                 590

Glu Lys Ala Ile Gly Ser Leu Lys Glu Val Met Thr His Ile Asn Glu
        595                 600                 605
```

```
Asp Lys Arg Lys Thr Glu Ala Gln Lys Gln Ile Phe Asp Val Val Tyr
    610                 615                 620

Glu Val Asp Gly Cys Pro Ala Asn Leu Leu Ser Ser His Arg Ser Leu
625                 630                 635                 640

Val Gln Arg Val Glu Thr Ile Ser Leu Gly Glu His Pro Cys Asp Arg
                645                 650                 655

Gly Glu Gln Val Thr Leu Phe Leu Phe Asn Asp Cys Leu Glu Ile Ala
            660                 665                 670

Arg Lys Arg His Lys Val Ile Gly Thr Phe Arg Ser Pro His Gly Gln
        675                 680                 685

Thr Arg Pro Pro Ala Ser Leu Lys His Ile His Leu Met Pro Leu Ser
    690                 695                 700

Gln Ile Lys Lys Val Leu Asp Ile Arg Glu Thr Glu Asp Cys His Asn
705                 710                 715                 720

Ala Phe Ala Leu Leu Val Arg Pro Pro Thr Glu Gln Ala Asn Val Leu
                725                 730                 735

Leu Ser Phe Gln Met Thr Ser Asp Glu Leu Pro Lys Glu Asn Trp Leu
            740                 745                 750

Lys Met Leu Cys Arg His Val Ala Asn Thr Ile Cys Lys Ala Asp Ala
        755                 760                 765

Glu Asn Leu Ile Tyr Thr Ala Asp Pro Glu Ser Phe Glu Val Asn Thr
    770                 775                 780

Lys Asp Met Asp Ser Thr Leu Ser Arg Ala Ser Arg Ala Ile Lys Lys
785                 790                 795                 800

Thr Ser Lys Lys Val Thr Arg Ala Phe Ser Phe Ser Lys Thr Pro Lys
                805                 810                 815

Arg Ala Leu Arg Arg Ala Leu Met Thr Ser His Gly Ser Val Glu Gly
            820                 825                 830

Arg Ser Pro Ser Ser Asn Asp Lys His Val Met Ser Arg Leu Ser Ser
        835                 840                 845
```

```
Thr Ser Ser Leu Ala Gly Ile Pro Ser Pro Ser Leu Val Ser Leu Pro
    850                 855                 860

Ser Phe Phe Glu Arg Arg Ser His Thr Leu Ser Arg Ser Thr Thr His
865                 870                 875                 880

Leu Ile
```

<210> 7
<211> 1372
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (206)..(397)

<400> 7

```
gcacgagggc gcttttgtct ccggtgagtt ttgtggcggg aagcttctgc gctggtgctt     60

agtaaccgac tttcctccgg actcctgcac gacctgctcc tacagccggc gatccactcc    120

cggctgttcc cccggagggt ccagaggcct ttcagaagga gaaggcagct ctgtttctct    180

gcagaggagt agggtccttt cagcc atg aag cat gtg ttg aac ctc tac ctg      232
                           Met Lys His Val Leu Asn Leu Tyr Leu
                           1               5

tta ggt gtg gta ctg acc cta ctc tcc atc ttc gtt aga gtg atg gag      280
Leu Gly Val Val Leu Thr Leu Leu Ser Ile Phe Val Arg Val Met Glu
10                  15                  20                  25

tcc cta gaa ggc tta cta gag agc cca tcg cct ggg acc tcc tgg acc      328
Ser Leu Glu Gly Leu Leu Glu Ser Pro Ser Pro Gly Thr Ser Trp Thr
                30                  35                  40

acc aga agc caa cta gcc aac aca gag ccc acc aag ggc ctt cca gac      376
Thr Arg Ser Gln Leu Ala Asn Thr Glu Pro Thr Lys Gly Leu Pro Asp
            45                  50                  55

cat cca tcc aga agc atg tga taagacctcc ttccatactg gccatatttt         427
His Pro Ser Arg Ser Met
        60

ggaacactga cctagacatg tccagatggg agtcccattc ctagcagaca agctgagcac    487

cgttgtaacc agagaactat tactaggcct tgaagaacct gtctaactgg atgctcattg    547

cctgggcaag gcctgtttag gccggttgcg gtggctcatg cctgtaatcc tagcactttg    607

ggaggctgag gtgggtggat cacctgaggt caggagttcg agaccagcct cgccaacatg    667

gcgaaacccc atctctacta aaaatacaaa agttagctgg gtgtggtggc agaggcctgt    727

aatcccagtt ccttgggagg ctgaggcggg agaattgctt gaacccgggg acggaggttg    787
```

cagtgaaccg agatcgcact gctgtaccca gcctgggcca cagtgcaaga ctccatctca 847

aaaaaaaaaa gaaaagaaaa agcctgttta atgcacaggt gtgagtggat tgcttatggc 907

tatgagatag gttgatctcg cccttacccc ggggtctggt gtatgctgtg ctttcctcag 967

cagtatggct ctgacatctc ttagatgtcc caacttcagc tgttgggaga tggtgatatt 1027

ttcaacccta cttcctaaac atctgtctgg ggttccttta gtcttgaatg tcttatgctc 1087

aattatttgg tgttgagcct ctcttccaca agagctcctc catgtttgga tagcagttga 1147

agaggttgtg tgggtgggct gttgggagtg aggatggagt gttcagtgcc catttctcat 1207

tttacatttt aaagtcgttc ctccaacata gtgtgtattg gtctgaaggg ggtggtggga 1267

tgccaaagcc tgctcaagtt atggacattg tggccaccat gtggcttaaa tgatttttc 1327

taactaataa agtggaatat atatttcaaa aaaaaaaaaa aaaaa 1372

<210> 8
<211> 63
<212> PRT
<213> Homo sapiens

<400> 8

Met Lys His Val Leu Asn Leu Tyr Leu Leu Gly Val Val Leu Thr Leu
1 5 10 15

Leu Ser Ile Phe Val Arg Val Met Glu Ser Leu Glu Gly Leu Leu Glu
20 25 30

Ser Pro Ser Pro Gly Thr Ser Trp Thr Thr Arg Ser Gln Leu Ala Asn
35 40 45

Thr Glu Pro Thr Lys Gly Leu Pro Asp His Pro Ser Arg Ser Met
50 55 60

<210> 9
<211> 3516
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (767)..(1990)

<400> 9
ggatcctgga gacaactttg ccgtgtgacg cgccgggagg actgcagggc ccgcggccga 60

gggctcggcg ccgcctgtga gcgggcccgc gcggccggct ctcccgggca ccaagcttgc 120

tccgcgccac tgcccgccgg cccgcggcga ggacgacctg cccgtctccg ccgccggcgg 180

```
cccttcctgg cgcgaggcag tgagggcgag gcgctcaggt gcgagcgcgg ggccccgccg    240

cagcgcccgc cgcagcgccg cgccaagccg cgcccggctc cgctccgggg ggctccagcg    300

ccttcgcttc cgtctcagcc aagttgcgtg gacccgctct ttcgccacct tccccagccg    360

ccggccgaac cgccgctccc actgacgctg ctttcgcttc acccgaaccg gggctgcggg    420

gcccccgacg cggaaaggat ggggagaagg ctgcagatgc cgaggcgccc cgagacgccc    480

gtgcggcagt gacccgcgac ctccgccccg cccggcgcgc ccctcgggcc cccggggccc    540

tcggcgcccc ttccctgccg cgcgggaacc cccgaggccc ggccggcccc ctccccctgc    600

gagccggcgg cagccctccc ggcgggcggg cgggcggagg cccgggcggg cgcgggcgcg    660

ggcgggggcg gggcggggcg gcgcgcccgg agcccggagc ccggccctgc gctcggctcg    720

actcggctcg cctcgcggcg ggcgccctcg tcgccagcgg cgcacc atg gac ggg       775
                                                    Met Asp Gly
                                                    1

ctg ccc ggt cgg gcg ctg ggg gcc gcc tgc ctt ctg ctg ctg gcg gcc      823
Leu Pro Gly Arg Ala Leu Gly Ala Ala Cys Leu Leu Leu Leu Ala Ala
    5                  10                  15

ggc tgg ctg ggg cct gag gcc tgg ggc tca ccc acg ccc ccg ccg acg      871
Gly Trp Leu Gly Pro Glu Ala Trp Gly Ser Pro Thr Pro Pro Pro Thr
20                  25                  30                  35

cct gcc gcg ccg ccg cca ccc ccg cca ccc gga gcc ccg ggt ggc tcg      919
Pro Ala Ala Pro Pro Pro Pro Pro Pro Gly Ala Pro Gly Gly Ser
                40                  45                  50

cag gac acc tgt acg tcg tgc ggc ggc ttc cgg cgg cca gag gag ctc      967
Gln Asp Thr Cys Thr Ser Cys Gly Gly Phe Arg Arg Pro Glu Glu Leu
            55                  60                  65

ggc cga gtg gac ggc gac ttc ctg gag gcg gtg aag cgg cac atc ttg     1015
Gly Arg Val Asp Gly Asp Phe Leu Glu Ala Val Lys Arg His Ile Leu
        70                  75                  80

agc cgc ctg cag atg cgg ggc cgg ccc aac atc acg cac gcc gtg cct     1063
Ser Arg Leu Gln Met Arg Gly Arg Pro Asn Ile Thr His Ala Val Pro
    85                  90                  95

aag gcc gcc atg gtc acg gcc ctg cgc aag ctg cac gcg ggc aag gtg     1111
Lys Ala Ala Met Val Thr Ala Leu Arg Lys Leu His Ala Gly Lys Val
100                 105                 110                 115

cgc gag gac ggc cgc gtg gag atc ccg cac ctc gac ggc cac gcc agc     1159
Arg Glu Asp Gly Arg Val Glu Ile Pro His Leu Asp Gly His Ala Ser
                120                 125                 130

ccg ggc gcc gac ggc cag gag cgc gtt tcc gaa atc atc agc ttc gcc     1207
Pro Gly Ala Asp Gly Gln Glu Arg Val Ser Glu Ile Ile Ser Phe Ala
            135                 140                 145

gag aca gat ggc ctc gcc tcc tcc cgg gtc cgc cta tac ttc ttc atc     1255
Glu Thr Asp Gly Leu Ala Ser Ser Arg Val Arg Leu Tyr Phe Phe Ile
```

```
        150                 155                 160

tcc aac gaa ggc aac cag aac ctg ttt gtg gtc cag gcc agc ctg tgg     1303
Ser Asn Glu Gly Asn Gln Asn Leu Phe Val Val Gln Ala Ser Leu Trp
    165                 170                 175

ctt tac ctg aaa ctc ctg ccc tac gtc ctg gag aag ggc agc cgg cgg     1351
Leu Tyr Leu Lys Leu Leu Pro Tyr Val Leu Glu Lys Gly Ser Arg Arg
180                 185                 190                 195

aag gtg cgg gtc aaa gtg tac ttc cag gag cag ggc cac ggt gac agg     1399
Lys Val Arg Val Lys Val Tyr Phe Gln Glu Gln Gly His Gly Asp Arg
                200                 205                 210

tgg aac atg gtg gag aag agg gtg gac ctc aag cgc agc ggc tgg cat     1447
Trp Asn Met Val Glu Lys Arg Val Asp Leu Lys Arg Ser Gly Trp His
            215                 220                 225

acc ttc cca ctc acg gag gcc atc cag gcc ttg ttt gag cgg ggc gag     1495
Thr Phe Pro Leu Thr Glu Ala Ile Gln Ala Leu Phe Glu Arg Gly Glu
        230                 235                 240

cgg cga ctc aac cta gac gtg cag tgt gac agc tgc cag gag ctg gcc     1543
Arg Arg Leu Asn Leu Asp Val Gln Cys Asp Ser Cys Gln Glu Leu Ala
    245                 250                 255

gtg gtg ccg gtg ttc gtg gac cca ggc gaa gag tcg cac cga ccc ttt     1591
Val Val Pro Val Phe Val Asp Pro Gly Glu Glu Ser His Arg Pro Phe
260                 265                 270                 275

gtg gtg gtg cag gct cgg ctg ggc gac agc agg cac cgc att cgc aag     1639
Val Val Val Gln Ala Arg Leu Gly Asp Ser Arg His Arg Ile Arg Lys
                280                 285                 290

cga ggc ctg gag tgc gat ggc cgg acc aac ctc tgt tgc agg caa cag     1687
Arg Gly Leu Glu Cys Asp Gly Arg Thr Asn Leu Cys Cys Arg Gln Gln
            295                 300                 305

ttc ttc att gac ttc cgc ctc atc ggc tgg aac gac tgg atc ata gca     1735
Phe Phe Ile Asp Phe Arg Leu Ile Gly Trp Asn Asp Trp Ile Ile Ala
        310                 315                 320

ccc acc ggc tac tac ggc aac tac tgt gag ggc agc tgc cca gcc tac     1783
Pro Thr Gly Tyr Tyr Gly Asn Tyr Cys Glu Gly Ser Cys Pro Ala Tyr
    325                 330                 335

ctg gca ggg gtc ccc ggc tct gcc tcc tcc ttc cac acg gct gtg gtg     1831
Leu Ala Gly Val Pro Gly Ser Ala Ser Ser Phe His Thr Ala Val Val
340                 345                 350                 355

aac cag tac cgc atg cgg ggt ctg aac ccc ggc acg gtg aac tcc tgc     1879
Asn Gln Tyr Arg Met Arg Gly Leu Asn Pro Gly Thr Val Asn Ser Cys
                360                 365                 370

tgc att ccc acc aag ctg agc acc atg tcc atg ctg tac ttc gat gat     1927
Cys Ile Pro Thr Lys Leu Ser Thr Met Ser Met Leu Tyr Phe Asp Asp
            375                 380                 385

gag tac aac atc gtc aag cgg gac gtg ccc aac atg att gtg gag gag     1975
Glu Tyr Asn Ile Val Lys Arg Asp Val Pro Asn Met Ile Val Glu Glu
        390                 395                 400
```

tgc ggc tgc gcc tga cagtgcaagg caggggcacg gtggtggggc acggagggca 2030
Cys Gly Cys Ala
405

gtcccgggtg ggcttcttcc agccccccgc gggaacgggg tacacggtgg gctgagtaca 2090

gtcattctgt tgggctgtgg agatagtgcc agggtgcggc ctgagatatt tttctacagc 2150

ttcatagagc aaccagtcaa aaccagagcg agaaccctca actgacatga aatactttaa 2210

aatgcacacg tagccacgca cagccagacg catcctgcca cccacacagc agcctccagg 2270

ataccagcaa atggatgcgg tgacaaatgg cagcttagct acaaatgcct gtcagtcgga 2330

gagaatgggg tgagcagcca ccattccacc agctggcccg gccacgtctc gaagttgcgc 2390

cttcccgagc acacataaaa gcacaaagac agagacgcag agagagagag agagccacgg 2450

agaggaaaag cagatgcagg ggtggggagc gcagctcggc ggaggctgcg tgtgccccgt 2510

ggcttttacc aggcctgctc tgcctggctc gatgtctgct tcttcccagc ctgggatcct 2570

tcgtgcttca aggcctgggg agcctgtcct tccatgccct tgtcgaggga aagagaccca 2630

gaaaggacac aacccgtcag agacctggga gcaggggcaa tgaccgtttg actgtttgtg 2690

gcttgggcct ctgacatgac ttatgtgtgt gtgtgttttt ggggtgggga gggagggaga 2750

gaagaggggg ctaaatttga tgctttaact gatctccaac agttgacagg tcatccttgc 2810

cagttgtata actgaaaaag gacttttcta ccaggtatga ccttttaagt gaaaatctga 2870

attgttctaa atggaaagaa aaaaagttgc aatctgtgcc cttcattggg gacattcctc 2930

taggactggt ttggggacgg gtgggaatga cccctaggca aggggatgag accgcaggag 2990

gaaatggcgg ggaggtggca ttcttgaact gctgaggatg gggggtgtcc cctcagcgga 3050

ggccaaggga ggggagcagc ctagttggtc ttggagagat ggggaaggct ttcagctgat 3110

ttgcagaagt tgcccatgtg ggcccaacca tcagggctgg ccgtggacgt ggcccctgcc 3170

cactcacctg cccgcctgcc cgcccgcccg catagcactt gcagacctgc ctgaacgcac 3230

atgacatagc acttgccgat ctgcgtgtgc ccagaagtgg cccttggccg agcgccgaac 3290

tcgctcgccc tctagatgtc caagtgccac gtgaactatg caatttaaag ggttgaccca 3350

cactagacga aactggactc gtacgactct ttttatattt tttatacttg aaatgaaatc 3410

ctttgcttct tttttaagcg aatgattgct tttaatgttt gcactgattt agttgcatga 3470

ttagtcagaa actgccattt gaaaaaaaag ttatttttat agcagc 3516

<210> 10
<211> 407
<212> PRT
<213> Homo sapiens

<400> 10

