SEQUENCE LISTING

<110> ONCOTHERAPY SCIENCE, INC.
THE UNIVERSITY OF TOKYO
FUJIOKA, Tomoaki

<120> PEPTIDE VACCINES FOR CANCERS EXPRESSING MPHOSPH1 OR DEPDC1 POLYPEPTIDES

<130> ONC-A0618P

<150> US 60/852,575
<151> 2006-10-17

<160> 255

<170> PatentIn version 3.1

<210> 1
<211> 6319
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (73)..(5415)

<400> 1
attgtttgaa tttgaaaacg gtaacatcgc agtgctgctc gcgggtctgg ctagtcaggc 60

gaagtttgca ga atg gaa tct aat ttt aat caa gag gga gta cct cga cca 111
Met Glu Ser Asn Phe Asn Gln Glu Gly Val Pro Arg Pro
1 5 10

tct tat gtt ttt agt gct gac cca att gca agg cct tca gaa ata aat 159
Ser Tyr Val Phe Ser Ala Asp Pro Ile Ala Arg Pro Ser Glu Ile Asn
15 20 25

ttc gat ggc att aag ctt gat ctg tct cat gaa ttt tcc tta gtt gct 207
Phe Asp Gly Ile Lys Leu Asp Leu Ser His Glu Phe Ser Leu Val Ala
30 35 40 45

cca aat act gag gca aac agt ttc gaa tct aaa gat tat ctc cag gtt 255
Pro Asn Thr Glu Ala Asn Ser Phe Glu Ser Lys Asp Tyr Leu Gln Val
50 55 60

tgt ctt cga ata aga cca ttt aca cag tca gaa aaa gaa ctt gag tct 303
Cys Leu Arg Ile Arg Pro Phe Thr Gln Ser Glu Lys Glu Leu Glu Ser
65 70 75

gag ggc tgt gtg cat att ctg gat tca cag act gtt gtg ctg aaa gag 351
Glu Gly Cys Val His Ile Leu Asp Ser Gln Thr Val Val Leu Lys Glu
80 85 90

cct caa tgc atc ctt ggt cgg tta agt gaa aaa agc tca ggg cag atg 399
Pro Gln Cys Ile Leu Gly Arg Leu Ser Glu Lys Ser Ser Gly Gln Met
95 100 105

gca cag aaa ttc agt ttt tcc aag gtt ttt ggc cca gca act aca cag 447
Ala Gln Lys Phe Ser Phe Ser Lys Val Phe Gly Pro Ala Thr Thr Gln
110 115 120 125

aag gaa ttc ttt cag ggt tgc att atg caa cca gta aaa gac ctc ttg 495
Lys Glu Phe Phe Gln Gly Cys Ile Met Gln Pro Val Lys Asp Leu Leu
130 135 140