```
Met Asp Gly Leu Pro Gly Arg Ala Leu Gly Ala Ala Cys Leu Leu Leu
1               5                  10                  15

Leu Ala Ala Gly Trp Leu Gly Pro Glu Ala Trp Gly Ser Pro Thr Pro
            20                  25                  30

Pro Pro Thr Pro Ala Ala Pro Pro Pro Pro Pro Pro Gly Ala Pro
        35                  40                  45

Gly Gly Ser Gln Asp Thr Cys Thr Ser Cys Gly Gly Phe Arg Arg Pro
    50                  55                  60

Glu Glu Leu Gly Arg Val Asp Gly Asp Phe Leu Glu Ala Val Lys Arg
65                  70                  75                  80

His Ile Leu Ser Arg Leu Gln Met Arg Gly Arg Pro Asn Ile Thr His
                85                  90                  95

Ala Val Pro Lys Ala Ala Met Val Thr Ala Leu Arg Lys Leu His Ala
            100                 105                 110

Gly Lys Val Arg Glu Asp Gly Arg Val Glu Ile Pro His Leu Asp Gly
        115                 120                 125

His Ala Ser Pro Gly Ala Asp Gly Gln Glu Arg Val Ser Glu Ile Ile
    130                 135                 140

Ser Phe Ala Glu Thr Asp Gly Leu Ala Ser Ser Arg Val Arg Leu Tyr
145                 150                 155                 160

Phe Phe Ile Ser Asn Glu Gly Asn Gln Asn Leu Phe Val Val Gln Ala
                165                 170                 175

Ser Leu Trp Leu Tyr Leu Lys Leu Leu Pro Tyr Val Leu Glu Lys Gly
            180                 185                 190

Ser Arg Arg Lys Val Arg Val Lys Val Tyr Phe Gln Glu Gln Gly His
        195                 200                 205

Gly Asp Arg Trp Asn Met Val Glu Lys Arg Val Asp Leu Lys Arg Ser
    210                 215                 220

Gly Trp His Thr Phe Pro Leu Thr Glu Ala Ile Gln Ala Leu Phe Glu
225                 230                 235                 240
```

```
Arg Gly Glu Arg Arg Leu Asn Leu Asp Val Gln Cys Asp Ser Cys Gln
                245                 250                 255

Glu Leu Ala Val Val Pro Val Phe Val Asp Pro Gly Glu Glu Ser His
            260                 265                 270

Arg Pro Phe Val Val Val Gln Ala Arg Leu Gly Asp Ser Arg His Arg
        275                 280                 285

Ile Arg Lys Arg Gly Leu Glu Cys Asp Gly Arg Thr Asn Leu Cys Cys
    290                 295                 300

Arg Gln Gln Phe Phe Ile Asp Phe Arg Leu Ile Gly Trp Asn Asp Trp
305                 310                 315                 320

Ile Ile Ala Pro Thr Gly Tyr Tyr Gly Asn Tyr Cys Glu Gly Ser Cys
                325                 330                 335

Pro Ala Tyr Leu Ala Gly Val Pro Gly Ser Ala Ser Ser Phe His Thr
            340                 345                 350

Ala Val Val Asn Gln Tyr Arg Met Arg Gly Leu Asn Pro Gly Thr Val
        355                 360                 365

Asn Ser Cys Cys Ile Pro Thr Lys Leu Ser Thr Met Ser Met Leu Tyr
    370                 375                 380

Phe Asp Asp Glu Tyr Asn Ile Val Lys Arg Asp Val Pro Asn Met Ile
385                 390                 395                 400

Val Glu Glu Cys Gly Cys Ala
                405
```

<210> 11
<211> 2972
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (28)..(2700)

<400> 11

```
tcttcggacc taggctgccc tgccgtc atg tcg caa ggg atc ctt tct ccg cca     54
                              Met Ser Gln Gly Ile Leu Ser Pro Pro
                              1               5

gcg ggc ttg ctg tcc gat gac gat gtc gta gtt tct ccc atg ttt gag      102
```

```
Ala Gly Leu Leu Ser Asp Asp Asp Val Val Val Ser Pro Met Phe Glu
10                  15                  20                  25

tcc aca gct gca gat ttg ggg tct gtg gta cgc aag aac ctg cta tca      150
Ser Thr Ala Ala Asp Leu Gly Ser Val Val Arg Lys Asn Leu Leu Ser
                30                  35                  40

gac tgc tct gtc gtc tct acc tcc cta gag gac aag cag cag gtt cca      198
Asp Cys Ser Val Val Ser Thr Ser Leu Glu Asp Lys Gln Gln Val Pro
            45                  50                  55

tct gag gac agt atg gag aag gtg aaa gta tac ttg agg gtt agg ccc      246
Ser Glu Asp Ser Met Glu Lys Val Lys Val Tyr Leu Arg Val Arg Pro
        60                  65                  70

ttg tta cct tca gag ttg gaa cga cag gaa gat cag ggt tgt gtc cgt      294
Leu Leu Pro Ser Glu Leu Glu Arg Gln Glu Asp Gln Gly Cys Val Arg
    75                  80                  85

att gag aat gtg gag acc ctt gtt cta caa gca ccc aag gac tcg ttt      342
Ile Glu Asn Val Glu Thr Leu Val Leu Gln Ala Pro Lys Asp Ser Phe
90                  95                  100                 105

gcc ctg aag agc aat gaa cgg gga att ggc caa gcc aca cac agg ttc      390
Ala Leu Lys Ser Asn Glu Arg Gly Ile Gly Gln Ala Thr His Arg Phe
                110                 115                 120

acc ttt tcc cag atc ttt ggg cca gaa gtg gga cag gca tcc ttc ttc      438
Thr Phe Ser Gln Ile Phe Gly Pro Glu Val Gly Gln Ala Ser Phe Phe
            125                 130                 135

aac cta act gtg aag gag atg gta aag gat gta ctc aaa ggg cag aac      486
Asn Leu Thr Val Lys Glu Met Val Lys Asp Val Leu Lys Gly Gln Asn
        140                 145                 150

tgg ctc atc tat aca tat gga gtc act aac tca ggg aaa acc cac acg      534
Trp Leu Ile Tyr Thr Tyr Gly Val Thr Asn Ser Gly Lys Thr His Thr
    155                 160                 165

att caa ggt acc atc aag gat gga ggg att ctc ccc cgg tcc ctg gcg      582
Ile Gln Gly Thr Ile Lys Asp Gly Gly Ile Leu Pro Arg Ser Leu Ala
170                 175                 180                 185

ctg atc ttc aat agc ctc caa ggc caa ctt cat cca aca cct gat ctg      630
Leu Ile Phe Asn Ser Leu Gln Gly Gln Leu His Pro Thr Pro Asp Leu
                190                 195                 200

aag ccc ttg ctc tcc aat gag gta atc tgg cta gac agc aag cag atc      678
Lys Pro Leu Leu Ser Asn Glu Val Ile Trp Leu Asp Ser Lys Gln Ile
            205                 210                 215

cga cag gag gaa atg aag aag ctg tcc ctg cta aat gga ggc ctc caa      726
Arg Gln Glu Glu Met Lys Lys Leu Ser Leu Leu Asn Gly Gly Leu Gln
        220                 225                 230

gag gag gag ctg tcc act tcc ttg aag agg agt gtc tac atc gaa agt      774
Glu Glu Glu Leu Ser Thr Ser Leu Lys Arg Ser Val Tyr Ile Glu Ser
    235                 240                 245

cgg ata ggt acc agc acc agc ttc gac agt ggc att gct ggg ctc tct      822
Arg Ile Gly Thr Ser Thr Ser Phe Asp Ser Gly Ile Ala Gly Leu Ser
```

```
250                 255                 260                 265

tct atc agt cag tgt acc agc agt agc cag ctg gat gaa aca agt cat      870
Ser Ile Ser Gln Cys Thr Ser Ser Ser Gln Leu Asp Glu Thr Ser His
                270                 275                 280

cga tgg gca cag cca gac act gcc cca cta cct gtc ccg gca aac att      918
Arg Trp Ala Gln Pro Asp Thr Ala Pro Leu Pro Val Pro Ala Asn Ile
            285                 290                 295

cgc ttc tcc atc tgg atc tca ttc ttt gag atc tac aac gaa ctg ctt      966
Arg Phe Ser Ile Trp Ile Ser Phe Phe Glu Ile Tyr Asn Glu Leu Leu
        300                 305                 310

tat gac cta tta gaa ccg cct agc caa cag cgc aag agg cag act ttg     1014
Tyr Asp Leu Leu Glu Pro Pro Ser Gln Gln Arg Lys Arg Gln Thr Leu
    315                 320                 325

cgg cta tgc gag gat caa aat ggc aat ccc tat gtg aaa gat ctc aac     1062
Arg Leu Cys Glu Asp Gln Asn Gly Asn Pro Tyr Val Lys Asp Leu Asn
330                 335                 340                 345

tgg att cat gtg caa gat gct gag gag gcc tgg aag ctc cta aaa gtg     1110
Trp Ile His Val Gln Asp Ala Glu Glu Ala Trp Lys Leu Leu Lys Val
                350                 355                 360

ggt cgt aag aac cag agc ttt gcc agc acc cac ctc aac cag aac tcc     1158
Gly Arg Lys Asn Gln Ser Phe Ala Ser Thr His Leu Asn Gln Asn Ser
            365                 370                 375

agc cgc agt cac agc atc ttc tca atc agg atc cta cac ctt cag ggg     1206
Ser Arg Ser His Ser Ile Phe Ser Ile Arg Ile Leu His Leu Gln Gly
        380                 385                 390

gaa gga gat ata gtc ccc aag atc agc gag ctg tca ctc tgt gat ctg     1254
Glu Gly Asp Ile Val Pro Lys Ile Ser Glu Leu Ser Leu Cys Asp Leu
    395                 400                 405

gct ggc tca gag cgc tgc aaa gat cag aag agt ggt gaa cgg ttg aag     1302
Ala Gly Ser Glu Arg Cys Lys Asp Gln Lys Ser Gly Glu Arg Leu Lys
410                 415                 420                 425

gaa gca gga aac att aac acc tct cta cac acc ctg ggc cgc tgt att     1350
Glu Ala Gly Asn Ile Asn Thr Ser Leu His Thr Leu Gly Arg Cys Ile
                430                 435                 440

gct gcc ctt cgt caa aac cag cag aac cgg tca aag cag aac ctg gtt     1398
Ala Ala Leu Arg Gln Asn Gln Gln Asn Arg Ser Lys Gln Asn Leu Val
            445                 450                 455

ccc ttc cgt gac agc aag ttg act cga gtg ttc caa ggt ttc ttc aca     1446
Pro Phe Arg Asp Ser Lys Leu Thr Arg Val Phe Gln Gly Phe Phe Thr
        460                 465                 470

ggc cga ggc cgt tcc tgc atg att gtc aat gtg aat ccc tgt gca tct     1494
Gly Arg Gly Arg Ser Cys Met Ile Val Asn Val Asn Pro Cys Ala Ser
    475                 480                 485

acc tat gat gaa act ctt cat gtg gcc aag ttc tca gcc att gct agc     1542
Thr Tyr Asp Glu Thr Leu His Val Ala Lys Phe Ser Ala Ile Ala Ser
490                 495                 500                 505
```

```
cag ctt gtg cat gcc cca cct atg caa ctg gga ttc cca tcc ctg cac     1590
Gln Leu Val His Ala Pro Pro Met Gln Leu Gly Phe Pro Ser Leu His
               510                 515                 520

tcg ttc atc aag gaa cat agt ctt cag gta tcc ccc agc tta gag aaa     1638
Ser Phe Ile Lys Glu His Ser Leu Gln Val Ser Pro Ser Leu Glu Lys
           525                 530                 535

ggg gct aag gca gac aca ggc ctt gat gat gat att gaa aat gaa gct     1686
Gly Ala Lys Ala Asp Thr Gly Leu Asp Asp Ile Glu Asn Glu Ala
       540                 545                 550

gac atc tcc atg tat ggc aaa gag gag ctc cta caa gtt gtg gaa gcc     1734
Asp Ile Ser Met Tyr Gly Lys Glu Glu Leu Leu Gln Val Val Glu Ala
   555                 560                 565

atg aag aca ctg ctt ttg aag gaa cga cag gaa aag cta cag ctg gag     1782
Met Lys Thr Leu Leu Leu Lys Glu Arg Gln Glu Lys Leu Gln Leu Glu
570                 575                 580                 585

atg cat ctc cga gat gaa att tgc aat gag atg gta gaa cag atg caa     1830
Met His Leu Arg Asp Glu Ile Cys Asn Glu Met Val Glu Gln Met Gln
               590                 595                 600

cag cgg gaa cag tgg tgc agt gaa cat ttg gac acc caa aag gaa cta     1878
Gln Arg Glu Gln Trp Cys Ser Glu His Leu Asp Thr Gln Lys Glu Leu
           605                 610                 615

ttg gag gaa atg tat gaa gaa aaa cta aat atc ctc aag gag tca ctg     1926
Leu Glu Glu Met Tyr Glu Glu Lys Leu Asn Ile Leu Lys Glu Ser Leu
       620                 625                 630

aca agt ttt tac caa gaa gag att cag gag cgg gat gaa aag att gaa     1974
Thr Ser Phe Tyr Gln Glu Glu Ile Gln Glu Arg Asp Glu Lys Ile Glu
   635                 640                 645

gag cta gaa gct ctc ttg cag gaa gcc aga caa cag tca gtg gcc cat     2022
Glu Leu Glu Ala Leu Leu Gln Glu Ala Arg Gln Gln Ser Val Ala His
650                 655                 660                 665

cag caa tca ggg tct gaa ttg gcc cta cgg cgg tca caa agg ttg gca     2070
Gln Gln Ser Gly Ser Glu Leu Ala Leu Arg Arg Ser Gln Arg Leu Ala
               670                 675                 680

gct tct gcc tcc acc cag cag ctt cag gag gtt aaa gct aaa tta cag     2118
Ala Ser Ala Ser Thr Gln Gln Leu Gln Glu Val Lys Ala Lys Leu Gln
           685                 690                 695

cag tgc aaa gca gag cta aac tct acc act gaa gag ttg cat aag tat     2166
Gln Cys Lys Ala Glu Leu Asn Ser Thr Thr Glu Glu Leu His Lys Tyr
       700                 705                 710

cag aaa atg tta gaa cca cca ccc tca gcc aag ccc ttc acc att gat     2214
Gln Lys Met Leu Glu Pro Pro Pro Ser Ala Lys Pro Phe Thr Ile Asp
   715                 720                 725

gtg gac aag aag tta gaa gag ggc cag aag aat ata agg ctg ttg cgg     2262
Val Asp Lys Lys Leu Glu Glu Gly Gln Lys Asn Ile Arg Leu Leu Arg
730                 735                 740                 745
```

```
aca gag ctt cag aaa ctt ggt gag tct ctc caa tca gca gag aga gct     2310
Thr Glu Leu Gln Lys Leu Gly Glu Ser Leu Gln Ser Ala Glu Arg Ala
                750                 755                 760

tgt tgc cac agc act ggg gca gga aaa ctt cgt caa gcc ttg acc act     2358
Cys Cys His Ser Thr Gly Ala Gly Lys Leu Arg Gln Ala Leu Thr Thr
            765                 770                 775

tgt gat gac atc tta atc aaa cag gac cag act ctg gct gaa ctg cag     2406
Cys Asp Asp Ile Leu Ile Lys Gln Asp Gln Thr Leu Ala Glu Leu Gln
        780                 785                 790

aac aac atg gtg cta gtg aaa ctg gac ctt cgg aag aag gca gca tgt     2454
Asn Asn Met Val Leu Val Lys Leu Asp Leu Arg Lys Lys Ala Ala Cys
    795                 800                 805

att gct gag cag tat cat act gtg ttg aaa ctc caa ggc cag gtt tct     2502
Ile Ala Glu Gln Tyr His Thr Val Leu Lys Leu Gln Gly Gln Val Ser
810                 815                 820                 825

gcc aaa aag cgc ctt ggt acc aac cag gaa aat cag caa cca aac caa     2550
Ala Lys Lys Arg Leu Gly Thr Asn Gln Glu Asn Gln Gln Pro Asn Gln
                830                 835                 840

caa cca cca ggg aag aaa cca ttc ctt cga aat tta ctt ccc cga aca     2598
Gln Pro Pro Gly Lys Lys Pro Phe Leu Arg Asn Leu Leu Pro Arg Thr
            845                 850                 855

cca acc tgc caa agc tca aca gac tgc agc cct tat gcc cgg atc cta     2646
Pro Thr Cys Gln Ser Ser Thr Asp Cys Ser Pro Tyr Ala Arg Ile Leu
        860                 865                 870

cgc tca cgg cgt tcc cct tta ctc aaa tct ggg cct ttt ggc aaa aag     2694
Arg Ser Arg Arg Ser Pro Leu Leu Lys Ser Gly Pro Phe Gly Lys Lys
    875                 880                 885

tac taa ggctgtgggg aaagagaaga gcagtcatgg ccctgaggtg ggtcagctac      2750
Tyr
890

tctcctgaag aaataggtct cttttatgct ttaccatata tcaggaatta tatccaggat   2810

gcaatactca gacactagct tttttctcac ttttgtatta taaccaccta tgtaatctca   2870

tgttgttgtt ttttttttatt tacttatatg atttctatgc acacaaaaac agttatatta   2930

aagatattat tgttcacatt ttttattgaa aaaaaaaaaa aa                      2972


<210>  12
<211>  890
<212>  PRT
<213>  Homo sapiens

<400>  12

Met Ser Gln Gly Ile Leu Ser Pro Pro Ala Gly Leu Leu Ser Asp Asp
1               5                   10                  15


Asp Val Val Val Ser Pro Met Phe Glu Ser Thr Ala Ala Asp Leu Gly
```

```
            20                  25                  30

Ser Val Val Arg Lys Asn Leu Leu Ser Asp Cys Ser Val Val Ser Thr
        35                  40                  45

Ser Leu Glu Asp Lys Gln Gln Val Pro Ser Glu Asp Ser Met Glu Lys
    50                  55                  60

Val Lys Val Tyr Leu Arg Val Arg Pro Leu Leu Pro Ser Glu Leu Glu
65                  70                  75                  80

Arg Gln Glu Asp Gln Gly Cys Val Arg Ile Glu Asn Val Glu Thr Leu
                85                  90                  95

Val Leu Gln Ala Pro Lys Asp Ser Phe Ala Leu Lys Ser Asn Glu Arg
            100                 105                 110

Gly Ile Gly Gln Ala Thr His Arg Phe Thr Phe Ser Gln Ile Phe Gly
        115                 120                 125

Pro Glu Val Gly Gln Ala Ser Phe Phe Asn Leu Thr Val Lys Glu Met
    130                 135                 140

Val Lys Asp Val Leu Lys Gly Gln Asn Trp Leu Ile Tyr Thr Tyr Gly
145                 150                 155                 160

Val Thr Asn Ser Gly Lys Thr His Thr Ile Gln Gly Thr Ile Lys Asp
                165                 170                 175

Gly Gly Ile Leu Pro Arg Ser Leu Ala Leu Ile Phe Asn Ser Leu Gln
            180                 185                 190

Gly Gln Leu His Pro Thr Pro Asp Leu Lys Pro Leu Leu Ser Asn Glu
        195                 200                 205

Val Ile Trp Leu Asp Ser Lys Gln Ile Arg Gln Glu Glu Met Lys Lys
    210                 215                 220

Leu Ser Leu Leu Asn Gly Gly Leu Gln Glu Glu Glu Leu Ser Thr Ser
225                 230                 235                 240

Leu Lys Arg Ser Val Tyr Ile Glu Ser Arg Ile Gly Thr Ser Thr Ser
                245                 250                 255

Phe Asp Ser Gly Ile Ala Gly Leu Ser Ser Ile Ser Gln Cys Thr Ser
            260                 265                 270
```

```
Ser Ser Gln Leu Asp Glu Thr Ser His Arg Trp Ala Gln Pro Asp Thr
        275                 280                 285

Ala Pro Leu Pro Val Pro Ala Asn Ile Arg Phe Ser Ile Trp Ile Ser
    290                 295                 300

Phe Phe Glu Ile Tyr Asn Glu Leu Leu Tyr Asp Leu Leu Glu Pro Pro
305                 310                 315                 320

Ser Gln Gln Arg Lys Arg Gln Thr Leu Arg Leu Cys Glu Asp Gln Asn
                325                 330                 335

Gly Asn Pro Tyr Val Lys Asp Leu Asn Trp Ile His Val Gln Asp Ala
            340                 345                 350

Glu Glu Ala Trp Lys Leu Leu Lys Val Gly Arg Lys Asn Gln Ser Phe
        355                 360                 365

Ala Ser Thr His Leu Asn Gln Asn Ser Ser Arg Ser His Ser Ile Phe
    370                 375                 380

Ser Ile Arg Ile Leu His Leu Gln Gly Glu Gly Asp Ile Val Pro Lys
385                 390                 395                 400

Ile Ser Glu Leu Ser Leu Cys Asp Leu Ala Gly Ser Glu Arg Cys Lys
                405                 410                 415

Asp Gln Lys Ser Gly Glu Arg Leu Lys Glu Ala Gly Asn Ile Asn Thr
            420                 425                 430

Ser Leu His Thr Leu Gly Arg Cys Ile Ala Ala Leu Arg Gln Asn Gln
        435                 440                 445

Gln Asn Arg Ser Lys Gln Asn Leu Val Pro Phe Arg Asp Ser Lys Leu
    450                 455                 460

Thr Arg Val Phe Gln Gly Phe Phe Thr Gly Arg Gly Arg Ser Cys Met
465                 470                 475                 480

Ile Val Asn Val Asn Pro Cys Ala Ser Thr Tyr Asp Glu Thr Leu His
                485                 490                 495

Val Ala Lys Phe Ser Ala Ile Ala Ser Gln Leu Val His Ala Pro Pro
            500                 505                 510
```

```
Met Gln Leu Gly Phe Pro Ser Leu His Ser Phe Ile Lys Glu His Ser
        515                 520                 525

Leu Gln Val Ser Pro Ser Leu Glu Lys Gly Ala Lys Ala Asp Thr Gly
    530                 535                 540

Leu Asp Asp Asp Ile Glu Asn Glu Ala Asp Ile Ser Met Tyr Gly Lys
545                 550                 555                 560

Glu Glu Leu Leu Gln Val Val Glu Ala Met Lys Thr Leu Leu Leu Lys
                565                 570                 575

Glu Arg Gln Glu Lys Leu Gln Leu Glu Met His Leu Arg Asp Glu Ile
            580                 585                 590

Cys Asn Glu Met Val Glu Gln Met Gln Gln Arg Glu Gln Trp Cys Ser
        595                 600                 605

Glu His Leu Asp Thr Gln Lys Glu Leu Leu Glu Glu Met Tyr Glu Glu
    610                 615                 620

Lys Leu Asn Ile Leu Lys Glu Ser Leu Thr Ser Phe Tyr Gln Glu Glu
625                 630                 635                 640

Ile Gln Glu Arg Asp Glu Lys Ile Glu Glu Leu Glu Ala Leu Leu Gln
                645                 650                 655

Glu Ala Arg Gln Gln Ser Val Ala His Gln Gln Ser Gly Ser Glu Leu
            660                 665                 670

Ala Leu Arg Arg Ser Gln Arg Leu Ala Ala Ser Ala Ser Thr Gln Gln
        675                 680                 685

Leu Gln Glu Val Lys Ala Lys Leu Gln Gln Cys Lys Ala Glu Leu Asn
    690                 695                 700

Ser Thr Thr Glu Glu Leu His Lys Tyr Gln Lys Met Leu Glu Pro Pro
705                 710                 715                 720

Pro Ser Ala Lys Pro Phe Thr Ile Asp Val Asp Lys Lys Leu Glu Glu
                725                 730                 735

Gly Gln Lys Asn Ile Arg Leu Leu Arg Thr Glu Leu Gln Lys Leu Gly
            740                 745                 750
```

```
Glu Ser Leu Gln Ser Ala Glu Arg Ala Cys Cys His Ser Thr Gly Ala
        755                 760                 765

Gly Lys Leu Arg Gln Ala Leu Thr Thr Cys Asp Asp Ile Leu Ile Lys
    770                 775                 780

Gln Asp Gln Thr Leu Ala Glu Leu Gln Asn Asn Met Val Leu Val Lys
785                 790                 795                 800

Leu Asp Leu Arg Lys Lys Ala Ala Cys Ile Ala Glu Gln Tyr His Thr
                805                 810                 815

Val Leu Lys Leu Gln Gly Gln Val Ser Ala Lys Lys Arg Leu Gly Thr
            820                 825                 830

Asn Gln Glu Asn Gln Gln Pro Asn Gln Gln Pro Pro Gly Lys Lys Pro
        835                 840                 845

Phe Leu Arg Asn Leu Leu Pro Arg Thr Pro Thr Cys Gln Ser Ser Thr
    850                 855                 860

Asp Cys Ser Pro Tyr Ala Arg Ile Leu Arg Ser Arg Arg Ser Pro Leu
865                 870                 875                 880

Leu Lys Ser Gly Pro Phe Gly Lys Lys Tyr
                885                 890
```

<210> 13
<211> 2150
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (105)..(2033)

<400> 13

```
ctcgagccac gaaggccccg ctgtcctgtc tagcagatac ttgcacggtt tacagaaatt     60

cggtccctgg gtcgtgtcag gaaactggaa aaaaggtcat aagc atg aag cgc agt     116
                                                 Met Lys Arg Ser
                                                 1

tca gtt tcc agc ggt ggt gct ggc cgc ctc tcc atg cag gag tta aga      164
Ser Val Ser Ser Gly Gly Ala Gly Arg Leu Ser Met Gln Glu Leu Arg
5                   10                  15                  20

tcc cag gat gta aat aaa caa ggc ctc tat acc cct caa acc aaa gag      212
Ser Gln Asp Val Asn Lys Gln Gly Leu Tyr Thr Pro Gln Thr Lys Glu
                25                  30                  35
```

```
aaa cca acc ttt gga aag ttg agt ata aac aaa ccg aca tct gaa aga      260
Lys Pro Thr Phe Gly Lys Leu Ser Ile Asn Lys Pro Thr Ser Glu Arg
            40                  45                  50

aaa gtc tcg cta ttt ggc aaa aga act agt gga cat gga tcc cgg aat      308
Lys Val Ser Leu Phe Gly Lys Arg Thr Ser Gly His Gly Ser Arg Asn
        55                  60                  65

agt caa ctt ggt ata ttt tcc agt tct gag aaa atc aag gac ccg aga      356
Ser Gln Leu Gly Ile Phe Ser Ser Ser Glu Lys Ile Lys Asp Pro Arg
    70                  75                  80

cca ctt aat gac aaa gca ttc att cag cag tgt att cga caa ctc tgt      404
Pro Leu Asn Asp Lys Ala Phe Ile Gln Gln Cys Ile Arg Gln Leu Cys
85                  90                  95                  100

gag ttt ctt aca gaa aat ggt tat gca cat aat gtg tcc atg aaa tct      452
Glu Phe Leu Thr Glu Asn Gly Tyr Ala His Asn Val Ser Met Lys Ser
                105                 110                 115

cta caa gct ccc tct gtt aaa gac ttc ctg aag atc ttc aca ttt ctt      500
Leu Gln Ala Pro Ser Val Lys Asp Phe Leu Lys Ile Phe Thr Phe Leu
            120                 125                 130

tat ggc ttc ctg tgc ccc tca tac gaa ctt cct gac aca aag ttt gaa      548
Tyr Gly Phe Leu Cys Pro Ser Tyr Glu Leu Pro Asp Thr Lys Phe Glu
        135                 140                 145

gaa gag gtt cca aga atc ttt aaa gac ctt ggg tat cct ttt gca cta      596
Glu Glu Val Pro Arg Ile Phe Lys Asp Leu Gly Tyr Pro Phe Ala Leu
    150                 155                 160

tcc aaa agc tcc atg tac aca gtg ggg gct cct cat aca tgg cct cac      644
Ser Lys Ser Ser Met Tyr Thr Val Gly Ala Pro His Thr Trp Pro His
165                 170                 175                 180

att gtg gca gcc tta gtt tgg cta ata gac tgc atc aag ata cat act      692
Ile Val Ala Ala Leu Val Trp Leu Ile Asp Cys Ile Lys Ile His Thr
                185                 190                 195

gcc atg aaa gaa agc tca cct tta ttt gat gat ggg cag cct tgg gga      740
Ala Met Lys Glu Ser Ser Pro Leu Phe Asp Asp Gly Gln Pro Trp Gly
            200                 205                 210

gaa gaa act gaa gat gga att atg cat aat aag ttg ttt ttg gac tac      788
Glu Glu Thr Glu Asp Gly Ile Met His Asn Lys Leu Phe Leu Asp Tyr
        215                 220                 225

acc ata aaa tgc tat gag agt ttt atg agt ggt gcc gac agc ttt gat      836
Thr Ile Lys Cys Tyr Glu Ser Phe Met Ser Gly Ala Asp Ser Phe Asp
    230                 235                 240

gag atg aat gca gag ctg cag tca aaa ctg aag gat tta ttt aat gtg      884
Glu Met Asn Ala Glu Leu Gln Ser Lys Leu Lys Asp Leu Phe Asn Val
245                 250                 255                 260

gat gct ttt aag ctg gaa tca tta gaa gca aaa aac aga gca ttg aat      932
Asp Ala Phe Lys Leu Glu Ser Leu Glu Ala Lys Asn Arg Ala Leu Asn
                265                 270                 275

gaa cag att gca aga ttg gaa caa gaa aga gaa aaa gaa ccg aat cgt      980
```

```
Glu Gln Ile Ala Arg Leu Glu Gln Glu Arg Glu Lys Glu Pro Asn Arg
            280                 285                 290

cta gag tcg ttg aga aaa ctg aag gct tcc tta caa gga gat gtt caa     1028
Leu Glu Ser Leu Arg Lys Leu Lys Ala Ser Leu Gln Gly Asp Val Gln
        295                 300                 305

aag tat cag gca tac atg agc aat ttg gag tct cat tca gcc att ctt     1076
Lys Tyr Gln Ala Tyr Met Ser Asn Leu Glu Ser His Ser Ala Ile Leu
    310                 315                 320

gac cag aaa tta aat ggt ctc aat gag gaa att gct aga gta gaa cta     1124
Asp Gln Lys Leu Asn Gly Leu Asn Glu Glu Ile Ala Arg Val Glu Leu
325                 330                 335                 340

gaa tgt gaa aca ata aaa cag gag aac act cga cta cag aat atc att     1172
Glu Cys Glu Thr Ile Lys Gln Glu Asn Thr Arg Leu Gln Asn Ile Ile
                345                 350                 355

gac aac cag aag tac tca gtt gca gac att gag cga ata aat cat gaa     1220
Asp Asn Gln Lys Tyr Ser Val Ala Asp Ile Glu Arg Ile Asn His Glu
            360                 365                 370

aga aat gaa ttg cag cag act att aat aaa tta acc aag gac ctg gaa     1268
Arg Asn Glu Leu Gln Gln Thr Ile Asn Lys Leu Thr Lys Asp Leu Glu
        375                 380                 385

gct gaa caa cag aag ttg tgg aat gag gag tta aaa tat gcc aga ggc     1316
Ala Glu Gln Gln Lys Leu Trp Asn Glu Glu Leu Lys Tyr Ala Arg Gly
    390                 395                 400

aaa gaa gcg att gaa aca caa tta gca gag tat cac aaa ttg gct aga     1364
Lys Glu Ala Ile Glu Thr Gln Leu Ala Glu Tyr His Lys Leu Ala Arg
405                 410                 415                 420

aaa tta aaa ctt att cct aaa ggt gct gag aat tcc aaa ggt tat gac     1412
Lys Leu Lys Leu Ile Pro Lys Gly Ala Glu Asn Ser Lys Gly Tyr Asp
                425                 430                 435

ttt gaa att aag ttt aat ccc gag gct ggt gcc aac tgc ctt gtc aaa     1460
Phe Glu Ile Lys Phe Asn Pro Glu Ala Gly Ala Asn Cys Leu Val Lys
            440                 445                 450

tac agg gct caa gtt tat gta cct ctt aag gaa ctc ctg aat gaa act     1508
Tyr Arg Ala Gln Val Tyr Val Pro Leu Lys Glu Leu Leu Asn Glu Thr
        455                 460                 465

gaa gaa gaa att aat aaa gcc cta aat aaa aaa atg ggt ttg gag gat     1556
Glu Glu Glu Ile Asn Lys Ala Leu Asn Lys Lys Met Gly Leu Glu Asp
    470                 475                 480

act tta gaa caa ttg aat gca atg ata aca gaa agc aag aga agt gtg     1604
Thr Leu Glu Gln Leu Asn Ala Met Ile Thr Glu Ser Lys Arg Ser Val
485                 490                 495                 500

aga act ctg aaa gaa gaa gtt caa aag ctg gat gat ctt tac caa caa     1652
Arg Thr Leu Lys Glu Glu Val Gln Lys Leu Asp Asp Leu Tyr Gln Gln
                505                 510                 515

aaa att aag gaa gca gag gaa gag gat gaa aaa tgt gcc agt gag ctt     1700
Lys Ile Lys Glu Ala Glu Glu Glu Asp Glu Lys Cys Ala Ser Glu Leu
```