aaa gga cag agt cgt ctg att ttt act tac ggg cta acc aat tca gga 543
Lys Gly Gln Ser Arg Leu Ile Phe Thr Tyr Gly Leu Thr Asn Ser Gly
145 150 155

```
aaa aca tat aca ttt caa ggg aca gaa gaa aat att ggc att ctg cct      591
Lys Thr Tyr Thr Phe Gln Gly Thr Glu Glu Asn Ile Gly Ile Leu Pro
        160                 165                 170

cga act ttg aat gta tta ttt gat agt ctt caa gaa aga ctg tat aca      639
Arg Thr Leu Asn Val Leu Phe Asp Ser Leu Gln Glu Arg Leu Tyr Thr
    175                 180                 185

aag atg aac ctt aaa cca cat aga tcc aga gaa tac tta agg tta tca      687
Lys Met Asn Leu Lys Pro His Arg Ser Arg Glu Tyr Leu Arg Leu Ser
190                 195                 200                 205

tca gaa caa gag aaa gaa gaa att gct agc aaa agt gca ttg ctt cgg      735
Ser Glu Gln Glu Lys Glu Glu Ile Ala Ser Lys Ser Ala Leu Leu Arg
                210                 215                 220

caa att aaa gag gtt act gtg cat aat gat agt gat gat act ctt tat      783
Gln Ile Lys Glu Val Thr Val His Asn Asp Ser Asp Asp Thr Leu Tyr
            225                 230                 235

gga agt tta act aac tct ttg aat atc tca gag ttt gaa gaa tcc ata      831
Gly Ser Leu Thr Asn Ser Leu Asn Ile Ser Glu Phe Glu Glu Ser Ile
        240                 245                 250

aaa gat tat gaa caa gcc aac ttg aat atg gct aat agt ata aaa ttt      879
Lys Asp Tyr Glu Gln Ala Asn Leu Asn Met Ala Asn Ser Ile Lys Phe
    255                 260                 265

tct gtg tgg gtt tct ttc ttt gaa att tac aat gaa tat att tat gac      927
Ser Val Trp Val Ser Phe Phe Glu Ile Tyr Asn Glu Tyr Ile Tyr Asp
270                 275                 280                 285

tta ttt gtt cct gta tca tct aaa ttc caa aag aga aag atg ctg cgc      975
Leu Phe Val Pro Val Ser Ser Lys Phe Gln Lys Arg Lys Met Leu Arg
                290                 295                 300

ctt tcc caa gac gta aag ggc tat tct ttt ata aaa gat cta caa tgg     1023
Leu Ser Gln Asp Val Lys Gly Tyr Ser Phe Ile Lys Asp Leu Gln Trp
            305                 310                 315

att caa gta tct gat tcc aaa gaa gcc tat aga ctt tta aaa cta gga     1071
Ile Gln Val Ser Asp Ser Lys Glu Ala Tyr Arg Leu Leu Lys Leu Gly
        320                 325                 330

ata aag cac cag agt gtt gcc ttc aca aaa ttg aat aat gct tcc agt     1119
Ile Lys His Gln Ser Val Ala Phe Thr Lys Leu Asn Asn Ala Ser Ser
    335                 340                 345

aga agt cac agc ata ttc act gtt aaa ata tta cag att gaa gat tct     1167
Arg Ser His Ser Ile Phe Thr Val Lys Ile Leu Gln Ile Glu Asp Ser
350                 355                 360                 365

gaa atg tct cgt gta att cga gtc agt gaa tta tct tta tgt gat ctt     1215
Glu Met Ser Arg Val Ile Arg Val Ser Glu Leu Ser Leu Cys Asp Leu
                370                 375                 380

gct ggt tca gaa cga act atg aag aca cag aat gaa ggt gaa agg tta     1263
Ala Gly Ser Glu Arg Thr Met Lys Thr Gln Asn Glu Gly Glu Arg Leu
            385                 390                 395

aga gag act ggg aat atc aac act tct tta ttg act ctg gga aag tgt     1311
Arg Glu Thr Gly Asn Ile Asn Thr Ser Leu Leu Thr Leu Gly Lys Cys
        400                 405                 410

att aac gtc ttg aag aat agt gaa aag tca aag ttt caa cag cat gtg     1359
Ile Asn Val Leu Lys Asn Ser Glu Lys Ser Lys Phe Gln Gln His Val
    415                 420                 425
```

```
cct ttc cgg gaa agt aaa ctg act cac tat ttt caa agt ttt ttt aat      1407
Pro Phe Arg Glu Ser Lys Leu Thr His Tyr Phe Gln Ser Phe Phe Asn
430                 435                 440                 445

ggt aaa ggg aaa att tgt atg att gtc aat atc agc caa tgt tat tta      1455
Gly Lys Gly Lys Ile Cys Met Ile Val Asn Ile Ser Gln Cys Tyr Leu
                450                 455                 460

gcc tat gat gaa aca ctc aat gta ttg aag ttc tcc gcc att gca caa      1503
Ala Tyr Asp Glu Thr Leu Asn Val Leu Lys Phe Ser Ala Ile Ala Gln
            465                 470                 475

aaa gtt tgt gtc cca gac act tta aat tcc tct caa gag aaa tta ttt      1551
Lys Val Cys Val Pro Asp Thr Leu Asn Ser Ser Gln Glu Lys Leu Phe
        480                 485                 490

gga cct gtc aaa tct tct caa gat gta tca cta gac agt aat tca aac      1599
Gly Pro Val Lys Ser Ser Gln Asp Val Ser Leu Asp Ser Asn Ser Asn
    495                 500                 505

agt aaa ata tta aat gta aaa aga gcc acc att tca tgg gaa aat agt      1647
Ser Lys Ile Leu Asn Val Lys Arg Ala Thr Ile Ser Trp Glu Asn Ser
510                 515                 520                 525

cta gaa gat ttg atg gaa gac gag gat ttg gtt gag gag cta gaa aac      1695
Leu Glu Asp Leu Met Glu Asp Glu Asp Leu Val Glu Glu Leu Glu Asn
                530                 535                 540

gct gaa gaa act caa aat gtg gaa act aaa ctt ctt gat gaa gat cta      1743
Ala Glu Glu Thr Gln Asn Val Glu Thr Lys Leu Leu Asp Glu Asp Leu
            545                 550                 555

gat aaa aca tta gag gaa aat aag gct ttc att agc cac gag gag aaa      1791
Asp Lys Thr Leu Glu Glu Asn Lys Ala Phe Ile Ser His Glu Glu Lys
        560                 565                 570

aga aaa ctg ttg gac tta ata gaa gac ttg aaa aaa aaa ctg ata aat      1839
Arg Lys Leu Leu Asp Leu Ile Glu Asp Leu Lys Lys Lys Leu Ile Asn
    575                 580                 585

gaa aaa aag gaa aaa tta acc ttg gaa ttt aaa att cga gaa gaa gtt      1887
Glu Lys Lys Glu Lys Leu Thr Leu Glu Phe Lys Ile Arg Glu Glu Val
590                 595                 600                 605

aca cag gag ttt act cag tat tgg gct caa cgg gaa gct gac ttt aag      1935
Thr Gln Glu Phe Thr Gln Tyr Trp Ala Gln Arg Glu Ala Asp Phe Lys
                610                 615                 620

gag act ctg ctt caa gaa cga gag ata tta gaa gaa aat gct gaa cgt      1983
Glu Thr Leu Leu Gln Glu Arg Glu Ile Leu Glu Glu Asn Ala Glu Arg
            625                 630                 635

cgt ttg gct atc ttc aag gat ttg gtt ggt aaa tgt gac act cga gaa      2031
Arg Leu Ala Ile Phe Lys Asp Leu Val Gly Lys Cys Asp Thr Arg Glu
        640                 645                 650

gaa gca gcg aaa gac att tgt gcc aca aaa gtt gaa act gaa gaa gct      2079
Glu Ala Ala Lys Asp Ile Cys Ala Thr Lys Val Glu Thr Glu Glu Ala
    655                 660                 665

act gct tgt tta gaa cta aag ttt aat caa att aaa gct gaa tta gct      2127
Thr Ala Cys Leu Glu Leu Lys Phe Asn Gln Ile Lys Ala Glu Leu Ala
670                 675                 680                 685

aaa acc aaa gga gaa tta atc aaa acc aaa gaa gag tta aaa aag aga      2175
Lys Thr Lys Gly Glu Leu Ile Lys Thr Lys Glu Glu Leu Lys Lys Arg
                690                 695                 700

gaa aat gaa tca gat tca ttg att caa gag ctt gag aca tct aat aag      2223
```

```
Glu Asn Glu Ser Asp Ser Leu Ile Gln Glu Leu Glu Thr Ser Asn Lys
            705                 710                 715

aaa ata att aca cag aat caa aga att aaa gaa ttg ata aat ata att      2271
Lys Ile Ile Thr Gln Asn Gln Arg Ile Lys Glu Leu Ile Asn Ile Ile
        720                 725                 730

gat caa aaa gaa gat act atc aac gaa ttt cag aac cta aag tct cat      2319
Asp Gln Lys Glu Asp Thr Ile Asn Glu Phe Gln Asn Leu Lys Ser His
    735                 740                 745

atg gaa aac aca ttt aaa tgc aat gac aag gct gat aca tct tct tta      2367
Met Glu Asn Thr Phe Lys Cys Asn Asp Lys Ala Asp Thr Ser Ser Leu
750                 755                 760                 765

ata ata aac aat aaa ttg att tgt aat gaa aca gtt gaa gta cct aag      2415
Ile Ile Asn Asn Lys Leu Ile Cys Asn Glu Thr Val Glu Val Pro Lys
                770                 775                 780

gac agc aaa tct aaa atc tgt tca gaa aga aaa aga gta aat gaa aat      2463
Asp Ser Lys Ser Lys Ile Cys Ser Glu Arg Lys Arg Val Asn Glu Asn
            785                 790                 795

gaa ctt cag caa gat gaa cca cca gca aag aaa ggg tct atc cat gtt      2511
Glu Leu Gln Gln Asp Glu Pro Pro Ala Lys Lys Gly Ser Ile His Val
        800                 805                 810

agt tca gct atc act gaa gac caa aag aaa agt gaa gaa gtg cga ccg      2559
Ser Ser Ala Ile Thr Glu Asp Gln Lys Lys Ser Glu Glu Val Arg Pro
    815                 820                 825

aac att gca gaa att gaa gac atc aga gtt tta caa gaa aat aat gaa      2607
Asn Ile Ala Glu Ile Glu Asp Ile Arg Val Leu Gln Glu Asn Asn Glu
830                 835                 840                 845

gga ctg aga gca ttt tta ctc act att gag aat gaa ctt aaa aat gaa      2655
Gly Leu Arg Ala Phe Leu Leu Thr Ile Glu Asn Glu Leu Lys Asn Glu
                850                 855                 860

aag gaa gaa aaa gca gaa tta aat aaa cag att gtt cat ttt cag cag      2703
Lys Glu Glu Lys Ala Glu Leu Asn Lys Gln Ile Val His Phe Gln Gln
            865                 870                 875

gaa ctt tct ctt tct gaa aaa aag aat tta act tta agt aaa gag gtc      2751
Glu Leu Ser Leu Ser Glu Lys Lys Asn Leu Thr Leu Ser Lys Glu Val
        880                 885                 890

caa caa att cag tca aat tat gat att gca att gct gaa tta cat gtg      2799
Gln Gln Ile Gln Ser Asn Tyr Asp Ile Ala Ile Ala Glu Leu His Val
    895                 900                 905

cag aaa agt aaa aat caa gaa cag gag gaa aag atc atg aaa ttg tca      2847
Gln Lys Ser Lys Asn Gln Glu Gln Glu Glu Lys Ile Met Lys Leu Ser
910                 915                 920                 925

aat gag ata gaa act gct aca aga agc att aca aat aat gtt tca caa      2895
Asn Glu Ile Glu Thr Ala Thr Arg Ser Ile Thr Asn Asn Val Ser Gln
                930                 935                 940

ata aaa tta atg cac acg aaa ata gac gaa cta cgt act ctt gat tca      2943
Ile Lys Leu Met His Thr Lys Ile Asp Glu Leu Arg Thr Leu Asp Ser
            945                 950                 955

gtt tct cag att tca aac ata gat ttg ctc aat ctc agg gat ctg tca      2991
Val Ser Gln Ile Ser Asn Ile Asp Leu Leu Asn Leu Arg Asp Leu Ser
        960                 965                 970

aat ggt tct gag gag gat aat ttg cca aat aca cag tta gac ctt tta      3039
Asn Gly Ser Glu Glu Asp Asn Leu Pro Asn Thr Gln Leu Asp Leu Leu
```