```
            520                 525                 530

gag tcc ttg gag aaa cac aag cac ctg cta gaa agt act gtt aac cag     1748
Glu Ser Leu Glu Lys His Lys His Leu Leu Glu Ser Thr Val Asn Gln
        535                 540                 545

ggg ctc agt gaa gct atg aat gaa tta gat gct gtt cag cgg gaa tac     1796
Gly Leu Ser Glu Ala Met Asn Glu Leu Asp Ala Val Gln Arg Glu Tyr
    550                 555                 560

caa cta gtt gtg caa acc acg act gaa gaa aga cga aaa gtg gga aat     1844
Gln Leu Val Val Gln Thr Thr Thr Glu Glu Arg Arg Lys Val Gly Asn
565                 570                 575                 580

aac ttg caa cgt ctg tta gag atg gtt gct aca cat gtt ggg tct gta     1892
Asn Leu Gln Arg Leu Leu Glu Met Val Ala Thr His Val Gly Ser Val
                585                 590                 595

gag aaa cat ctt gag gag cag att gct aaa gtt gat aga gaa tat gaa     1940
Glu Lys His Leu Glu Glu Gln Ile Ala Lys Val Asp Arg Glu Tyr Glu
            600                 605                 610

gaa tgc atg tca gaa gat ctc tcg gaa aat att aaa gag att aga gat     1988
Glu Cys Met Ser Glu Asp Leu Ser Glu Asn Ile Lys Glu Ile Arg Asp
        615                 620                 625

aag tat gag aag aaa gct act cta att aag tct tct gaa gaa tga         2033
Lys Tyr Glu Lys Lys Ala Thr Leu Ile Lys Ser Ser Glu Glu
    630                 635                 640

agataaaatg ttgatcatgt atatatatcc atagtgaata aaattgtctc agtaaaaaaa   2093

aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaa      2150


<210>  14
<211>  642
<212>  PRT
<213>  Homo sapiens

<400>  14

Met Lys Arg Ser Ser Val Ser Ser Gly Gly Ala Gly Arg Leu Ser Met
1               5                   10                  15


Gln Glu Leu Arg Ser Gln Asp Val Asn Lys Gln Gly Leu Tyr Thr Pro
            20                  25                  30


Gln Thr Lys Glu Lys Pro Thr Phe Gly Lys Leu Ser Ile Asn Lys Pro
        35                  40                  45


Thr Ser Glu Arg Lys Val Ser Leu Phe Gly Lys Arg Thr Ser Gly His
    50                  55                  60


Gly Ser Arg Asn Ser Gln Leu Gly Ile Phe Ser Ser Ser Glu Lys Ile
65                  70                  75                  80
```

```
Lys Asp Pro Arg Pro Leu Asn Asp Lys Ala Phe Ile Gln Gln Cys Ile
               85                  90                  95

Arg Gln Leu Cys Glu Phe Leu Thr Glu Asn Gly Tyr Ala His Asn Val
            100                 105                 110

Ser Met Lys Ser Leu Gln Ala Pro Ser Val Lys Asp Phe Leu Lys Ile
        115                 120                 125

Phe Thr Phe Leu Tyr Gly Phe Leu Cys Pro Ser Tyr Glu Leu Pro Asp
    130                 135                 140

Thr Lys Phe Glu Glu Glu Val Pro Arg Ile Phe Lys Asp Leu Gly Tyr
145                 150                 155                 160

Pro Phe Ala Leu Ser Lys Ser Ser Met Tyr Thr Val Gly Ala Pro His
               165                 170                 175

Thr Trp Pro His Ile Val Ala Ala Leu Val Trp Leu Ile Asp Cys Ile
            180                 185                 190

Lys Ile His Thr Ala Met Lys Glu Ser Ser Pro Leu Phe Asp Asp Gly
        195                 200                 205

Gln Pro Trp Gly Glu Glu Thr Glu Asp Gly Ile Met His Asn Lys Leu
    210                 215                 220

Phe Leu Asp Tyr Thr Ile Lys Cys Tyr Glu Ser Phe Met Ser Gly Ala
225                 230                 235                 240

Asp Ser Phe Asp Glu Met Asn Ala Glu Leu Gln Ser Lys Leu Lys Asp
               245                 250                 255

Leu Phe Asn Val Asp Ala Phe Lys Leu Glu Ser Leu Glu Ala Lys Asn
            260                 265                 270

Arg Ala Leu Asn Glu Gln Ile Ala Arg Leu Glu Gln Glu Arg Glu Lys
        275                 280                 285

Glu Pro Asn Arg Leu Glu Ser Leu Arg Lys Leu Lys Ala Ser Leu Gln
    290                 295                 300

Gly Asp Val Gln Lys Tyr Gln Ala Tyr Met Ser Asn Leu Glu Ser His
305                 310                 315                 320
```

```
Ser Ala Ile Leu Asp Gln Lys Leu Asn Gly Leu Asn Glu Glu Ile Ala
               325                 330                 335

Arg Val Glu Leu Glu Cys Glu Thr Ile Lys Gln Glu Asn Thr Arg Leu
            340                 345                 350

Gln Asn Ile Ile Asp Asn Gln Lys Tyr Ser Val Ala Asp Ile Glu Arg
        355                 360                 365

Ile Asn His Glu Arg Asn Glu Leu Gln Gln Thr Ile Asn Lys Leu Thr
    370                 375                 380

Lys Asp Leu Glu Ala Glu Gln Gln Lys Leu Trp Asn Glu Glu Leu Lys
385                 390                 395                 400

Tyr Ala Arg Gly Lys Glu Ala Ile Glu Thr Gln Leu Ala Glu Tyr His
               405                 410                 415

Lys Leu Ala Arg Lys Leu Lys Leu Ile Pro Lys Gly Ala Glu Asn Ser
            420                 425                 430

Lys Gly Tyr Asp Phe Glu Ile Lys Phe Asn Pro Glu Ala Gly Ala Asn
        435                 440                 445

Cys Leu Val Lys Tyr Arg Ala Gln Val Tyr Val Pro Leu Lys Glu Leu
    450                 455                 460

Leu Asn Glu Thr Glu Glu Glu Ile Asn Lys Ala Leu Asn Lys Lys Met
465                 470                 475                 480

Gly Leu Glu Asp Thr Leu Glu Gln Leu Asn Ala Met Ile Thr Glu Ser
               485                 490                 495

Lys Arg Ser Val Arg Thr Leu Lys Glu Glu Val Gln Lys Leu Asp Asp
            500                 505                 510

Leu Tyr Gln Gln Lys Ile Lys Glu Ala Glu Glu Glu Asp Glu Lys Cys
        515                 520                 525

Ala Ser Glu Leu Glu Ser Leu Glu Lys His Lys His Leu Leu Glu Ser
    530                 535                 540

Thr Val Asn Gln Gly Leu Ser Glu Ala Met Asn Glu Leu Asp Ala Val
545                 550                 555                 560

Gln Arg Glu Tyr Gln Leu Val Val Gln Thr Thr Thr Glu Glu Arg Arg
```

```
               565                 570                 575

Lys Val Gly Asn Asn Leu Gln Arg Leu Leu Glu Met Val Ala Thr His
            580                 585                 590

Val Gly Ser Val Glu Lys His Leu Glu Glu Gln Ile Ala Lys Val Asp
        595                 600                 605

Arg Glu Tyr Glu Glu Cys Met Ser Glu Asp Leu Ser Glu Asn Ile Lys
    610                 615                 620

Glu Ile Arg Asp Lys Tyr Glu Lys Lys Ala Thr Leu Ile Lys Ser Ser
625                 630                 635                 640

Glu Glu
```

<210> 15
<211> 2984
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (75)..(2648)

<400> 15

```
ggaaattcaa acgtgtttgc ggaaaggagt ttgggttcca tcttttcatt tccccagcgc     60

agctttctgt agaa atg gaa tcc gag gat tta agt ggc aga gaa ttg aca      110
               Met Glu Ser Glu Asp Leu Ser Gly Arg Glu Leu Thr
               1               5                   10

att gat tcc ata atg aac aaa gtg aga gac att aaa aat aag ttt aaa      158
Ile Asp Ser Ile Met Asn Lys Val Arg Asp Ile Lys Asn Lys Phe Lys
        15                  20                  25

aat gaa gac ctt act gat gaa cta agc ttg aat aaa att tct gct gat      206
Asn Glu Asp Leu Thr Asp Glu Leu Ser Leu Asn Lys Ile Ser Ala Asp
    30                  35                  40

act aca gat aac tcg gga act gtt aac caa att atg atg atg gca aac      254
Thr Thr Asp Asn Ser Gly Thr Val Asn Gln Ile Met Met Met Ala Asn
45                  50                  55                  60

aac cca gag gac tgg ttg agt ttg ttg ctc aaa cta gag aaa aac agt      302
Asn Pro Glu Asp Trp Leu Ser Leu Leu Leu Lys Leu Glu Lys Asn Ser
               65                  70                  75

gtt ccg cta agt gat gct ctt tta aat aaa ttg att ggt cgt tac agt      350
Val Pro Leu Ser Asp Ala Leu Leu Asn Lys Leu Ile Gly Arg Tyr Ser
            80                  85                  90

caa gca att gaa gcg ctt ccc cca gat aaa tat ggc caa aat gag agt      398
```

```
Gln Ala Ile Glu Ala Leu Pro Pro Asp Lys Tyr Gly Gln Asn Glu Ser
        95                  100                 105

ttt gct aga att caa gtg aga ttt gct gaa tta aaa gct att caa gag      446
Phe Ala Arg Ile Gln Val Arg Phe Ala Glu Leu Lys Ala Ile Gln Glu
    110                 115                 120

cca gat gat gca cgt gac tac ttt caa atg gcc aga gca aac tgc aag      494
Pro Asp Asp Ala Arg Asp Tyr Phe Gln Met Ala Arg Ala Asn Cys Lys
125                 130                 135                 140

aaa ttt gct ttt gtt cat ata tct ttt gca caa ttt gaa ctg tca caa      542
Lys Phe Ala Phe Val His Ile Ser Phe Ala Gln Phe Glu Leu Ser Gln
                145                 150                 155

ggt aat gtc aaa aaa agt aaa caa ctt ctt caa aaa gct gta gaa cgt      590
Gly Asn Val Lys Lys Ser Lys Gln Leu Leu Gln Lys Ala Val Glu Arg
            160                 165                 170

gga gca gta cca cta gaa atg ctg gaa att gcc ctg cgg aat tta aac      638
Gly Ala Val Pro Leu Glu Met Leu Glu Ile Ala Leu Arg Asn Leu Asn
        175                 180                 185

ctc caa aaa aag cag ctg ctt tca gag gag gaa aag aag aat tta tca      686
Leu Gln Lys Lys Gln Leu Leu Ser Glu Glu Glu Lys Lys Asn Leu Ser
    190                 195                 200

gca tct acg gta tta act gcc caa gaa tca ttt tcc ggt tca ctt ggg      734
Ala Ser Thr Val Leu Thr Ala Gln Glu Ser Phe Ser Gly Ser Leu Gly
205                 210                 215                 220

cat tta cag aat agg aac aac agt tgt gat tcc aga gga cag act act      782
His Leu Gln Asn Arg Asn Asn Ser Cys Asp Ser Arg Gly Gln Thr Thr
                225                 230                 235

aaa gcc agg ttt tta tat gga gag aac atg cca cca caa gat gca gaa      830
Lys Ala Arg Phe Leu Tyr Gly Glu Asn Met Pro Pro Gln Asp Ala Glu
            240                 245                 250

ata ggt tac cgg aat tca ttg aga caa act aac aaa act aaa cag tca      878
Ile Gly Tyr Arg Asn Ser Leu Arg Gln Thr Asn Lys Thr Lys Gln Ser
        255                 260                 265

tgc cca ttt gga aga gtc cca gtt aac ctt cta aat agc cca gat tgt      926
Cys Pro Phe Gly Arg Val Pro Val Asn Leu Leu Asn Ser Pro Asp Cys
    270                 275                 280

gat gtg aag aca gat gat tca gtt gta cct tgt ttt atg aaa aga caa      974
Asp Val Lys Thr Asp Asp Ser Val Val Pro Cys Phe Met Lys Arg Gln
285                 290                 295                 300

acc tct aga tca gaa tgc cga gat ttg gtt gtg cct gga tct aaa cca     1022
Thr Ser Arg Ser Glu Cys Arg Asp Leu Val Val Pro Gly Ser Lys Pro
                305                 310                 315

agt gga aat gat tcc tgt gaa tta aga aat tta aag tct gtt caa aat     1070
Ser Gly Asn Asp Ser Cys Glu Leu Arg Asn Leu Lys Ser Val Gln Asn
            320                 325                 330

agt cat ttc aag gaa cct ctg gtg tca gat gaa aag agt tct gaa ctt     1118
Ser His Phe Lys Glu Pro Leu Val Ser Asp Glu Lys Ser Ser Glu Leu
```

```
        335                 340                 345

att att act gat tca ata acc ctg aag aat aaa acg gaa tca agt ctt     1166
Ile Ile Thr Asp Ser Ile Thr Leu Lys Asn Lys Thr Glu Ser Ser Leu
    350                 355                 360

cta gct aaa tta gaa gaa act aaa gag tat caa gaa cca gag gtt cca     1214
Leu Ala Lys Leu Glu Glu Thr Lys Glu Tyr Gln Glu Pro Glu Val Pro
365                 370                 375                 380

gag agt aac cag aaa cag tgg caa tct aag aga aag tca gag tgt att     1262
Glu Ser Asn Gln Lys Gln Trp Gln Ser Lys Arg Lys Ser Glu Cys Ile
                385                 390                 395

aac cag aat cct gct gca tct tca aat cac tgg cag att ccg gag tta     1310
Asn Gln Asn Pro Ala Ala Ser Ser Asn His Trp Gln Ile Pro Glu Leu
            400                 405                 410

gcc cga aaa gtt aat aca gag cag aaa cat acc act ttt gag caa cct     1358
Ala Arg Lys Val Asn Thr Glu Gln Lys His Thr Thr Phe Glu Gln Pro
        415                 420                 425

gtc ttt tca gtt tca aaa cag tca cca cca ata tca aca tct aaa tgg     1406
Val Phe Ser Val Ser Lys Gln Ser Pro Pro Ile Ser Thr Ser Lys Trp
    430                 435                 440

ttt gac cca aaa tct att tgt aag aca cca agc agc aat acc ttg gat     1454
Phe Asp Pro Lys Ser Ile Cys Lys Thr Pro Ser Ser Asn Thr Leu Asp
445                 450                 455                 460

gat tac atg agc tgt ttt aga act cca gtt gta aag aat gac ttt cca     1502
Asp Tyr Met Ser Cys Phe Arg Thr Pro Val Val Lys Asn Asp Phe Pro
                465                 470                 475

cct gct tgt cag ttg tca aca cct tat ggc caa cct gcc tgt ttc cag     1550
Pro Ala Cys Gln Leu Ser Thr Pro Tyr Gly Gln Pro Ala Cys Phe Gln
            480                 485                 490

cag caa cag cat caa ata ctt gcc act cca ctt caa aat tta cag gtt     1598
Gln Gln Gln His Gln Ile Leu Ala Thr Pro Leu Gln Asn Leu Gln Val
        495                 500                 505

tta gca tct tct tca gca aat gaa tgc att tcg gtt aaa gga aga att     1646
Leu Ala Ser Ser Ser Ala Asn Glu Cys Ile Ser Val Lys Gly Arg Ile
    510                 515                 520

tat tcc att tta aag cag ata gga agt gga ggt tca agc aag gta ttt     1694
Tyr Ser Ile Leu Lys Gln Ile Gly Ser Gly Gly Ser Ser Lys Val Phe
525                 530                 535                 540

cag gtg tta aat gaa aag aaa cag ata tat gct ata aaa tat gtg aac     1742
Gln Val Leu Asn Glu Lys Lys Gln Ile Tyr Ala Ile Lys Tyr Val Asn
                545                 550                 555

tta gaa gaa gca gat aac caa act ctt gat agt tac cgg aac gaa ata     1790
Leu Glu Glu Ala Asp Asn Gln Thr Leu Asp Ser Tyr Arg Asn Glu Ile
            560                 565                 570

gct tat ttg aat aaa cta caa caa cac agt gat aag atc atc cga ctt     1838
Ala Tyr Leu Asn Lys Leu Gln Gln His Ser Asp Lys Ile Ile Arg Leu
        575                 580                 585
```