975 980 985

ggt aat gat tat ttg gta agt aag caa gtt aaa gaa tat cga att caa 3087
Gly Asn Asp Tyr Leu Val Ser Lys Gln Val Lys Glu Tyr Arg Ile Gln
990 995 1000 1005

gaa ccc aat agg gaa aat tct ttc cac tct agt att gaa gct att 3132
Glu Pro Asn Arg Glu Asn Ser Phe His Ser Ser Ile Glu Ala Ile
1010 1015 1020

tgg gaa gaa tgt aaa gag att gtg aag gcc tct tcc aaa aaa agt 3177
Trp Glu Glu Cys Lys Glu Ile Val Lys Ala Ser Ser Lys Lys Ser
1025 1030 1035

cat cag att gag gaa ctg gaa caa caa att gaa aaa ttg cag gca 3222
His Gln Ile Glu Glu Leu Glu Gln Gln Ile Glu Lys Leu Gln Ala
1040 1045 1050

gaa gta aaa ggc tat aag gat gaa aac aat aga cta aag gag aag 3267
Glu Val Lys Gly Tyr Lys Asp Glu Asn Asn Arg Leu Lys Glu Lys
1055 1060 1065

gag cat aaa aac caa gat gac cta cta aaa gaa aaa gaa act ctt 3312
Glu His Lys Asn Gln Asp Asp Leu Leu Lys Glu Lys Glu Thr Leu
1070 1075 1080

ata cag cag ctg aaa gaa gaa ttg caa gaa aaa aat gtt act ctt 3357
Ile Gln Gln Leu Lys Glu Glu Leu Gln Glu Lys Asn Val Thr Leu
1085 1090 1095

gat gtt caa ata cag cat gta gtt gaa gga aag aga gcg ctt tca 3402
Asp Val Gln Ile Gln His Val Val Glu Gly Lys Arg Ala Leu Ser
1100 1105 1110

gaa ctt aca caa ggt gtt act tgc tat aag gca aaa ata aag gaa 3447
Glu Leu Thr Gln Gly Val Thr Cys Tyr Lys Ala Lys Ile Lys Glu
1115 1120 1125

ctt gaa aca att tta gag act cag aaa gtt gaa tgt agt cat tca 3492
Leu Glu Thr Ile Leu Glu Thr Gln Lys Val Glu Cys Ser His Ser
1130 1135 1140

gcc aag tta gaa caa gac att ttg gaa aag gaa tct atc atc tta 3537
Ala Lys Leu Glu Gln Asp Ile Leu Glu Lys Glu Ser Ile Ile Leu
1145 1150 1155

aag cta gaa aga aat ttg aag gaa ttt caa gaa cat ctt cag gat 3582
Lys Leu Glu Arg Asn Leu Lys Glu Phe Gln Glu His Leu Gln Asp
1160 1165 1170

tct gtc aaa aac acc aaa gat tta aat gta aag gaa ctc aag ctg 3627
Ser Val Lys Asn Thr Lys Asp Leu Asn Val Lys Glu Leu Lys Leu
1175 1180 1185

aaa gaa gaa atc aca cag tta aca aat aat ttg caa gat atg aaa 3672
Lys Glu Glu Ile Thr Gln Leu Thr Asn Asn Leu Gln Asp Met Lys
1190 1195 1200

cat tta ctt caa tta aaa gaa gaa gaa gaa gaa acc aac agg caa 3717
His Leu Leu Gln Leu Lys Glu Glu Glu Glu Glu Thr Asn Arg Gln
1205 1210 1215

gaa aca gaa aaa ttg aaa gag gaa ctc tct gca agc tct gct cgt 3762
Glu Thr Glu Lys Leu Lys Glu Glu Leu Ser Ala Ser Ser Ala Arg
1220 1225 1230