```
tat gat tat gaa atc acg gac cag tac atc tac atg gta atg gag tgt     1886
Tyr Asp Tyr Glu Ile Thr Asp Gln Tyr Ile Tyr Met Val Met Glu Cys
    590                 595                 600

gga aat att gat ctt aat agt tgg ctt aaa aag aaa aaa tcc att gat     1934
Gly Asn Ile Asp Leu Asn Ser Trp Leu Lys Lys Lys Lys Ser Ile Asp
605                 610                 615                 620

cca tgg gaa cgc aag agt tac tgg aaa aat atg tta gag gca gtt cac     1982
Pro Trp Glu Arg Lys Ser Tyr Trp Lys Asn Met Leu Glu Ala Val His
                625                 630                 635

aca atc cat caa cat ggc att gtt cac agt gat ctt aaa cca gct aac     2030
Thr Ile His Gln His Gly Ile Val His Ser Asp Leu Lys Pro Ala Asn
            640                 645                 650

ttt ctg ata gtt gat gga atg cta aag cta att gat ttt ggg att gca     2078
Phe Leu Ile Val Asp Gly Met Leu Lys Leu Ile Asp Phe Gly Ile Ala
        655                 660                 665

aac caa atg caa cca gat aca aca agt gtt gtt aaa gat tct cag gtt     2126
Asn Gln Met Gln Pro Asp Thr Thr Ser Val Val Lys Asp Ser Gln Val
    670                 675                 680

ggc aca gtt aat tat atg cca cca gaa gca atc aaa gat atg tct tcc     2174
Gly Thr Val Asn Tyr Met Pro Pro Glu Ala Ile Lys Asp Met Ser Ser
685                 690                 695                 700

tcc aga gag aat ggg aaa tct aag tca aag ata agc ccc aaa agt gat     2222
Ser Arg Glu Asn Gly Lys Ser Lys Ser Lys Ile Ser Pro Lys Ser Asp
                705                 710                 715

gtt tgg tcc tta gga tgt att ttg tac tat atg act tac ggg aaa aca     2270
Val Trp Ser Leu Gly Cys Ile Leu Tyr Tyr Met Thr Tyr Gly Lys Thr
            720                 725                 730

cca ttt cag cag ata att aat cag att tct aaa tta cat gcc ata att     2318
Pro Phe Gln Gln Ile Ile Asn Gln Ile Ser Lys Leu His Ala Ile Ile
        735                 740                 745

gat cct aat cat gaa att gaa ttt ccc gat att cca gag aaa gat ctt     2366
Asp Pro Asn His Glu Ile Glu Phe Pro Asp Ile Pro Glu Lys Asp Leu
    750                 755                 760

caa gat gtg tta aag tgt tgt tta aaa agg gac cca aaa cag agg ata     2414
Gln Asp Val Leu Lys Cys Cys Leu Lys Arg Asp Pro Lys Gln Arg Ile
765                 770                 775                 780

tcc att cct gag ctc ctg gct cat ccc tat gtt caa att caa act cat     2462
Ser Ile Pro Glu Leu Leu Ala His Pro Tyr Val Gln Ile Gln Thr His
                785                 790                 795

cca gtt aac caa atg gcc aag gga acc act gaa gaa atg aaa tat gtt     2510
Pro Val Asn Gln Met Ala Lys Gly Thr Thr Glu Glu Met Lys Tyr Val
            800                 805                 810

ctg ggc caa ctt gtt ggt ctg aat tct cct aac tcc att ttg aaa gct     2558
Leu Gly Gln Leu Val Gly Leu Asn Ser Pro Asn Ser Ile Leu Lys Ala
        815                 820                 825
```

```
gct aaa act tta tat gaa cac tat agt ggt ggt gaa agt cat aat tct     2606
Ala Lys Thr Leu Tyr Glu His Tyr Ser Gly Gly Glu Ser His Asn Ser
    830                 835                 840

tca tcc tcc aag act ttt gaa aaa aaa agg gga aaa aaa tga             2648
Ser Ser Ser Lys Thr Phe Glu Lys Lys Arg Gly Lys Lys
845                 850                 855

tttgcagtta ttcgtaatgt caaataccac ctataaaata tattggactg ttatactctt   2708

gaatccctgt ggaaatctac atttgaagac aacatcactc tgaagtgtta tcagcaaaaa   2768

aaattcagta gattatcttt aaaagaaaac tgtaaaaata gcaaccactt atggtactgt   2828

atatattgta gacttgtttt ctctgtttta tgctcttgtg taatctactt gacatcattt   2888

tactcttgga atagtgggtg gatagcaagt atattctaaa aaactttgta aataaagttt   2948

tgtggctaaa atgacactaa aaaaaaaaaa aaaaaa                             2984
```

<210> 16
<211> 857
<212> PRT
<213> Homo sapiens

<400> 16

```
Met Glu Ser Glu Asp Leu Ser Gly Arg Glu Leu Thr Ile Asp Ser Ile
1               5                   10                  15

Met Asn Lys Val Arg Asp Ile Lys Asn Lys Phe Lys Asn Glu Asp Leu
            20                  25                  30

Thr Asp Glu Leu Ser Leu Asn Lys Ile Ser Ala Asp Thr Thr Asp Asn
        35                  40                  45

Ser Gly Thr Val Asn Gln Ile Met Met Met Ala Asn Asn Pro Glu Asp
    50                  55                  60

Trp Leu Ser Leu Leu Leu Lys Leu Glu Lys Asn Ser Val Pro Leu Ser
65                  70                  75                  80

Asp Ala Leu Leu Asn Lys Leu Ile Gly Arg Tyr Ser Gln Ala Ile Glu
                85                  90                  95

Ala Leu Pro Pro Asp Lys Tyr Gly Gln Asn Glu Ser Phe Ala Arg Ile
            100                 105                 110

Gln Val Arg Phe Ala Glu Leu Lys Ala Ile Gln Glu Pro Asp Asp Ala
        115                 120                 125

Arg Asp Tyr Phe Gln Met Ala Arg Ala Asn Cys Lys Lys Phe Ala Phe
```

```
    130                 135                 140

Val His Ile Ser Phe Ala Gln Phe Glu Leu Ser Gln Gly Asn Val Lys
145                 150                 155                 160

Lys Ser Lys Gln Leu Leu Gln Lys Ala Val Glu Arg Gly Ala Val Pro
                165                 170                 175

Leu Glu Met Leu Glu Ile Ala Leu Arg Asn Leu Asn Leu Gln Lys Lys
            180                 185                 190

Gln Leu Leu Ser Glu Glu Glu Lys Lys Asn Leu Ser Ala Ser Thr Val
        195                 200                 205

Leu Thr Ala Gln Glu Ser Phe Ser Gly Ser Leu Gly His Leu Gln Asn
    210                 215                 220

Arg Asn Asn Ser Cys Asp Ser Arg Gly Gln Thr Thr Lys Ala Arg Phe
225                 230                 235                 240

Leu Tyr Gly Glu Asn Met Pro Pro Gln Asp Ala Glu Ile Gly Tyr Arg
                245                 250                 255

Asn Ser Leu Arg Gln Thr Asn Lys Thr Lys Gln Ser Cys Pro Phe Gly
            260                 265                 270

Arg Val Pro Val Asn Leu Leu Asn Ser Pro Asp Cys Asp Val Lys Thr
        275                 280                 285

Asp Asp Ser Val Val Pro Cys Phe Met Lys Arg Gln Thr Ser Arg Ser
    290                 295                 300

Glu Cys Arg Asp Leu Val Val Pro Gly Ser Lys Pro Ser Gly Asn Asp
305                 310                 315                 320

Ser Cys Glu Leu Arg Asn Leu Lys Ser Val Gln Asn Ser His Phe Lys
                325                 330                 335

Glu Pro Leu Val Ser Asp Glu Lys Ser Ser Glu Leu Ile Ile Thr Asp
            340                 345                 350

Ser Ile Thr Leu Lys Asn Lys Thr Glu Ser Ser Leu Leu Ala Lys Leu
        355                 360                 365

Glu Glu Thr Lys Glu Tyr Gln Glu Pro Glu Val Pro Glu Ser Asn Gln
    370                 375                 380
```

```
Lys Gln Trp Gln Ser Lys Arg Lys Ser Glu Cys Ile Asn Gln Asn Pro
385                 390                 395                 400

Ala Ala Ser Ser Asn His Trp Gln Ile Pro Glu Leu Ala Arg Lys Val
                405                 410                 415

Asn Thr Glu Gln Lys His Thr Thr Phe Glu Gln Pro Val Phe Ser Val
            420                 425                 430

Ser Lys Gln Ser Pro Pro Ile Ser Thr Ser Lys Trp Phe Asp Pro Lys
        435                 440                 445

Ser Ile Cys Lys Thr Pro Ser Ser Asn Thr Leu Asp Asp Tyr Met Ser
    450                 455                 460

Cys Phe Arg Thr Pro Val Val Lys Asn Asp Phe Pro Pro Ala Cys Gln
465                 470                 475                 480

Leu Ser Thr Pro Tyr Gly Gln Pro Ala Cys Phe Gln Gln Gln Gln His
                485                 490                 495

Gln Ile Leu Ala Thr Pro Leu Gln Asn Leu Gln Val Leu Ala Ser Ser
            500                 505                 510

Ser Ala Asn Glu Cys Ile Ser Val Lys Gly Arg Ile Tyr Ser Ile Leu
        515                 520                 525

Lys Gln Ile Gly Ser Gly Gly Ser Ser Lys Val Phe Gln Val Leu Asn
    530                 535                 540

Glu Lys Lys Gln Ile Tyr Ala Ile Lys Tyr Val Asn Leu Glu Glu Ala
545                 550                 555                 560

Asp Asn Gln Thr Leu Asp Ser Tyr Arg Asn Glu Ile Ala Tyr Leu Asn
                565                 570                 575

Lys Leu Gln Gln His Ser Asp Lys Ile Ile Arg Leu Tyr Asp Tyr Glu
            580                 585                 590

Ile Thr Asp Gln Tyr Ile Tyr Met Val Met Glu Cys Gly Asn Ile Asp
        595                 600                 605

Leu Asn Ser Trp Leu Lys Lys Lys Lys Ser Ile Asp Pro Trp Glu Arg
    610                 615                 620
```

```
Lys Ser Tyr Trp Lys Asn Met Leu Glu Ala Val His Thr Ile His Gln
625                 630                 635                 640

His Gly Ile Val His Ser Asp Leu Lys Pro Ala Asn Phe Leu Ile Val
                645                 650                 655

Asp Gly Met Leu Lys Leu Ile Asp Phe Gly Ile Ala Asn Gln Met Gln
            660                 665                 670

Pro Asp Thr Thr Ser Val Val Lys Asp Ser Gln Val Gly Thr Val Asn
        675                 680                 685

Tyr Met Pro Pro Glu Ala Ile Lys Asp Met Ser Ser Ser Arg Glu Asn
    690                 695                 700

Gly Lys Ser Lys Ser Lys Ile Ser Pro Lys Ser Asp Val Trp Ser Leu
705                 710                 715                 720

Gly Cys Ile Leu Tyr Tyr Met Thr Tyr Gly Lys Thr Pro Phe Gln Gln
                725                 730                 735

Ile Ile Asn Gln Ile Ser Lys Leu His Ala Ile Ile Asp Pro Asn His
            740                 745                 750

Glu Ile Glu Phe Pro Asp Ile Pro Glu Lys Asp Leu Gln Asp Val Leu
        755                 760                 765

Lys Cys Cys Leu Lys Arg Asp Pro Lys Gln Arg Ile Ser Ile Pro Glu
    770                 775                 780

Leu Leu Ala His Pro Tyr Val Gln Ile Gln Thr His Pro Val Asn Gln
785                 790                 795                 800

Met Ala Lys Gly Thr Thr Glu Glu Met Lys Tyr Val Leu Gly Gln Leu
                805                 810                 815

Val Gly Leu Asn Ser Pro Asn Ser Ile Leu Lys Ala Ala Lys Thr Leu
            820                 825                 830

Tyr Glu His Tyr Ser Gly Gly Glu Ser His Asn Ser Ser Ser Ser Lys
        835                 840                 845

Thr Phe Glu Lys Lys Arg Gly Lys Lys
    850                 855
```

<210> 17
<211> 1735
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (242)..(913)

<400> 17
gttatcagag gtgagcccgt gctcttcagc ggagaagatc ccctacctgg ccgccggcca 60

ctttctgtgg gccgtggggt cctcaaggag acggcccttg ggctcagggg ctgcgtttcc 120

acacgcgcct ttcccagggc tcccgcgccc gttcctgcct ggccgccggc cgctccaaca 180

gcagcacaag gcgggactca gaaccggcgt tcagggccgc cagcggccgc gaggccctga 240

g atg agg ctc caa aga ccc cga cag gcc ccg gcg ggt ggg agg cgc gcg 289
Met Arg Leu Gln Arg Pro Arg Gln Ala Pro Ala Gly Gly Arg Arg Ala
1 5 10 15

ccc cgg ggc ggg cgg ggc tcc ccc tac cgg cca gac ccg ggg aga ggc 337
Pro Arg Gly Gly Arg Gly Ser Pro Tyr Arg Pro Asp Pro Gly Arg Gly
20 25 30

gcg cgg agg ctg cga agg ttc cag aag ggc ggg gag ggg gcg ccg cgc 385
Ala Arg Arg Leu Arg Arg Phe Gln Lys Gly Gly Glu Gly Ala Pro Arg
35 40 45

gct gac cct ccc tgg gca ccg ctg ggg acg atg gcg ctg ctc gcc ttg 433
Ala Asp Pro Pro Trp Ala Pro Leu Gly Thr Met Ala Leu Leu Ala Leu
50 55 60

ctg ctg gtc gtg gcc cta ccg cgg gtg tgg aca gac gcc aac ctg act 481
Leu Leu Val Val Ala Leu Pro Arg Val Trp Thr Asp Ala Asn Leu Thr
65 70 75 80

gcg aga caa cga gat cca gag gac tcc cag cga acg gac gag ggt gac 529
Ala Arg Gln Arg Asp Pro Glu Asp Ser Gln Arg Thr Asp Glu Gly Asp
85 90 95

aat aga gtg tgg tgt cat gtt tgt gag aga gaa aac act ttc gag tgc 577
Asn Arg Val Trp Cys His Val Cys Glu Arg Glu Asn Thr Phe Glu Cys
100 105 110

cag aac cca agg agg tgc aaa tgg aca gag cca tac tgc gtt ata gcg 625
Gln Asn Pro Arg Arg Cys Lys Trp Thr Glu Pro Tyr Cys Val Ile Ala
115 120 125

gcc gtg aaa ata ttt cca cgt ttt ttc atg gtt gcg aag cag tgc tcc 673
Ala Val Lys Ile Phe Pro Arg Phe Phe Met Val Ala Lys Gln Cys Ser
130 135 140

gct ggt tgt gca gcg atg gag aga ccc aag cca gag gag aag cgg ttt 721
Ala Gly Cys Ala Ala Met Glu Arg Pro Lys Pro Glu Glu Lys Arg Phe
145 150 155 160

ctc ctg gaa gag ccc atg ccc ttc ttt tac ctc aag tgt tgt aaa att 769
Leu Leu Glu Glu Pro Met Pro Phe Phe Tyr Leu Lys Cys Cys Lys Ile