acc cag aat ctg aaa gca gat ctt cag agg aag gaa gaa gat tat 3807
Thr Gln Asn Leu Lys Ala Asp Leu Gln Arg Lys Glu Glu Asp Tyr
1235 1240 1245

```
gct gac ctg aaa gag  aaa ctg act gat gcc  aaa aag cag att aag        3852
Ala Asp Leu Lys Glu  Lys Leu Thr Asp Ala  Lys Lys Gln Ile Lys
                1250                1255                1260

caa gta cag aaa gag  gta tct gta atg cgt  gat gag gat aaa tta        3897
Gln Val Gln Lys Glu  Val Ser Val Met Arg  Asp Glu Asp Lys Leu
                1265                1270                1275

ctg agg att aaa att  aat gaa ctg gag aaa  aag aaa aac cag tgt        3942
Leu Arg Ile Lys Ile  Asn Glu Leu Glu Lys  Lys Lys Asn Gln Cys
                1280                1285                1290

tct cag gaa tta gat  atg aaa cag cga acc  att cag caa ctc aag        3987
Ser Gln Glu Leu Asp  Met Lys Gln Arg Thr  Ile Gln Gln Leu Lys
                1295                1300                1305

gag cag tta aat aat  cag aaa gtg gaa gaa  gct ata caa cag tat        4032
Glu Gln Leu Asn Asn  Gln Lys Val Glu Glu  Ala Ile Gln Gln Tyr
                1310                1315                1320

gag aga gca tgc aaa  gat cta aat gtt aaa  gag aaa ata att gaa        4077
Glu Arg Ala Cys Lys  Asp Leu Asn Val Lys  Glu Lys Ile Ile Glu
                1325                1330                1335

gac atg cga atg aca  cta gaa gaa cag gaa  caa act cag gta gaa        4122
Asp Met Arg Met Thr  Leu Glu Glu Gln Glu  Gln Thr Gln Val Glu
                1340                1345                1350

cag gat caa gtg ctt  gag gct aaa tta gag  gaa gtt gaa agg ctg        4167
Gln Asp Gln Val Leu  Glu Ala Lys Leu Glu  Glu Val Glu Arg Leu
                1355                1360                1365

gcc aca gaa ttg gaa  aaa tgg aag gaa aaa  tgc aat gat ttg gaa        4212
Ala Thr Glu Leu Glu  Lys Trp Lys Glu Lys  Cys Asn Asp Leu Glu
                1370                1375                1380

acc aaa aac aat caa  agg tca aat aaa gaa  cat gag aac aac aca        4257
Thr Lys Asn Asn Gln  Arg Ser Asn Lys Glu  His Glu Asn Asn Thr
                1385                1390                1395

gat gtg ctt gga aag  ctc act aat ctt caa  gat gag tta cag gag        4302
Asp Val Leu Gly Lys  Leu Thr Asn Leu Gln  Asp Glu Leu Gln Glu
                1400                1405                1410

tct gaa cag aaa tat  aat gct gat aga aag  aaa tgg tta gaa gaa        4347
Ser Glu Gln Lys Tyr  Asn Ala Asp Arg Lys  Lys Trp Leu Glu Glu
                1415                1420                1425

aaa atg atg ctt atc  act caa gcg aaa gaa  gca gag aat ata cga        4392
Lys Met Met Leu Ile  Thr Gln Ala Lys Glu  Ala Glu Asn Ile Arg
                1430                1435                1440

aat aaa gag atg aaa  aaa tat gct gag gac  agg gag cgt ttt ttt        4437
Asn Lys Glu Met Lys  Lys Tyr Ala Glu Asp  Arg Glu Arg Phe Phe
                1445                1450                1455

aag caa cag aat gaa  atg gaa ata ctg aca  gcc cag ctg aca gag        4482
Lys Gln Gln Asn Glu  Met Glu Ile Leu Thr  Ala Gln Leu Thr Glu
                1460                1465                1470

aaa gat agt gac ctt  caa aag tgg cga gaa  gaa cga gat caa ctg        4527
Lys Asp Ser Asp Leu  Gln Lys Trp Arg Glu  Glu Arg Asp Gln Leu
                1475                1480                1485

gtt gca gct tta gaa  ata cag cta aaa gca  ctg ata tcc agt aat        4572
Val Ala Ala Leu Glu  Ile Gln Leu Lys Ala  Leu Ile Ser Ser Asn
                1490                1495                1500
```

```
gta cag aaa gat aat  gaa att gaa caa cta  aaa agg atc ata tca        4617
Val Gln Lys Asp Asn  Glu Ile Glu Gln Leu  Lys Arg Ile Ile Ser
                1505                1510                1515

gag act tct aaa ata  gaa aca caa atc atg  gat atc aag ccc aaa        4662
Glu Thr Ser Lys Ile  Glu Thr Gln Ile Met  Asp Ile Lys Pro Lys
                1520                1525                1530

cgt att agt tca gca  gat cct gac aaa ctt  caa act gaa cct cta        4707
Arg Ile Ser Ser Ala  Asp Pro Asp Lys Leu  Gln Thr Glu Pro Leu
                1535                1540                1545

tcg aca agt ttt gaa  att tcc aga aat aaa  ata gag gat gga tct        4752
Ser Thr Ser Phe Glu  Ile Ser Arg Asn Lys  Ile Glu Asp Gly Ser
                1550                1555                1560

gta gtc ctt gac tct  tgt gaa gtg tca aca  gaa aat gat caa agc        4797
Val Val Leu Asp Ser  Cys Glu Val Ser Thr  Glu Asn Asp Gln Ser
                1565                1570                1575

act cga ttt cca aaa  cct gag tta gag att  caa ttt aca cct tta        4842
Thr Arg Phe Pro Lys  Pro Glu Leu Glu Ile  Gln Phe Thr Pro Leu
                1580                1585                1590

cag cca aac aaa atg  gca gtg aaa cac cct  ggt tgt acc aca cca        4887
Gln Pro Asn Lys Met  Ala Val Lys His Pro  Gly Cys Thr Thr Pro
                1595                1600                1605

gtg aca gtt aag att  ccc aag gct cgg aag  agg aag agt aat gaa        4932
Val Thr Val Lys Ile  Pro Lys Ala Arg Lys  Arg Lys Ser Asn Glu
                1610                1615                1620

atg gag gag gac ttg  gtg aaa tgt gaa aat  aag aag aat gct aca        4977
Met Glu Glu Asp Leu  Val Lys Cys Glu Asn  Lys Lys Asn Ala Thr
                1625                1630                1635

ccc aga act aat ttg  aaa ttt cct att tca  gat gat aga aat tct        5022
Pro Arg Thr Asn Leu  Lys Phe Pro Ile Ser  Asp Asp Arg Asn Ser
                1640                1645                1650

tct gtc aaa aag gaa  caa aag gtt gcc ata  cgt cca tca tct aag        5067
Ser Val Lys Lys Glu  Gln Lys Val Ala Ile  Arg Pro Ser Ser Lys
                1655                1660                1665

aaa aca tat tct tta  cgg agt cag gca tcc  ata att ggt gta aac        5112
Lys Thr Tyr Ser Leu  Arg Ser Gln Ala Ser  Ile Ile Gly Val Asn
                1670                1675                1680

ctg gcc act aag aaa  aaa gaa gga aca cta  cag aaa ttt gga gac        5157
Leu Ala Thr Lys Lys  Lys Glu Gly Thr Leu  Gln Lys Phe Gly Asp
                1685                1690                1695

ttc tta caa cat tct  ccc tca att ctt caa  tca aaa gca aag aag        5202
Phe Leu Gln His Ser  Pro Ser Ile Leu Gln  Ser Lys Ala Lys Lys
                1700                1705                1710

ata att gaa aca atg  agc tct tca aag ctc  tca aat gta gaa gca        5247
Ile Ile Glu Thr Met  Ser Ser Ser Lys Leu  Ser Asn Val Glu Ala
                1715                1720                1725

agt aaa gaa aat gtg  tct caa cca aaa cga  gcc aaa cgg aaa tta        5292
Ser Lys Glu Asn Val  Ser Gln Pro Lys Arg  Ala Lys Arg Lys Leu
                1730                1735                1740

tac aca agt gaa att  tca tct cct att gat  ata tca ggc caa gtg        5337
Tyr Thr Ser Glu Ile  Ser Ser Pro Ile Asp  Ile Ser Gly Gln Val
                1745                1750                1755

att tta atg gac cag  aaa atg aag gag agt  gat cac cag att atc        5382
```

Ile Leu Met Asp Gln Lys Met Lys Glu Ser Asp His Gln Ile Ile
1760 1765 1770

aaa cga cga ctt cga aca aaa aca gcc aaa taa atcacttatg 5425
Lys Arg Arg Leu Arg Thr Lys Thr Ala Lys
1775 1780

gaaatgttta atataaattt tatagtcata gtcattggaa cttgcatcct gtattgtaaa 5485

tataaatgta tatattatgc attaaatcac tctgcatata gattgctgtt ttatacatag 5545

tataatttta attcaataaa tgagtcaaaa tttgtatatt tttataaggc ttttttataa 5605

tagcttcttt caaactgtat ttccctatta tctcagacat tggatcagtg aagatcctag 5665

gaaagaggct gttattctca tttattttgc tatacaggat gtaataggtc aggtatttgg 5725

tttacttata tttaacaatg tcttatgaat tttttttact ttatctgtta tacaactgat 5785

tttacatatc tgtttggatt atagctagga tttggagaat aagtgtgtac agatcacaaa 5845

acatgtatat acattattta gaaaagatct caagtcttta attagaatgt ctcacttatt 5905

ttgtaaacat tttgtgggta catagtacat gtatatattt acggggtatg tgagatgttt 5965

tgacacaggc atgcaatgtg aaatacgtgt atcatggaga atgaggtatc catcccctca 6025

agcatttttc ctttgaatta cagataatcc aattacattc tttagatcat ttaaaaatat 6085

acaagtaagt tattattgat tatagtcact ctattgtgct atcagatagt agatcattct 6145

ttttatctta tttgtttttg tacccattaa ccatccccac ctccccctgc aaccgtcagt 6205

acccttacca gccactggta accattcttc tactctgtat gcccatgagg tcaattgatt 6265

ttatttttag atcccataaa taaatgagaa catgcagtct ttgtcaaaaa aaaa 6319

<210> 2
<211> 1780
<212> PRT
<213> Homo sapiens

<400> 2

Met Glu Ser Asn Phe Asn Gln Glu Gly Val Pro Arg Pro Ser Tyr Val
1 5 10 15

Phe Ser Ala Asp Pro Ile Ala Arg Pro Ser Glu Ile Asn Phe Asp Gly
20 25 30

Ile Lys Leu Asp Leu Ser His Glu Phe Ser Leu Val Ala Pro Asn Thr
35 40 45

Glu Ala Asn Ser Phe Glu Ser Lys Asp Tyr Leu Gln Val Cys Leu Arg
50 55 60

Ile Arg Pro Phe Thr Gln Ser Glu Lys Glu Leu Glu Ser Glu Gly Cys
65 70 75 80

Val His Ile Leu Asp Ser Gln Thr Val Val Leu Lys Glu Pro Gln Cys
85 90 95

Ile Leu Gly Arg Leu Ser Glu Lys Ser Ser Gly Gln Met Ala Gln Lys
100 105 110

Phe Ser Phe Ser Lys Val Phe Gly Pro Ala Thr Thr Gln Lys Glu Phe
115 120 125

Phe Gln Gly Cys Ile Met Gln Pro Val Lys Asp Leu Leu Lys Gly Gln
130 135 140

Ser Arg Leu Ile Phe Thr Tyr Gly Leu Thr Asn Ser Gly Lys Thr Tyr
145 150 155 160

Thr Phe Gln Gly Thr Glu Glu Asn Ile Gly Ile Leu Pro Arg Thr Leu
165 170 175

Asn Val Leu Phe Asp Ser Leu Gln Glu Arg Leu Tyr Thr Lys Met Asn
180 185 190

Leu Lys Pro His Arg Ser Arg Glu Tyr Leu Arg Leu Ser Ser Glu Gln
195 200 205

Glu Lys Glu Glu Ile Ala Ser Lys Ser Ala Leu Leu Arg Gln Ile Lys
210 215 220

Glu Val Thr Val His Asn Asp Ser Asp Asp Thr Leu Tyr Gly Ser Leu
225 230 235 240

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

Glu Gln Ala Asn Leu Asn Met Ala Asn Ser Ile Lys Phe Ser Val Trp
260 265 270

Val Ser Phe Phe Glu Ile Tyr Asn Glu Tyr Ile Tyr Asp Leu Phe Val
275 280 285

Pro Val Ser Ser Lys Phe Gln Lys Arg Lys Met Leu Arg Leu Ser Gln
290 295 300

Asp Val Lys Gly Tyr Ser Phe Ile Lys Asp Leu Gln Trp Ile Gln Val
305 310 315 320

Ser Asp Ser Lys Glu Ala Tyr Arg Leu Leu Lys Leu Gly Ile Lys His
325 330 335

Gln Ser Val Ala Phe Thr Lys Leu Asn Asn Ala Ser Ser Arg Ser His
340 345 350

Ser Ile Phe Thr Val Lys Ile Leu Gln Ile Glu Asp Ser Glu Met Ser
355 360 365

Arg Val Ile Arg Val Ser Glu Leu Ser Leu Cys Asp Leu Ala Gly Ser

370 375 380

Glu Arg Thr Met Lys Thr Gln Asn Glu Gly Glu Arg Leu Arg Glu Thr
385 390 395 400

Gly Asn Ile Asn Thr Ser Leu Leu Thr Leu Gly Lys Cys Ile Asn Val
405 410 415

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

Glu Ser Lys Leu Thr His Tyr Phe Gln Ser Phe Phe Asn Gly Lys Gly
435 440 445

Lys Ile Cys Met Ile Val Asn Ile Ser Gln Cys Tyr Leu Ala Tyr Asp
450 455 460

Glu Thr Leu Asn Val Leu Lys Phe Ser Ala Ile Ala Gln Lys Val Cys
465 470 475 480

Val Pro Asp Thr Leu Asn Ser Ser Gln Glu Lys Leu Phe Gly Pro Val
485 490 495

Lys Ser Ser Gln Asp Val Ser Leu Asp Ser Asn Ser Asn Ser Lys Ile
500 505 510

Leu Asn Val Lys Arg Ala Thr Ile Ser Trp Glu Asn Ser Leu Glu Asp
515 520 525

Leu Met Glu Asp Glu Asp Leu Val Glu Glu Leu Glu Asn Ala Glu Glu
530 535 540

Thr Gln Asn Val Glu Thr Lys Leu Leu Asp Glu Asp Leu Asp Lys Thr
545 550 555 560

Leu Glu Glu Asn Lys Ala Phe Ile Ser His Glu Glu Lys Arg Lys Leu
565 570 575

Leu Asp Leu Ile Glu Asp Leu Lys Lys Lys Leu Ile Asn Glu Lys Lys
580 585 590

Glu Lys Leu Thr Leu Glu Phe Lys Ile Arg Glu Glu Val Thr Gln Glu
595 600 605

Phe Thr Gln Tyr Trp Ala Gln Arg Glu Ala Asp Phe Lys Glu Thr Leu
610 615 620

Leu Gln Glu Arg Glu Ile Leu Glu Glu Asn Ala Glu Arg Arg Leu Ala
625 630 635 640

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

Lys Asp Ile Cys Ala Thr Lys Val Glu Thr Glu Glu Ala Thr Ala Cys
660 665 670

Leu Glu Leu Lys Phe Asn Gln Ile Lys Ala Glu Leu Ala Lys Thr Lys
675 680 685

Gly Glu Leu Ile Lys Thr Lys Glu Glu Leu Lys Lys Arg Glu Asn Glu
690 695 700

Ser Asp Ser Leu Ile Gln Glu Leu Glu Thr Ser Asn Lys Lys Ile Ile
705 710 715 720

Thr Gln Asn Gln Arg Ile Lys Glu Leu Ile Asn Ile Ile Asp Gln Lys
725 730 735

Glu Asp Thr Ile Asn Glu Phe Gln Asn Leu Lys Ser His Met Glu Asn
740 745 750

Thr Phe Lys Cys Asn Asp Lys Ala Asp Thr Ser Ser Leu Ile Ile Asn
755 760 765

Asn Lys Leu Ile Cys Asn Glu Thr Val Glu Val Pro Lys Asp Ser Lys
770 775 780

Ser Lys Ile Cys Ser Glu Arg Lys Arg Val Asn Glu Asn Glu Leu Gln
785 790 795 800

Gln Asp Glu Pro Pro Ala Lys Lys Gly Ser Ile His Val Ser Ser Ala
805 810 815

Ile Thr Glu Asp Gln Lys Lys Ser Glu Glu Val Arg Pro Asn Ile Ala
820 825 830

Glu Ile Glu Asp Ile Arg Val Leu Gln Glu Asn Asn Glu Gly Leu Arg
835 840 845

Ala Phe Leu Leu Thr Ile Glu Asn Glu Leu Lys Asn Glu Lys Glu Glu
850 855 860

Lys Ala Glu Leu Asn Lys Gln Ile Val His Phe Gln Gln Glu Leu Ser
865 870 875 880

Leu Ser Glu Lys Lys Asn Leu Thr Leu Ser Lys Glu Val Gln Gln Ile
885 890 895

Gln Ser Asn Tyr Asp Ile Ala Ile Ala Glu Leu His Val Gln Lys Ser
900 905 910

Lys Asn Gln Glu Gln Glu Glu Lys Ile Met Lys Leu Ser Asn Glu Ile
915 920 925

```
Glu Thr Ala Thr Arg Ser Ile Thr Asn Asn Val Ser Gln Ile Lys Leu
    930                 935                 940

Met His Thr Lys Ile Asp Glu Leu Arg Thr Leu Asp Ser Val Ser Gln
945                 950                 955                 960

Ile Ser Asn Ile Asp Leu Leu Asn Leu Arg Asp Leu Ser Asn Gly Ser
                965                 970                 975

Glu Glu Asp Asn Leu Pro Asn Thr Gln Leu Asp Leu Leu Gly Asn Asp
            980                 985                 990

Tyr Leu Val Ser Lys Gln Val Lys  Glu Tyr Arg Ile Gln  Glu Pro Asn
        995                 1000                1005

Arg Glu  Asn Ser Phe His Ser  Ser Ile Glu Ala Ile  Trp Glu Glu
    1010                1015                1020

Cys Lys  Glu Ile Val Lys Ala  Ser Ser Lys Lys Ser  His Gln Ile
    1025                1030                1035

Glu Glu  Leu Glu Gln Gln Ile  Glu Lys Leu Gln Ala  Glu Val Lys
    1040                1045                1050

Gly Tyr  Lys Asp Glu Asn Asn  Arg Leu Lys Glu Lys  Glu His Lys
    1055                1060                1065

Asn Gln  Asp Asp Leu Leu Lys  Glu Lys Glu Thr Leu  Ile Gln Gln
    1070                1075                1080

Leu Lys  Glu Glu Leu Gln Glu  Lys Asn Val Thr Leu  Asp Val Gln
    1085                1090                1095

Ile Gln  His Val Val Glu Gly  Lys Arg Ala Leu Ser  Glu Leu Thr
    1100                1105                1110

Gln Gly  Val Thr Cys Tyr Lys  Ala Lys Ile Lys Glu  Leu Glu Thr
    1115                1120                1125

Ile Leu  Glu Thr Gln Lys Val  Glu Cys Ser His Ser  Ala Lys Leu
    1130                1135                1140

Glu Gln  Asp Ile Leu Glu Lys  Glu Ser Ile Ile Leu  Lys Leu Glu
    1145                1150                1155

Arg Asn  Leu Lys Glu Phe Gln  Glu His Leu Gln Asp  Ser Val Lys
    1160                1165                1170

Asn Thr  Lys Asp Leu Asn Val  Lys Glu Leu Lys Leu  Lys Glu Glu
    1175                1180                1185
```