```
                165                 170                 175

cgc tac tgc aat tta gag ggg cca cct atc aac tca tca gtg ttc aaa      817
Arg Tyr Cys Asn Leu Glu Gly Pro Pro Ile Asn Ser Ser Val Phe Lys
            180                 185                 190

gaa tat gct ggg agc atg ggt gag agc tgt ggt ggg ctg tgg ctg gcc      865
Glu Tyr Ala Gly Ser Met Gly Glu Ser Cys Gly Gly Leu Trp Leu Ala
        195                 200                 205

atc ctc ctg ctg ctg gcc tcc att gca gcc ggc ctc agc ctg tct tga      913
Ile Leu Leu Leu Leu Ala Ser Ile Ala Ala Gly Leu Ser Leu Ser
    210                 215                 220

gccacgggac tgccacagac tgagccttcc ggagcatgga ctcgctccag accgttgtca    973

cctgttgcat taaacttgtt ttctgttgat tacctcttgg tttgacttcc cagggtcttg   1033

ggatgggaga gtggggatca ggtgcagttg gctcttaacc ctcaagggtt ctttaactca   1093

cattcagagg aagtccagat ctcctgagta gtgattttgg tgacaagttt ttctctttga   1153

aatcaaacct tgtaactcat ttattgctga tggccactct tttccttgac tcccctctgc   1213

ctctgagggc ttcagtattg atggggaggg aggcctaagt accactcatg gagagtatgt   1273

gctgagatgc ttccgacctt tcaggtgacg caggaacact gggggagtct gaatgattgg   1333

ggtgaagaca tccctggagt gaaggactcc tcagcatggg gggcagtggg gcacacgtta   1393

gggctgcccc cattccagtg gtggaggcgc tgtggatggc tgcttttcct caacctttcc   1453

taccagattc caggaggcag aagataacta attgtgttga agaaacttag acttcaccca   1513

ccagctggca caggtgcaca gattcataaa ttcccacacg tgtgtgttca acatctgaaa   1573

cttaggccaa gtagagagca tcagggtaaa tggcgttcat ttctctgtta agatgcagcc   1633

atccatgggg agctgagaaa tcagactcaa agttccacca aaaacaaata caaggggact   1693

tcaaaagttc acgaaaaaat tgaattaaaa gataaaaatt aa                      1735


<210>  18
<211>  223
<212>  PRT
<213>  Homo sapiens

<400>  18

Met Arg Leu Gln Arg Pro Arg Gln Ala Pro Ala Gly Gly Arg Arg Ala
1               5                   10                  15


Pro Arg Gly Gly Arg Gly Ser Pro Tyr Arg Pro Asp Pro Gly Arg Gly
            20                  25                  30


Ala Arg Arg Leu Arg Arg Phe Gln Lys Gly Gly Glu Gly Ala Pro Arg
        35                  40                  45
```

```
Ala Asp Pro Pro Trp Ala Pro Leu Gly Thr Met Ala Leu Leu Ala Leu
    50                  55                  60

Leu Leu Val Val Ala Leu Pro Arg Val Trp Thr Asp Ala Asn Leu Thr
65                  70                  75                  80

Ala Arg Gln Arg Asp Pro Glu Asp Ser Gln Arg Thr Asp Glu Gly Asp
                85                  90                  95

Asn Arg Val Trp Cys His Val Cys Glu Arg Glu Asn Thr Phe Glu Cys
            100                 105                 110

Gln Asn Pro Arg Arg Cys Lys Trp Thr Glu Pro Tyr Cys Val Ile Ala
        115                 120                 125

Ala Val Lys Ile Phe Pro Arg Phe Phe Met Val Ala Lys Gln Cys Ser
    130                 135                 140

Ala Gly Cys Ala Ala Met Glu Arg Pro Lys Pro Glu Glu Lys Arg Phe
145                 150                 155                 160

Leu Leu Glu Glu Pro Met Pro Phe Phe Tyr Leu Lys Cys Cys Lys Ile
                165                 170                 175

Arg Tyr Cys Asn Leu Glu Gly Pro Pro Ile Asn Ser Ser Val Phe Lys
            180                 185                 190

Glu Tyr Ala Gly Ser Met Gly Glu Ser Cys Gly Gly Leu Trp Leu Ala
        195                 200                 205

Ile Leu Leu Leu Leu Ala Ser Ile Ala Ala Gly Leu Ser Leu Ser
    210                 215                 220