Ile Thr Gln Leu Thr Asn Asn Leu Gln Asp Met Lys His Leu Leu
1190 1195 1200

Gln Leu Lys Glu Glu Glu Glu Glu Thr Asn Arg Gln Glu Thr Glu
1205 1210 1215

Lys Leu Lys Glu Glu Leu Ser Ala Ser Ser Ala Arg Thr Gln Asn
1220 1225 1230

Leu Lys Ala Asp Leu Gln Arg Lys Glu Glu Asp Tyr Ala Asp Leu
1235 1240 1245

Lys Glu Lys Leu Thr Asp Ala Lys Lys Gln Ile Lys Gln Val Gln
1250 1255 1260

Lys Glu Val Ser Val Met Arg Asp Glu Asp Lys Leu Leu Arg Ile
1265 1270 1275

Lys Ile Asn Glu Leu Glu Lys Lys Lys Asn Gln Cys Ser Gln Glu
1280 1285 1290

Leu Asp Met Lys Gln Arg Thr Ile Gln Gln Leu Lys Glu Gln Leu
1295 1300 1305

Asn Asn Gln Lys Val Glu Glu Ala Ile Gln Gln Tyr Glu Arg Ala
1310 1315 1320

Cys Lys Asp Leu Asn Val Lys Glu Lys Ile Ile Glu Asp Met Arg
1325 1330 1335

Met Thr Leu Glu Glu Gln Glu Gln Thr Gln Val Glu Gln Asp Gln
1340 1345 1350

Val Leu Glu Ala Lys Leu Glu Glu Val Glu Arg Leu Ala Thr Glu
1355 1360 1365

Leu Glu Lys Trp Lys Glu Lys Cys Asn Asp Leu Glu Thr Lys Asn
1370 1375 1380

Asn Gln Arg Ser Asn Lys Glu His Glu Asn Asn Thr Asp Val Leu
1385 1390 1395

Gly Lys Leu Thr Asn Leu Gln Asp Glu Leu Gln Glu Ser Glu Gln
1400 1405 1410

Lys Tyr Asn Ala Asp Arg Lys Lys Trp Leu Glu Glu Lys Met Met
1415 1420 1425

Leu Ile Thr Gln Ala Lys Glu Ala Glu Asn Ile Arg Asn Lys Glu
1430 1435 1440

Met Lys Lys Tyr Ala Glu Asp Arg Glu Arg Phe Phe Lys Gln Gln

1445 1450 1455

Asn Glu Met Glu Ile Leu Thr Ala Gln Leu Thr Glu Lys Asp Ser
1460 1465 1470

Asp Leu Gln Lys Trp Arg Glu Glu Arg Asp Gln Leu Val Ala Ala
1475 1480 1485

Leu Glu Ile Gln Leu Lys Ala Leu Ile Ser Ser Asn Val Gln Lys
1490 1495 1500

Asp Asn Glu Ile Glu Gln Leu Lys Arg Ile Ile Ser Glu Thr Ser
1505 1510 1515

Lys Ile Glu Thr Gln Ile Met Asp Ile Lys Pro Lys Arg Ile Ser
1520 1525 1530

Ser Ala Asp Pro Asp Lys Leu Gln Thr Glu Pro Leu Ser Thr Ser
1535 1540 1545

Phe Glu Ile Ser Arg Asn Lys Ile Glu Asp Gly Ser Val Val Leu
1550 1555 1560

Asp Ser Cys Glu Val Ser Thr Glu Asn Asp Gln Ser Thr Arg Phe
1565 1570 1575

Pro Lys Pro Glu Leu Glu Ile Gln Phe Thr Pro Leu Gln Pro Asn
1580 1585 1590

Lys Met Ala Val Lys His Pro Gly Cys Thr Thr Pro Val Thr Val
1595 1600 1605

Lys Ile Pro Lys Ala Arg Lys Arg Lys Ser Asn Glu Met Glu Glu
1610 1615 1620

Asp Leu Val Lys Cys Glu Asn Lys Lys Asn Ala Thr Pro Arg Thr
1625 1630 1635

Asn Leu Lys Phe Pro Ile Ser Asp Asp Arg Asn Ser Ser Val Lys
1640 1645 1650

Lys Glu Gln Lys Val Ala Ile Arg Pro Ser Ser Lys Lys Thr Tyr
1655 1660 1665

Ser Leu Arg Ser Gln Ala Ser Ile Ile Gly Val Asn Leu Ala Thr
1670 1675 1680

Lys Lys Lys Glu Gly Thr Leu Gln Lys Phe Gly Asp Phe Leu Gln
1685 1690 1695

His Ser Pro Ser Ile Leu Gln Ser Lys Ala Lys Lys Ile Ile Glu
1700 1705 1710

```
Thr Met  Ser Ser Ser Lys Leu  Ser Asn Val Glu Ala  Ser Lys Glu
    1715                1720                1725

Asn Val  Ser Gln Pro Lys Arg  Ala Lys Arg Lys Leu  Tyr Thr Ser
    1730                1735                1740

Glu Ile  Ser Ser Pro Ile Asp  Ile Ser Gly Gln Val  Ile Leu Met
    1745                1750                1755

Asp Gln  Lys Met Lys Glu Ser  Asp His Gln Ile Ile  Lys Arg Arg
    1760                1765                1770

Leu Arg  Thr Lys Thr Ala Lys
    1775                1780
```

<210> 3
<211> 5318
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (79)..(2511)

<400> 3

```
gagactcgcc actgccgcgg ccgctgggcc tgagtgtcgc cttcgccgcc atggacgcca     60

ccgggcgctg acagacct atg gag agt cag ggt gtg cct ccc ggg cct tat      111
                       Met Glu Ser Gln Gly Val Pro Pro Gly Pro Tyr
                       1               5                  10

cgg gcc acc aag ctg tgg aat gaa gtt acc aca tct ttt cga gca gga      159
Arg Ala Thr Lys Leu Trp Asn Glu Val Thr Thr Ser Phe Arg Ala Gly
            15                  20                  25

atg cct cta aga aaa cac aga caa cac ttt aaa aaa tat ggc aat tgt      207
Met Pro Leu Arg Lys His Arg Gln His Phe Lys Lys Tyr Gly Asn Cys
        30                  35                  40

ttc aca gca gga gaa gca gtg gat tgg ctt tat gac cta tta aga aat      255
Phe Thr Ala Gly Glu Ala Val Asp Trp Leu Tyr Asp Leu Leu Arg Asn
    45                  50                  55

aat agc aat ttt ggt cct gaa gtt aca agg caa cag act atc caa ctg      303
Asn Ser Asn Phe Gly Pro Glu Val Thr Arg Gln Gln Thr Ile Gln Leu
60                  65                  70                  75

ttg agg aaa ttt ctt aag aat cat gta att gaa gat atc aaa ggg agg      351
Leu Arg Lys Phe Leu Lys Asn His Val Ile Glu Asp Ile Lys Gly Arg
                80                  85                  90

tgg gga tca gaa aat gtt gat gat aac aac cag ctc ttc aga ttt cct      399
Trp Gly Ser Glu Asn Val Asp Asp Asn Asn Gln Leu Phe Arg Phe Pro
            95                  100                 105

gca act tcg cca ctt aaa act cta cca cga agg tat cca gaa ttg aga      447
Ala Thr Ser Pro Leu Lys Thr Leu Pro Arg Arg Tyr Pro Glu Leu Arg
        110                 115                 120

aaa aac aac ata gag aac ttt tcc aaa gat aaa gat agc att ttt aaa      495
Lys Asn Asn Ile Glu Asn Phe Ser Lys Asp Lys Asp Ser Ile Phe Lys
    125                 130                 135
```

```
tta cga aac tta tct cgt aga act cct aaa agg cat gga tta cat tta      543
Leu Arg Asn Leu Ser Arg Arg Thr Pro Lys Arg His Gly Leu His Leu
140                 145                 150                 155

tct cag gaa aat ggc gag aaa ata aag cat gaa ata atc aat gaa gat      591
Ser Gln Glu Asn Gly Glu Lys Ile Lys His Glu Ile Ile Asn Glu Asp
                160                 165                 170

caa gaa aat gca att gat aat aga gaa cta agc cag gaa gat gtt gaa      639
Gln Glu Asn Ala Ile Asp Asn Arg Glu Leu Ser Gln Glu Asp Val Glu
            175                 180                 185

gaa gtt tgg aga tat gtt att ctg atc tac ctg caa acc att tta ggt      687
Glu Val Trp Arg Tyr Val Ile Leu Ile Tyr Leu Gln Thr Ile Leu Gly
        190                 195                 200

gtg cca tcc cta gaa gaa gtc ata aat cca aaa caa gta att ccc caa      735
Val Pro Ser Leu Glu Glu Val Ile Asn Pro Lys Gln Val Ile Pro Gln
    205                 210                 215

tat ata atg tac aac atg gcc aat aca agt aaa cgt gga gta gtt ata      783
Tyr Ile Met Tyr Asn Met Ala Asn Thr Ser Lys Arg Gly Val Val Ile
220                 225                 230                 235

cta caa aac aaa tca gat gac ctc cct cac tgg gta tta tct gcc atg      831
Leu Gln Asn Lys Ser Asp Asp Leu Pro His Trp Val Leu Ser Ala Met
                240                 245                 250

aag tgc cta gca aat tgg cca aga agc aat gat atg aat aat cca act      879
Lys Cys Leu Ala Asn Trp Pro Arg Ser Asn Asp Met Asn Asn Pro Thr
            255                 260                 265

tat gtt gga ttt gaa cga gat gta ttc aga aca atc gca gat tat ttt      927
Tyr Val Gly Phe Glu Arg Asp Val Phe Arg Thr Ile Ala Asp Tyr Phe
        270                 275                 280

cta gat ctc cct gaa cct cta ctt act ttt gaa tat tac gaa tta ttt      975
Leu Asp Leu Pro Glu Pro Leu Leu Thr Phe Glu Tyr Tyr Glu Leu Phe
    285                 290                 295

gta aac att ttg gtt gtt tgt ggc tac atc aca gtt tca gat aga tcc     1023
Val Asn Ile Leu Val Val Cys Gly Tyr Ile Thr Val Ser Asp Arg Ser
300                 305                 310                 315

agt ggg ata cat aaa att caa gat gat cca cag tct tca aaa ttc ctt     1071
Ser Gly Ile His Lys Ile Gln Asp Asp Pro Gln Ser Ser Lys Phe Leu
                320                 325                 330

cac tta aac aat ttg aat tcc ttc aaa tca act gag tgc ctt ctt ctc     1119
His Leu Asn Asn Leu Asn Ser Phe Lys Ser Thr Glu Cys Leu Leu Leu
            335                 340                 345

agt ctg ctt cat aga gaa aaa aac aaa gaa gaa tca gat tct act gag     1167
Ser Leu Leu His Arg Glu Lys Asn Lys Glu Glu Ser Asp Ser Thr Glu
        350                 355                 360

aga cta cag ata agc aat cca gga ttt caa gaa aga tgt gct aag aaa     1215
Arg Leu Gln Ile Ser Asn Pro Gly Phe Gln Glu Arg Cys Ala Lys Lys
    365                 370                 375

atg cag cta gtt aat tta aga aac aga aga gtg agt gct aat gac ata     1263
Met Gln Leu Val Asn Leu Arg Asn Arg Arg Val Ser Ala Asn Asp Ile
380                 385                 390                 395

atg gga gga agt tgt cat aat tta ata ggg tta agt aat atg cat gat     1311
Met Gly Gly Ser Cys His Asn Leu Ile Gly Leu Ser Asn Met His Asp
                400                 405                 410
```

```
cta tcc tct aac agc aaa cca agg tgc tgt tct ttg gaa gga att gta     1359
Leu Ser Ser Asn Ser Lys Pro Arg Cys Cys Ser Leu Glu Gly Ile Val
            415                 420                 425

gat gtg cca ggg aat tca agt aaa gag gca tcc agt gtc ttt cat caa     1407
Asp Val Pro Gly Asn Ser Ser Lys Glu Ala Ser Ser Val Phe His Gln
        430                 435                 440

tct ttt ccg aac ata gaa gga caa aat aat aaa ctg ttt tta gag tct     1455
Ser Phe Pro Asn Ile Glu Gly Gln Asn Asn Lys Leu Phe Leu Glu Ser
    445                 450                 455

aag ccc aaa cag gaa ttc ctg ttg aat ctt cat tca gag gaa aat att     1503
Lys Pro Lys Gln Glu Phe Leu Leu Asn Leu His Ser Glu Glu Asn Ile
460                 465                 470                 475

caa aag cca ttc agt gct ggt ttt aag aga acc tct act ttg act gtt     1551
Gln Lys Pro Phe Ser Ala Gly Phe Lys Arg Thr Ser Thr Leu Thr Val
                480                 485                 490

caa gac caa gag gag ttg tgt aat ggg aaa tgc aag tca aaa cag ctt     1599
Gln Asp Gln Glu Glu Leu Cys Asn Gly Lys Cys Lys Ser Lys Gln Leu
            495                 500                 505

tgt agg tct cag agt ttg ctt tta aga agt agt aca aga agg aat agt     1647
Cys Arg Ser Gln Ser Leu Leu Leu Arg Ser Ser Thr Arg Arg Asn Ser
        510                 515                 520

tat atc aat aca cca gtg gct gaa att atc atg aaa cca aat gtt gga     1695
Tyr Ile Asn Thr Pro Val Ala Glu Ile Ile Met Lys Pro Asn Val Gly
    525                 530                 535

caa ggc agc aca agt gtg caa aca gct atg gaa agt gaa ctc gga gag     1743
Gln Gly Ser Thr Ser Val Gln Thr Ala Met Glu Ser Glu Leu Gly Glu
540                 545                 550                 555

tct agt gcc aca atc aat aaa aga ctc tgc aaa agt aca ata gaa ctt     1791
Ser Ser Ala Thr Ile Asn Lys Arg Leu Cys Lys Ser Thr Ile Glu Leu
                560                 565                 570

tca gaa aat tct tta ctt cca gct tct tct atg ttg act ggc aca caa     1839
Ser Glu Asn Ser Leu Leu Pro Ala Ser Ser Met Leu Thr Gly Thr Gln
            575                 580                 585

agc ttg ctg caa cct cat tta gag agg gtt gcc atc gat gct cta cag     1887
Ser Leu Leu Gln Pro His Leu Glu Arg Val Ala Ile Asp Ala Leu Gln
        590                 595                 600

tta tgt tgt ttg tta ctt ccc cca cca aat cgt aga aag ctt caa ctt     1935
Leu Cys Cys Leu Leu Leu Pro Pro Pro Asn Arg Arg Lys Leu Gln Leu
    605                 610                 615

tta atg cgt atg att tcc cga atg agt caa aat gtt gat atg ccc aaa     1983
Leu Met Arg Met Ile Ser Arg Met Ser Gln Asn Val Asp Met Pro Lys
620                 625                 630                 635

ctt cat gat gca atg ggt acg agg tca ctg atg ata cat acc ttt tct     2031
Leu His Asp Ala Met Gly Thr Arg Ser Leu Met Ile His Thr Phe Ser
                640                 645                 650

cga tgt gtg tta tgc tgt gct gaa gaa gtg gat ctt gat gag ctt ctt     2079
Arg Cys Val Leu Cys Cys Ala Glu Glu Val Asp Leu Asp Glu Leu Leu
            655                 660                 665

gct gga aga tta gtt tct ttc tta atg gat cat cat cag gaa att ctt     2127
Ala Gly Arg Leu Val Ser Phe Leu Met Asp His His Gln Glu Ile Leu
        670                 675                 680

caa gta ccc tct tac tta cag act gca gtg gaa aaa cat ctt gac tac     2175
```

```
Gln Val Pro Ser Tyr Leu Gln Thr Ala Val Glu Lys His Leu Asp Tyr
    685                 690                 695

tta aaa aag gga cat att gaa aat cct gga gat gga cta ttt gct cct      2223
Leu Lys Lys Gly His Ile Glu Asn Pro Gly Asp Gly Leu Phe Ala Pro
700                 705                 710                 715

ttg cca act tac tca tac tgt aag cag att agt gct cag gag ttt gat      2271
Leu Pro Thr Tyr Ser Tyr Cys Lys Gln Ile Ser Ala Gln Glu Phe Asp
                720                 725                 730

gag caa aaa gtt tct acc tct caa gct gca att gca gaa ctt tta gaa      2319
Glu Gln Lys Val Ser Thr Ser Gln Ala Ala Ile Ala Glu Leu Leu Glu
            735                 740                 745

aat att att aaa aac agg agt tta cct cta aag gag aaa aga aaa aaa      2367
Asn Ile Ile Lys Asn Arg Ser Leu Pro Leu Lys Glu Lys Arg Lys Lys
        750                 755                 760

cta aaa cag ttt cag aag gaa tat cct ttg ata tat cag aaa aga ttt      2415
Leu Lys Gln Phe Gln Lys Glu Tyr Pro Leu Ile Tyr Gln Lys Arg Phe
    765                 770                 775

cca acc acg gag agt gaa gca gca ctt ttt ggt gac aaa cct aca atc      2463
Pro Thr Thr Glu Ser Glu Ala Ala Leu Phe Gly Asp Lys Pro Thr Ile
780                 785                 790                 795

aag caa cca atg ctg att tta aga aaa cca aag ttc cgt agt cta aga      2511
Lys Gln Pro Met Leu Ile Leu Arg Lys Pro Lys Phe Arg Ser Leu Arg
                800                 805                 810

taactaactg aattaaaaat tatgtaatac ttgtggaact ttgataaatg aagccatatc   2571

tgagaatgta gctactcaaa aggaagtctg tcattaataa ggtatttcta aataaacaca   2631

ttatgtaagg aagtgccaaa atagttatca atgtgagact cttaggaaac taactagatc   2691

tcaattgaga gcacataaca atagatgata ccaaatactt tttgttttta acacagctat   2751

ccagtaaggc tatcatgatg tgtgctaaaa ttttatttac ttgaattttg aaaactgagc   2811

tgtgttaggg attaaactat aattctgttc ttaaaagaaa atttatctgc aaatgtgcaa   2871

gttctgagat attagctaat gaattagttg tttggggtta cttctttgtt tctaagtata   2931

agaatgtgaa gaatatttga aaactcaatg aaataattct cagctgccaa atgttgcact   2991

cttttatata ttctttttcc acttttgatc tatttatata tatgtatgtg tttttaaaat   3051

atgtgtatat tttatcagat ttggttttgc cttaaatatt atccccaatt gcttcagtca   3111

ttcatttgtt cagtatatat attttgaatt ctagttttca taatctatta gaagatgggg   3171

atataaaaga agtataaggc aatcatatat tcattcaaaa gatatttatt tagcaactgc   3231

tatgtgcctt tcgttgttcc agatatgcag agacaatgat aaataaaaca tataatctct   3291

tccataaggt atttatttttt taatcaaggg agatacacct atcagatgtt taaaataaca   3351

acactaccca ctgaaatcag ggcatataga atcattcagc taaagagtga cttctatgat   3411

gatggaacag gtctctaagc tagtggtttt caaactggta cacattagac tcacccgagg   3471

aattttaaaa cagcctatat gcccagggcc taacttacac taattaaatc tgaattttgg   3531

ggatgttgta tagggattag tatttttttt aatctaggtg attccaatat tcagccaact   3591

gtgagaatca atggcctaaa tgctttttat aaacattttt ataagtgtca agataatggc   3651
```