<210>  19
<211>  9
<212>  PRT
<213>  artificial

<220>
<223>  An artificially synthesized peptide sequence

<400>  19

Ile Tyr Glu Val Met Val Leu Ala Met
1               5


<210>  20
<211>  9
```

<212> PRT
<213> artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 20

Leu Phe Leu Leu Leu Val Leu Leu Leu
1 5

<210> 21
<211> 9
<212> PRT
<213> artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 21

Val Phe Arg Glu Ala Glu Val Thr Leu
1 5

<210> 22
<211> 9
<212> PRT
<213> artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 22

Leu Tyr Val Glu Val Thr Asn Glu Ala
1 5

<210> 23
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 23

Lys Tyr Glu Ala His Val Pro Glu Asn
1 5

<210> 24
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 24

Lys Tyr Glu Leu Phe Gly His Ala Val
1 5

<210> 25
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 25

Arg Ser Leu Lys Glu Arg Asn Pro Leu
1 5

<210> 26
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 26

Arg Gly Pro Leu Ala Ser Leu Leu Leu
1 5

<210> 27
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 27

Lys Gly Gly Phe Ile Leu Pro Val Leu
1 5

<210> 28
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 28

Thr Tyr Asn Gly Val Val Ala Tyr Ser
1 5

<210> 29
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 29

Leu Phe Ser Thr Asp Asn Asp Asp Phe
1 5

<210> 30
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 30

Asp Tyr Leu Asn Glu Trp Gly Ser Arg Phe
1 5 10

<210> 31
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 31

Thr Tyr Asn Gly Val Val Ala Tyr Ser Ile
1 5 10

<210> 32
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 32

Leu Phe Leu Leu Leu Val Leu Leu Leu Leu
1 5 10

<210> 33
<211> 10
<212> PRT

<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 33

Asp Phe Glu Ala Lys Asn Gln His Thr Leu
1 5 10

<210> 34
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 34

Lys Tyr Glu Ala His Val Pro Glu Asn Ala
1 5 10

<210> 35
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 35

Lys Tyr Glu Leu Phe Gly His Ala Val Ser
1 5 10

<210> 36
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 36

Arg Asn Asn Ile Tyr Glu Val Met Val Leu
1 5 10

<210> 37
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 37

Arg Gly Pro Leu Ala Ser Leu Leu Leu Leu
1 5 10

<210> 38
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 38

Arg Ile Leu Arg Asp Pro Ala Gly Trp Leu
1 5 10

<210> 39
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 39

Cys Asn Gln Ser Pro Val Arg Gln Val Leu
1 5 10

<210> 40
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 40

Val Tyr Ile Glu Ile Lys Phe Thr Leu
1 5

<210> 41
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 41

Arg Tyr Ser Val Ala Leu Ala Trp Leu
1 5

<210> 42
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 42

Val Tyr Pro Ala Asn Glu Val Thr Leu
1 5

<210> 43
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 43

His Tyr Thr Pro Gln Gln Asn Gly Leu
1 5

<210> 44
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 44

Phe Tyr Phe Ala Leu Phe Ser Cys Leu
1 5

<210> 45
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 45

Gly Tyr Gly Asp Phe Ser Glu Pro Leu
1 5

<210> 46
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 46

Lys Phe Gly Gln Ile Val Asn Met Leu
1   5

<210> 47
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 47

Ala Tyr Thr Thr Arg Gly Gly Lys Ile
1   5

<210> 48
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 48

Lys Tyr Asn Pro Asn Pro Asp Gln Ser
1   5

<210> 49
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 49

Arg Asn Ile Leu Val Asn Ser Asn Leu
1   5

<210> 50
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 50

Lys Tyr Leu Ser Asp Met Ser Tyr Val
1 5

<210> 51
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 51

Lys Leu Ile Arg Asn Pro Asn Ser Leu
1 5

<210> 52
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 52

Arg Tyr Lys Asp Asn Phe Thr Ala Ala
1 5

<210> 53
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 53

Lys Ala Ile Glu Glu Gly Tyr Arg Leu
1 5

<210> 54
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 54

Lys Tyr Ser Lys Ala Lys Gln Glu Ala
1 5

<210> 55
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 55

Ala Phe Gln Asp Val Gly Ala Cys Ile
1 5

<210> 56
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 56

Trp Leu Val Pro Ile Gly Asn Cys Leu
1 5

<210> 57
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 57

Arg Pro Pro Ser Ala Pro Leu Asn Leu
1 5

<210> 58
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 58

Lys Cys Pro Leu Thr Val Arg Asn Leu
1 5

<210> 59
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 59

Ser Tyr Asn Val Val Cys Lys Lys Cys
1   5

<210> 60
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 60

Val Tyr Pro Ala Asn Glu Val Thr Leu Leu
1   5   10

<210> 61
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 61

Met Tyr Cys Gly Ala Asp Gly Glu Trp Leu
1   5   10

<210> 62
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 62

Gly Tyr Thr Asp Lys Gln Arg Arg Asp Phe
1   5   10

<210> 63
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 63

Phe Tyr Phe Ala Leu Phe Ser Cys Leu Phe
1 5 10

<210> 64
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 64

Lys Phe Thr Leu Arg Asp Cys Asn Ser Leu
1 5 10

<210> 65
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 65

Ser Tyr Gly Glu Arg Pro Tyr Trp Asp Met
1 5 10

<210> 66
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 66

Ile Phe Tyr Phe Ala Leu Phe Ser Cys Leu
1 5 10

<210> 67
<211> 10
<212> PRT
<213> Artificial

<220>
<223> SYGIVMWEVM

<400> 67

Ser Tyr Gly Ile Val Met Trp Glu Val Met
1 5 10

<210> 68

<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 68

Glu Phe Gly Glu Val Cys Ser Gly Arg Leu
1 5 10

<210> 69
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 69

Lys Tyr Asn Pro Asn Pro Asp Gln Ser Val
1 5 10

<210> 70
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 70

Asn Phe Thr Ala Ala Gly Tyr Thr Thr Leu
1 5 10

<210> 71
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 71

Gln Phe Asp His Pro Asn Ile Ile His Leu
1 5 10

<210> 72
<211> 10
<212> PRT
<213> Artificial

<220>

<223> An artificially synthesized peptide sequence

<400> 72

Ala Phe Leu Arg Lys Asn Asp Gly Arg Phe
1 5 10

<210> 73
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 73

Lys Gln Glu Ala Asp Glu Glu Lys His Leu
1 5 10

<210> 74
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 74

Arg Gly Ile Gly Ser Gly Met Lys Tyr Leu
1 5 10

<210> 75
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 75

Arg Val Tyr Ile Glu Ile Lys Phe Thr Leu
1 5 10

<210> 76
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 76

Ser Tyr Val Phe His Val Arg Ala Arg Thr

1 5 10

<210> 77
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 77

Glu Trp Leu Val Pro Ile Gly Asn Cys Leu
1 5 10

<210> 78
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 78

Arg Val Tyr Pro Ala Asn Glu Val Thr Leu
1 5 10

<210> 79
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 79

Glu Tyr Met Glu Asn Gly Ser Leu Asp Ala
1 5 10

<210> 80
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 80

Thr Tyr Pro Pro Phe Val Asn Phe Phe
1 5

<210> 81
<211> 9

<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 81

Leu Tyr Cys Thr Ser Met Met Asn Leu
1 5

<210> 82
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide seque

<400> 82

Leu Tyr Val Val Lys Gln Glu Trp Phe
1 5

<210> 83
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 83

Asn Tyr Val Asn Ile Leu Ala Thr Ile
1 5

<210> 84
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 84

Ile Tyr Thr Ala Asp Pro Glu Ser Phe
1 5

<210> 85
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 85

Leu Tyr Lys Ala Asp Cys Arg Val Ile
1 5

<210> 86
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 86

Ser Phe Gln Met Thr Ser Asp Glu Leu
1 5

<210> 87
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 87

Ile Phe Leu Lys Tyr Ser Lys Asp Leu
1 5

<210> 88
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 88

Phe Phe Glu Arg Arg Ser His Thr Leu
1 5

<210> 89
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 89

Asp Phe Asn Ser Lys Val Thr His Leu
1 5

<210> 90
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 90

Lys Gln Glu Glu Leu Ile Lys Ala Leu
1 5

<210> 91
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 91

Arg Gly Glu Gln Val Thr Leu Phe Leu
1 5

<210> 92
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 92

Arg Leu Pro Ser Val Ala Leu Leu Leu
1 5

<210> 93
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 93

Lys Pro Glu Cys Gly Arg Gln Ser Leu
1 5

<210> 94
<211> 9
<212> PRT

<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 94

Ile Phe Gly Ser Ile Pro Asp Ile Phe
1 5

<210> 95
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 95

Arg Val Ile Gly Pro Pro Val Val Leu
1 5

<210> 96
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 96

Lys Tyr Ser Lys Asp Leu Val Lys Thr
1 5

<210> 97
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 97

Asp Phe Tyr Ala Ala Val Asp Asp Phe
1 5

<210> 98
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 98

Leu Tyr Glu Lys Ala Asn Thr Pro Glu Leu
1 5 10

<210> 99
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 99

Asn Tyr Val Asn Ile Leu Ala Thr Ile Ile
1 5 10

<210> 100
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 100

Ser Tyr Val Glu Glu Glu Met Pro Gln Ile
1 5 10

<210> 101
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 101

Asp Phe Gln Asp Ser Val Phe Asn Asp Leu
1 5 10

<210> 102
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 102

Ser Phe Phe Glu Arg Arg Ser His Thr Leu
1 5 10

<210> 103
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 103

Ser Phe Ser Lys Thr Pro Lys Arg Ala Leu
1 5 10

<210> 104
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 104

Lys Tyr Leu Pro Leu Gly Asp Glu Arg Cys
1 5 10

<210> 105
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 105

Glu Phe Glu Gly Leu Asp Ser Pro Glu Phe
1 5 10

<210> 106
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 106

Lys Val Pro Pro Phe Gln Asp Cys Ile Leu
1 5 10

<210> 107
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 107

Arg Pro Pro Thr Glu Gln Ala Asn Val Leu
1 5 10

<210> 108
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 108

Lys Tyr Ser Lys Asp Leu Val Lys Thr Tyr
1 5 10

<210> 109
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 109

Val Val Glu Glu Asn Ile Val Lys Asp Leu
1 5 10

<210> 110
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 110

Ile Phe Val Arg Val Met Glu Ser Leu
1 5

<210> 111
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 111

Arg Val Met Glu Ser Leu Glu Gly Leu
1 5

<210> 112
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 112

Leu Tyr Leu Leu Gly Val Val Leu Thr Leu
1 5 10

<210> 113
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 113

Arg Val Met Glu Ser Leu Glu Gly Leu Leu
1 5 10

<210> 114
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 114

Tyr Leu Leu Gly Val Val Leu Thr Leu
1 5

<210> 115
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 115

Val Leu Thr Leu Leu Ser Ile Phe Val
1 5

<210> 116
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 116

Thr Leu Leu Ser Ile Phe Val Arg Val
1 5

<210> 117
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 117

Val Leu Asn Leu Tyr Leu Leu Gly Val
1 5

<210> 118
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 118

Leu Leu Gly Val Val Leu Thr Leu Leu
1 5

<210> 119
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 119

Arg Val Met Glu Ser Leu Glu Gly Leu
1 5

<210> 120
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 120

Asn Leu Tyr Leu Leu Gly Val Val Leu
1   5

<210> 121
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 121

Tyr Leu Leu Gly Val Val Leu Thr Leu Leu
1   5   10

<210> 122
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 122

Val Val Leu Thr Leu Leu Ser Ile Phe Val
1   5   10

<210> 123
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 123

Gly Leu Leu Glu Ser Pro Ser Pro Gly Thr
1   5   10

<210> 124
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 124

Asn Leu Tyr Leu Leu Gly Val Val Leu Thr
1 5 10

<210> 125
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 125

Val Leu Asn Leu Tyr Leu Leu Gly Val Val
1 5 10

<210> 126
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 126

Thr Leu Leu Ser Ile Phe Val Arg Val Met
1 5 10

<210> 127
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 127

Ser Ile Phe Val Arg Val Met Glu Ser Leu
1 5 10

<210> 128
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 128

Leu Thr Leu Leu Ser Ile Phe Val Arg Val
1 5 10

<210> 129

<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 129

Leu Tyr Phe Asp Asp Glu Tyr Asn Ile
1 5

<210> 130
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artifically synthesized peptide sequence

<400> 130

Leu Phe Glu Arg Gly Glu Arg Arg Leu
1 5

<210> 131
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 131

Arg Ala Leu Gly Ala Ala Cys Leu Leu
1 5

<210> 132
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 132

Glu Tyr Asn Ile Val Lys Arg Asp Val
1 5

<210> 133
<211> 10
<212> PRT
<213> Artificial

<220>

<223> An artificially synthesized peptide sequence

<400> 133

Leu Tyr Leu Lys Leu Leu Pro Tyr Val Leu
1   5   10

<210> 134
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 134

Leu Phe Val Val Gln Ala Ser Leu Trp Leu
1   5   10

<210> 135
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 135

Arg Gln Gln Phe Phe Ile Asp Phe Arg Leu
1   5   10

<210> 136
<211> 10
<212> PRT
<213> Artificial

<220>
<223> DFLEAVKRHI

<400> 136

Asp Phe Leu Glu Ala Val Lys Arg His Ile
1   5   10

<210> 137
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 137

Arg Ala Leu Gly Ala Ala Cys Leu Leu Leu

1 5 10

<210> 138
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 138

Arg Pro Phe Val Val Val Gln Ala Arg Leu
1 5 10

<210> 139
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 139

Ala Tyr Leu Ala Gly Val Pro Gly Ser Ala
1 5 10

<210> 140
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 140

Ser Leu Trp Leu Tyr Leu Lys Leu Leu
1 5

<210> 141
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 141

Leu Leu Leu Leu Ala Ala Gly Trp Leu
1 5

<210> 142
<211> 9

<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 142

Asn Leu Phe Val Val Gln Ala Ser Leu
1 5

<210> 143
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 143

Asn Met Val Glu Lys Arg Val Asp Leu
1 5

<210> 144
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 144

Phe Val Val Gln Ala Ser Leu Trp Leu
1 5

<210> 145
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 145

Gln Gln Phe Phe Ile Asp Phe Arg Leu
1 5

<210> 146
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 146

Arg Leu Gly Asp Ser Arg His Arg Ile
1 5

<210> 147
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 147

Val Gln Ala Ser Leu Trp Leu Tyr Leu
1 5

<210> 148
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 148

Glu Leu Ala Val Val Pro Val Phe Val
1 5

<210> 149
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 149

Arg Leu Ile Gly Trp Asn Asp Trp Ile
1 5

<210> 150
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 150

Arg Val Ser Glu Ile Ile Ser Phe Ala
1 5

<210> 151
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 151

Gly Leu Ala Ser Ser Arg Val Arg Leu
1 5

<210> 152
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 152

Ala Leu Gly Ala Ala Cys Leu Leu Leu
1 5

<210> 153
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 153

Val Gln Cys Asp Ser Cys Gln Glu Leu
1 5

<210> 154
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 154

Trp Leu Tyr Leu Lys Leu Leu Pro Tyr Val
1 5 10

<210> 155
<211> 10
<212> PRT

<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 155

Asn Leu Cys Cys Arg Gln Gln Phe Phe Ile
1 5 10

<210> 156
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 156

Ala Leu Phe Glu Arg Gly Glu Arg Arg Leu
1 5 10

<210> 157
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 157

Met Leu Tyr Phe Asp Asp Glu Tyr Asn Ile
1 5 10

<210> 158
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 158

Cys Leu Leu Leu Leu Ala Ala Gly Trp Leu
1 5 10

<210> 159
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 159

Ala Leu Gly Ala Ala Cys Leu Leu Leu Leu
1 5 10

<210> 160
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 160

Val Val Gln Ala Ser Leu Trp Leu Tyr Leu
1 5 10

<210> 161
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 161

Arg Leu Ile Gly Trp Asn Asp Trp Ile Ile
1 5 10

<210> 162
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 162

Gln Glu Leu Ala Val Val Pro Val Phe Val
1 5 10

<210> 163
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 163

Phe Ile Ser Asn Glu Gly Asn Gln Asn Leu
1 5 10

<210> 164
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 164

Arg Gln Gln Phe Phe Ile Asp Phe Arg Leu
1 5 10

<210> 165
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 165

Gly Leu Asn Pro Gly Thr Val Asn Ser Cys
1 5 10

<210> 166
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 166

Arg Leu Gln Met Arg Gly Arg Pro Asn Ile
1 5 10

<210> 167
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 167

Arg Val Asp Gly Asp Phe Leu Glu Ala Val
1 5 10

<210> 168
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 168

Ile Tyr Asn Glu Leu Leu Tyr Asp Leu
1   5

<210> 169
<211> 9
<212> PRT
<213> Artificial

<220>
<223> MYEEKLNIL

<400> 169

Met Tyr Glu Glu Lys Leu Asn Ile Leu
1   5

<210> 170
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 170

Val Tyr Leu Arg Val Arg Pro Leu Leu
1   5

<210> 171
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 171

Lys Phe Ser Ala Ile Ala Ser Gln Leu
1   5

<210> 172
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 172

Ser Phe Phe Glu Ile Tyr Asn Glu Leu
1 5

<210> 173
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 173

Ile Phe Asn Ser Leu Gln Gly Gln Leu
1 5

<210> 174
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 174

Phe Phe Glu Ile Tyr Asn Glu Leu Leu
1 5

<210> 175
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 175

Met Phe Glu Ser Thr Ala Ala Asp Leu
1 5

<210> 176
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 176

Ser Phe Asp Ser Gly Ile Ala Gly Leu
1 5

<210> 177
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 177

Arg Phe Ser Ile Trp Ile Ser Phe Phe
1 5

<210> 178
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 178

Ile Phe Ser Ile Arg Ile Leu His Leu
1 5

<210> 179
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 179

Lys Ile Glu Glu Leu Glu Ala Leu Leu
1 5

<210> 180
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 180

Lys Leu Asn Ile Leu Lys Glu Ser Leu
1 5

<210> 181
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 181

Lys Leu Gln Gln Cys Lys Ala Glu Leu
1   5

<210> 182
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 182

Phe Thr Ile Asp Val Asp Lys Lys Leu
1   5

<210> 183
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 183

Gln Leu Gln Glu Val Lys Ala Lys Leu
1   5

<210> 184
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 184

Ile Tyr Asn Glu Leu Leu Tyr Asp Leu Leu
1   5   10

<210> 185
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 185

Arg Ser Leu Ala Leu Ile Phe Asn Ser Leu
1 5 10

<210> 186
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 186

Ser Phe Phe Glu Ile Tyr Asn Glu Leu Leu
1 5 10

<210> 187
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 187

Arg Leu Leu Arg Thr Glu Leu Gln Lys Leu
1 5 10

<210> 188
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 188

Lys Asn Ile Arg Leu Leu Arg Thr Glu Leu
1 5 10

<210> 189
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 189

Arg Gln Glu Glu Met Lys Lys Leu Ser Leu
1 5 10

<210> 190

<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 190

Arg Val Arg Pro Leu Leu Pro Ser Glu Leu
1 5 10

<210> 191
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 191

Arg Ile Leu Arg Ser Arg Arg Ser Pro Leu
1 5 10

<210> 192
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 192

Arg Ile Glu Asn Val Glu Thr Leu Val Leu
1 5 10

<210> 193
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 193

Lys Asn Gln Ser Phe Ala Ser Thr His Leu
1 5 10

<210> 194
<211> 10
<212> PRT
<213> Artificial

<220>

<223> An artificially synthesized peptide sequence

<400> 194

Lys Val Tyr Leu Arg Val Arg Pro Leu Leu
1 5 10

<210> 195
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 195

Asp Ser Met Glu Lys Val Lys Val Tyr Leu
1 5 10

<210> 196
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 196

Lys Tyr Gln Ala Tyr Met Ser Asn Leu
1 5

<210> 197
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 197

Val Tyr Val Pro Leu Lys Glu Leu Leu
1 5

<210> 198
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 198

Glu Tyr His Lys Leu Ala Arg Lys Leu

1 5

<210> 199
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 199

Ser Tyr Glu Leu Pro Asp Thr Lys Phe
1 5

<210> 200
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 200

Lys Tyr Glu Lys Lys Ala Thr Leu Ile
1 5

<210> 201
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 201

Lys Tyr Ala Arg Gly Lys Glu Ala Ile
1 5

<210> 202
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 202

Asp Phe Leu Lys Ile Phe Thr Phe Leu
1 5

<210> 203
<211> 9

<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 203

Gly Phe Leu Cys Pro Ser Tyr Glu Leu
1 5

<210> 204
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 204

Leu Phe Asn Val Asp Ala Phe Lys Leu
1 5

<210> 205
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 205

Ser Phe Asp Glu Met Asn Ala Glu Leu
1 5

<210> 206
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 206

Ile Phe Thr Phe Leu Tyr Gly Phe Leu
1 5

<210> 207
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 207

Lys Phe Glu Glu Glu Val Pro Arg Ile
1 5

<210> 208
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 208

Arg Ile Asn His Glu Arg Asn Glu Leu
1 5

<210> 209
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 209

Ser Phe Met Ser Gly Ala Asp Ser Phe
1 5

<210> 210
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 210

Ile Phe Lys Asp Leu Gly Tyr Pro Phe
1 5

<210> 211
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 211

Glu Tyr Gln Leu Val Val Gln Thr Thr
1 5

<210> 212
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 212

Lys Ala Leu Asn Lys Lys Met Gly Leu
1 5

<210> 213
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 213

Glu Val Pro Arg Ile Phe Lys Asp Leu
1 5

<210> 214
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 214

Lys Tyr Arg Ala Gln Val Tyr Val Pro Leu
1 5 10

<210> 215
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 215

Glu Tyr Glu Glu Cys Met Ser Glu Asp Leu
1 5 10

<210> 216
<211> 10
<212> PRT

<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 216

Lys Tyr Ser Val Ala Asp Ile Glu Arg Ile
1 5 10

<210> 217
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 217

Asp Tyr Thr Ile Lys Cys Tyr Glu Ser Phe
1 5 10

<210> 218
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 218

Lys Phe Glu Glu Glu Val Pro Arg Ile Phe
1 5 10

<210> 219
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 219

Ala Phe Ile Gln Gln Cys Ile Arg Gln Leu
1 5 10

<210> 220
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 220

Arg Ser Gln Asp Val Asn Lys Gln Gly Leu
1 5 10

<210> 221
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 221

Arg Thr Leu Lys Glu Glu Val Gln Lys Leu
1 5 10

<210> 222
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 222

Arg Gly Lys Glu Ala Ile Glu Thr Gln Leu
1 5 10

<210> 223
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 223

Arg Ala Leu Asn Glu Gln Ile Ala Arg Leu
1 5 10

<210> 224
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 224

Glu Tyr Gln Leu Val Val Gln Thr Thr Thr
1 5 10

<210> 225
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 225

Glu Thr Glu Glu Glu Ile Asn Lys Ala Leu
1 5 10

<210> 226
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 226

Leu Leu Glu Ser Thr Val Asn Gln Gly Leu
1 5 10

<210> 227
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 227

Tyr Met Ser Cys Phe Arg Thr Pro Val
1 5

<210> 228
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 228

Lys Gln Ile Tyr Ala Ile Lys Tyr Val
1 5

<210> 229
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 229

Asn Met Leu Glu Ala Val His Thr Ile
1   5

<210> 230
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 230

Leu Leu Asn Ser Pro Asp Cys Asp Val
1   5

<210> 231
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 231

Ile Leu Ala Thr Pro Leu Gln Asn Leu
1   5

<210> 232
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 232

Tyr Val Leu Gly Gln Leu Val Gly Leu
1   5

<210> 233
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 233

Ser Leu Gly Cys Ile Leu Tyr Tyr Met
1 5

<210> 234
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 234

Gln Met Gln Pro Asp Thr Thr Ser Val
1 5

<210> 235
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 235

Gly Thr Thr Glu Glu Met Lys Tyr Val
1 5

<210> 236
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 236

Leu Ile Val Asp Gly Met Leu Lys Leu
1 5

<210> 237
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 237

Ser Leu Leu Ala Lys Leu Glu Glu Thr
1 5

<210> 238
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 238

Leu Phe Glu Arg Gly Glu Arg Arg Leu
1 5

<210> 239
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 239

Leu Leu Ala His Pro Tyr Val Gln Ile
1 5

<210> 240
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 240

Lys Leu Ile Gly Arg Tyr Ser Gln Ala
1 5

<210> 241
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 241

Asn Leu Asn Leu Gln Lys Lys Gln Leu
1 5

<210> 242
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 242

Met Gln Pro Asp Thr Thr Ser Val Val
1   5

<210> 243
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 243

Lys Leu Gln Gln His Ser Asp Lys Ile
1   5

<210> 244
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 244

Phe Ala Phe Val His Ile Ser Phe Ala
1   5

<210> 245
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 245

Cys Glu Leu Arg Asn Leu Lys Ser Val
1   5

<210> 246
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 246

Ser Ile Leu Lys Ala Ala Lys Thr Leu
1 5

<210> 247
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 247

Leu Leu Leu Lys Leu Glu Lys Asn Ser Val
1 5 10

<210> 248
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 248

Asn Leu Leu Asn Ser Pro Asp Cys Asp Val
1 5 10

<210> 249
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 249

Phe Leu Ile Val Asp Gly Met Leu Lys Leu
1 5 10

<210> 250
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 250

Thr Thr Phe Glu Gln Pro Val Phe Ser Val
1 5 10

<210> 251

<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 251

Val Leu Asn Glu Lys Lys Gln Ile Tyr Ala
1 5 10

<210> 252
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 252

Gly Met Leu Lys Leu Ile Asp Phe Gly Ile
1 5 10

<210> 253
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 253

Leu Leu Ser Glu Glu Glu Lys Lys Asn Leu
1 5 10

<210> 254
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 254

Tyr Met Ser Cys Phe Arg Thr Pro Val Val
1 5 10

<210> 255
<211> 10
<212> PRT
<213> Artificial

<220>

<223> An artificially synthesized peptide sequence

<400> 255

Met Met Ala Asn Asn Pro Glu Asp Trp Leu
1   5   10

<210> 256
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 256

Met Val Met Glu Cys Gly Asn Ile Asp Leu
1   5   10

<210> 257
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 257

Tyr Met Pro Pro Glu Ala Ile Lys Asp Met
1   5   10

<210> 258
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 258

Lys Leu Ile Gly Arg Tyr Ser Gln Ala Ile
1   5   10

<210> 259
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 259

Asn Gln Met Gln Pro Asp Thr Thr Ser Val

1 5 10

<210> 260
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 260

Gln Ile Leu Ala Thr Pro Leu Gln Asn Leu
1 5 10

<210> 261
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 261

Leu Ile Val Asp Gly Met Leu Lys Leu Ile
1 5 10

<210> 262
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 262

Asn Leu Asn Leu Gln Lys Lys Gln Leu Leu
1 5 10

<210> 263
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 263

Gln Met Gln Pro Asp Thr Thr Ser Val Val
1 5 10

<210> 264
<211> 10

<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 264

Lys Gly Thr Thr Glu Glu Met Lys Tyr Val
1 5 10

<210> 265
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequenc

<400> 265

Leu Thr Ile Asp Ser Ile Met Asn Lys Val
1 5 10

<210> 266
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 266

Lys Leu Gln Gln His Ser Asp Lys Ile Ile
1 5 10

<210> 267
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 267

Lys Ile Phe Pro Arg Phe Phe Met Val
1 5

<210> 268
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 268

Gly Leu Trp Leu Ala Ile Leu Leu Leu
1 5

<210> 269
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 269

Leu Leu Val Val Ala Leu Pro Arg Val
1 5

<210> 270
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 270

Ala Leu Leu Ala Leu Leu Leu Val Val
1 5

<210> 271
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 271

Trp Leu Ala Ile Leu Leu Leu Leu Ala
1 5

<210> 272
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 272

Leu Leu Ala Ser Ile Ala Ala Gly Leu
1 5

<210> 273
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 273

Leu Leu Leu Leu Ala Ser Ile Ala Ala
1 5

<210> 274
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 274

Phe Met Val Ala Lys Gln Cys Ser Ala
1 5

<210> 275
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 275

Thr Met Ala Leu Leu Ala Leu Leu Leu
1 5

<210> 276
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 276

Met Ala Leu Leu Ala Leu Leu Leu Val
1 5

<210> 277
<211> 9
<212> PRT

<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 277

Ala Ile Leu Leu Leu Leu Ala Ser Ile
1 5

<210> 278
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 278

Ala Leu Pro Arg Val Trp Thr Asp Ala
1 5

<210> 279
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 279

Ser Met Gly Glu Ser Cys Gly Gly Leu
1 5

<210> 280
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 280

Leu Leu Ala Leu Leu Leu Val Val Ala
1 5

<210> 281
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 281

Val Val Ala Leu Pro Arg Val Trp Thr
1 5

<210> 282
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 282

Arg Val Trp Thr Asp Ala Asn Leu Thr
1 5

<210> 283
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 283

Phe Leu Leu Glu Glu Pro Met Pro Phe
1 5

<210> 284
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 284

Leu Ala Leu Leu Leu Val Val Ala Leu
1 5

<210> 285
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 285

Gly Thr Met Ala Leu Leu Ala Leu Leu
1 5

<210> 286
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 286

Leu Leu Leu Val Val Ala Leu Pro Arg Val
1 5 10

<210> 287
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 287

Gly Leu Trp Leu Ala Ile Leu Leu Leu Leu
1 5 10

<210> 288
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 288

Leu Leu Leu Ala Ser Ile Ala Ala Gly Leu
1 5 10

<210> 289
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 289

Thr Met Ala Leu Leu Ala Leu Leu Leu Val
1 5 10

<210> 290
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 290

Leu Leu Ala Leu Leu Leu Val Val Ala Leu
1   5   10

<210> 291
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 291

Phe Leu Leu Glu Glu Pro Met Pro Phe Phe
1   5   10

<210> 292
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 292

Ile Leu Leu Leu Leu Ala Ser Ile Ala Ala
1   5   10

<210> 293
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 293

Lys Ile Phe Pro Arg Phe Phe Met Val Ala
1   5   10

<210> 294
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 294

Ala Leu Leu Ala Leu Leu Leu Val Val Ala
1 5 10

<210> 295
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 295

Leu Val Val Ala Leu Pro Arg Val Trp Thr
1 5 10

<210> 296
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 296

Met Ala Leu Leu Ala Leu Leu Leu Val Val
1 5 10

<210> 297
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 297

Arg Leu Gln Arg Pro Arg Gln Ala Pro Ala
1 5 10

<210> 298
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 298

Cys Gln Asn Pro Arg Arg Cys Lys Trp Thr
1 5 10

<210> 299
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 299

Arg Val Trp Thr Asp Ala Asn Leu Thr Ala
1 5 10

<210> 300
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 300

Trp Ala Pro Leu Gly Thr Met Ala Leu Leu
1 5 10

<210> 301
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 301

Thr Glu Pro Tyr Cys Val Ile Ala Ala Val
1 5 10

<210> 302
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 302

Leu Glu Glu Pro Met Pro Phe Phe Tyr Leu
1 5 10

<210> 303
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 303

Leu Glu Gly Pro Pro Ile Asn Ser Ser Val
1   5   10

<210> 304
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 304

Tyr Leu Lys Cys Cys Lys Ile Arg Tyr Cys
1   5   10

<210> 305
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 305

Val Lys Ile Phe Pro Arg Phe Phe Met Val
1   5   10

<210> 306
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 306

Lys Ile Phe Pro Ser Lys Arg Ile Leu
1   5

<210> 307
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 307

Arg Gly Ser Val Leu Glu Gly Val Leu
1 5

<210> 308
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 308

Phe Leu Leu Leu Val Leu Leu Leu Leu
1 5

<210> 309
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 309

Ile Gly Asn Phe Ile Ile Glu Asn Leu
1 5

<210> 310
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 310

Thr Ala Val Ala Val Val Glu Ile Leu
1 5

<210> 311
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 311

Asn Gln Ser Pro Val Arg Gln Val Leu
1 5

<210> 312

<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 312

Lys Gln Asp Thr Tyr Asp Val His Leu
1 5

<210> 313
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 313

Asp Tyr Glu Gly Ser Gly Ser Asp Ala
1 5

<210> 314
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 314

Gly Trp Leu Leu Leu Asn Lys Pro Leu
1 5

<210> 315
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 315

Ile Leu Pro Val Leu Gly Ala Val Leu
1 5

<210> 316
<211> 9
<212> PRT
<213> Artificial

<220>

<223> An artificially synthesized peptide sequence

<400> 316

Thr Ala Pro Pro Tyr Asp Thr Leu Leu
1   5

<210> 317
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 317

Val Val Leu Ser Leu Lys Lys Phe Leu
1   5

<210> 318
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 318

Ala Leu Leu Phe Leu Leu Leu Val Leu
1   5

<210> 319
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 319

Val Thr Asn Glu Ala Pro Phe Val Leu
1   5

<210> 320
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 320

Ala Val Leu Ala Leu Leu Phe Leu Leu

1 5

<210> 321
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 321

Asp Thr Tyr Asp Val His Leu Ser Leu
1 5

<210> 322
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 322

Gly Pro Leu Ala Ser Leu Leu Leu Leu
1 5

<210> 323
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 323

Val Leu Asn Ile Thr Asp Lys Asp Leu
1 5

<210> 324
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 324

Ala Val Glu Lys Glu Thr Gly Trp Leu
1 5

<210> 325
<211> 9

<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 325

Asn Asn Ile Tyr Glu Val Met Val Leu
1 5

<210> 326
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 326

Leu Leu Leu Leu Gln Val Cys Trp Leu
1 5

<210> 327
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 327

Gly Cys Pro Gly Gln Glu Pro Ala Leu
1 5

<210> 328
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 328

Glu Tyr Thr Leu Thr Ile Gln Ala Thr
1 5

<210> 329
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 329

Glu Thr Val Gln Glu Arg Arg Ser Leu
1 5

<210> 330
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 330

Ser Tyr Arg Ile Leu Arg Asp Pro Ala
1 5

<210> 331
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 331

Gly Gln Val Thr Ala Val Gly Thr Leu
1 5

<210> 332
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 332

Gly Ala Val Leu Ala Leu Leu Phe Leu
1 5

<210> 333
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 333

Gly Ile Leu Thr Thr Arg Lys Gly Leu
1 5

<210> 334
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 334

His Pro Glu Ser Asn Gln Gly Ile Leu
1 5

<210> 335
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 335

Val Leu Ala Leu Leu Phe Leu Leu Leu
1 5

<210> 336
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 336

Glu Gly Asp Thr Val Val Leu Ser Leu
1 5

<210> 337
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 337

Thr Ile Ser Val Ile Ser Ser Gly Leu
1 5

<210> 338
<211> 9
<212> PRT

<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 338

Val Leu Gly Ala Val Leu Ala Leu Leu
1 5

<210> 339
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 339

Glu Trp Gly Ser Arg Phe Lys Lys Leu
1 5

<210> 340
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 340

Lys Val Val Glu Val Gln Glu Gly Ile
1 5

<210> 341
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 341

Thr Tyr Asp Val His Leu Ser Leu Ser
1 5

<210> 342
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 342

Phe Tyr Ser Ile Thr Gly Pro Gly Ala
1 5

<210> 343
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 343

Ile Tyr Thr Tyr Asn Gly Val Val Ala
1 5

<210> 344
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 344

Phe Ile Leu Pro Val Leu Gly Ala Val Leu
1 5 10

<210> 345
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 345

Ala Val Leu Ala Leu Leu Phe Leu Leu Leu
1 5 10

<210> 346
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 346

Gly Thr Ile Ser Val Ile Ser Ser Gly Leu
1 5 10

<210> 347
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 347

Asp Tyr Glu Gly Ser Gly Ser Asp Ala Ala
1 5 10

<210> 348
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 348

Thr Val Val Leu Ser Leu Lys Lys Phe Leu
1 5 10

<210> 349
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 349

Phe Ala Val Glu Lys Glu Thr Gly Trp Leu
1 5 10

<210> 350
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 350

Ala Leu Leu Phe Leu Leu Leu Val Leu Leu
1 5 10

<210> 351
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 351

Ser Gln Glu Pro Lys Asp Pro His Asp Leu
1   5   10

<210> 352
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 352

Leu Ala Leu Leu Phe Leu Leu Leu Val Leu
1   5   10

<210> 353
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 353

Gly Ala Glu Gln Glu Pro Gly Gln Ala Leu
1   5   10

<210> 354
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 354

Gly Ala Val Leu Ala Leu Leu Phe Leu Leu
1   5   10

<210> 355
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 355

Val Asn Glu Glu Gly Asp Thr Val Val Leu
1 5 10

<210> 356
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 356

Asn Ala Val Gly His Glu Val Gln Arg Leu
1 5 10

<210> 357
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 357

Thr Asn Glu Ala Pro Phe Val Leu Lys Leu
1 5 10

<210> 358
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 358

Glu Asn Gln Lys Ile Ser Tyr Arg Ile Leu
1 5 10

<210> 359
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 359

Ser Leu Leu Leu Leu Gln Val Cys Trp Leu
1 5 10

<210> 360
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 360

Gly Leu Glu Ala Arg Pro Glu Val Val Leu
1 5 10

<210> 361
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 361

Glu Val Gln Arg Leu Thr Val Thr Asp Leu
1 5 10

<210> 362
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 362

Gly Leu Pro Arg Gly Pro Leu Ala Ser Leu
1 5 10

<210> 363
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 363

Leu Pro Val Leu Gly Ala Val Leu Ala Leu
1 5 10

<210> 364
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 364

Gln Val Leu Asn Ile Thr Asp Lys Asp Leu
1   5   10

<210> 365
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 365

Ala Val Glu Lys Glu Thr Gly Trp Leu Leu
1   5   10

<210> 366
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 366

Ser Gly Gln Val Thr Ala Val Gly Thr Leu
1   5   10

<210> 367
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 367

Gln Gly Ile Leu Thr Thr Arg Lys Gly Leu
1   5   10

<210> 368
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 368

Ser Pro Pro Thr Thr Gly Thr Gly Thr Leu
1 5 10

<210> 369
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 369

Asn Ser Pro Ala Trp Arg Ala Thr Tyr Leu
1 5 10

<210> 370
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 370

Gly Pro Phe Pro Gln Arg Leu Asn Gln Leu
1 5 10

<210> 371
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 371

Glu Ile Gly Asn Phe Ile Ile Glu Asn Leu
1 5 10

<210> 372
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 372

Thr Thr Ala Val Ala Val Val Glu Ile Leu
1 5 10

<210> 373

<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 373

Ile Tyr Thr Tyr Asn Gly Val Val Ala Tyr
1 5 10

<210> 374
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 374

Asp Tyr Asp Tyr Leu Asn Glu Trp Gly Ser
1 5 10

<210> 375
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 375

Ala Leu Phe Ser Cys Leu Phe Gly Ile
1 5

<210> 376
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 376

Gly Leu Asn Pro Leu Thr Ser Tyr Val
1 5

<210> 377
<211> 9
<212> PRT
<213> Artificial

<220>

<223> An artificially synthesized peptide sequence

<400> 377

Cys Leu Phe Gly Ile Cys Asp Ala Val
1   5

<210> 378
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 378

Gln Met His Gly Arg Met Val Pro Val
1   5

<210> 379
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 379

Lys Leu Asn Thr Glu Ile Arg Asp Val
1   5

<210> 380
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 380

Trp Leu Val Pro Ile Gly Asn Cys Leu
1   5

<210> 381
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 381

Lys Leu Ile Arg Asn Pro Asn Ser Leu

1 5

<210> 382
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 382

Val Val Ile Leu Ile Ala Ala Phe Val
1 5

<210> 383
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 383

Val Met Trp Glu Val Met Ser Tyr Gly
1 5

<210> 384
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 384

Gly Ile Gly Ser Gly Met Lys Tyr Leu
1 5

<210> 385
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 385

Asn Ile Leu Val Asn Ser Asn Leu Val
1 5

<210> 386
<211> 9

<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 386

Thr Thr Leu Glu Ala Val Val His Val
1 5

<210> 387
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 387

Tyr Leu Leu Gly Val Val Leu Thr Leu
1 5

<210> 388
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 388

Leu Tyr Leu Leu Gly Val Val Leu Thr
1 5

<210> 389
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 389

Val Met Glu Ser Leu Glu Gly Leu Leu
1 5

<210> 390
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 390

Leu Leu Gly Val Val Leu Thr Leu Leu
1 5

<210> 391
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 391

Tyr Leu Leu Gly Val Val Leu Thr Leu Leu
1 5 10

<210> 392
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 392

Leu Asn Leu Tyr Leu Leu Gly Val Val Leu
1 5 10

<210> 393
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 393

Leu Ala Asn Thr Glu Pro Thr Lys Gly Leu
1 5 10

<210> 394
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 394

Ser Ile Phe Val Arg Val Met Glu Ser Leu
1 5 10

<210> 395
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 395

Leu Tyr Leu Lys Leu Leu Pro Tyr Val
1 5

<210> 396
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 396

Ile Ser Asn Glu Gly Asn Gln Asn Leu
1 5

<210> 397
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 397

Arg Ser Gly Trp His Thr Phe Pro Leu
1 5

<210> 398
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 398

Ala Ser Leu Trp Leu Tyr Leu Lys Leu
1 5

<210> 399
<211> 9
<212> PRT

<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 399

Ala Tyr Leu Ala Gly Val Pro Gly Ser
1 5

<210> 400
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 400

Asn Met Val Glu Lys Arg Val Asp Leu
1 5

<210> 401
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 401

Ala Met Val Thr Ala Leu Arg Lys Leu
1 5

<210> 402
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 402

Val Gln Cys Asp Ser Cys Gln Glu Leu
1 5

<210> 403
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 403

Asn Ser Cys Cys Ile Pro Thr Lys Leu
1 5

<210> 404
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 404

Asn Tyr Cys Glu Gly Ser Cys Pro Ala
1 5

<210> 405
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 405

Phe Val Val Gln Ala Ser Leu Trp Leu
1 5

<210> 406
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 406

Val Asn Gln Tyr Arg Met Arg Gly Leu
1 5

<210> 407
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 407

Gln Phe Phe Ile Asp Phe Arg Leu Ile
1 5

<210> 408
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 408

Leu Leu Leu Leu Ala Ala Gly Trp Leu
1 5

<210> 409
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 409

Gln Gln Phe Phe Ile Asp Phe Arg Leu
1 5

<210> 410
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 410

Asn Leu Phe Val Val Gln Ala Ser Leu
1 5

<210> 411
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 411

Tyr Tyr Gly Asn Tyr Cys Glu Gly Ser
1 5

<210> 412
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 412

Gln Asn Leu Phe Val Val Gln Ala Ser Leu
1   5   10

<210> 413
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 413

Asp Val Gln Cys Asp Ser Cys Gln Glu Leu
1   5   10

<210> 414
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 414

Val Val Gln Ala Ser Leu Trp Leu Tyr Leu
1   5   10

<210> 415
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 415

Leu Tyr Phe Asp Asp Glu Tyr Asn Ile Val
1   5   10

<210> 416
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 416

Phe Pro Leu Thr Glu Ala Ile Gln Ala Leu
1 5 10

<210> 417
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 417

Arg Thr Asn Leu Cys Cys Arg Gln Gln Phe
1 5 10

<210> 418
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 418

Ala Ala Met Val Thr Ala Leu Arg Lys Leu
1 5 10

<210> 419
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 419

Val Asn Ser Cys Cys Ile Pro Thr Lys Leu
1 5 10

<210> 420
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 420

Cys Leu Leu Leu Leu Ala Ala Gly Trp Leu
1 5 10

<210> 421
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 421

Val Val Asn Gln Tyr Arg Met Arg Gly Leu
1 5 10

<210> 422
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 422

Asp Gly Leu Ala Ser Ser Arg Val Arg Leu
1 5 10

<210> 423
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 423

Gly Leu Glu Cys Asp Gly Arg Thr Asn Leu
1 5 10

<210> 424
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 424

Asn Tyr Cys Glu Gly Ser Cys Pro Ala Tyr
1 5 10

<210> 425
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 425

Ala Ser Leu Trp Leu Tyr Leu Lys Leu Leu
1   5   10

<210> 426
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 426

Trp Asn Met Val Glu Lys Arg Val Asp Leu
1   5   10

<210> 427
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 427

Phe Leu Glu Ala Val Lys Arg His Ile Leu
1   5   10

<210> 428
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 428

Tyr Cys Glu Gly Ser Cys Pro Ala Tyr Leu
1   5   10

<210> 429
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 429

Ala Val Lys Arg His Ile Leu Ser Arg Leu
1 5 10

<210> 430
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 430

Gln Ala Ser Leu Trp Leu Tyr Leu Lys Leu
1 5 10

<210> 431
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 431

Gly Tyr Tyr Gly Asn Tyr Cys Glu Gly Ser
1 5 10

<210> 432
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 432

Leu Tyr Phe Phe Ile Ser Asn Glu Gly Asn
1 5 10

<210> 433
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 433

Tyr Tyr Gly Asn Tyr Cys Glu Gly Ser Cys
1 5 10

<210> 434

<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 434

Ile Leu Leu Leu Leu Ala Ser Ile Ala
1 5