acattgactt tatttttca ttggaagaaa atgcctgcca agtataaatg actctcatct 3711

taaaacaagg ttcttcaggt ttctgcttga ttgacttggt acaaacttga agcaagttgc 3771

cttctaattt ttactccaag attgtttcat atctattcct taagtgtaaa gaaatatata 3831

atgcatggtt tgtaataaaa tcttaatgtt taatgactgt tctcatttct caatgtaatt 3891

tcatactgtt tctctataaa atgatagtat tccatttaac attactgatt tttattaaaa 3951

acctggacag aaaattataa attataaata tgactttatc ctggctataa aattattgaa 4011

ccaaaatgaa ttctttctaa ggcatttgaa tactaaaacg tttattgttt atagatatgt 4071

aaaatgtgga ttatgttgca aattgagatt aaaattattt ggggttttgt aacaatataa 4131

ttttgctttt gtattataga caaatatata aataataaag gcaggcaact ttcatttgca 4191

ctaatgtaca tgcaattgag attacaaaat acatggtaca atgctttaat aacaaactct 4251

gccagtcagg tttgaatcct actgtgctat taactagcta gtaaactcag acaagttact 4311

taacttctct aagccccagt tttgttatct ataaaatgaa tattataata gtacctcttt 4371

ttaggattgc gaggattaag caggataatg catgtaaagt gttagcacag tgtctcacat 4431

agaataagca ctctataaat attttactag aatcacctag gattatagca ctagaagaga 4491

tcttagcaaa aatgtggtcc tttctgttgc tttggacaga catgaaccaa aacaaaatta 4551

cggacaattg atgagcctta ttaactatct tttcattatg agacaaaggt tctgattatg 4611

cctactggtt gaaatttttt aatctagtca agaaggaaaa tttgatgagg aaggaaggaa 4671

tggatatctt cagaagggct tcgcctaagc tggaacatgg atagattcca ttctaacata 4731

aagatcttta agttcaaata tagatgagtt gactggtaga tttggtggta gttgctttct 4791

cgggatataa gaagcaaaat caactgctac aagtaaagag gggatgggga aggtgttgca 4851

catttaaaga gagaaagtgt gaaaaagcct aattgtggga atgcacaggt ttcaccagat 4911

cagatgatgt ctggttattc tgtaaattat agttcttatc ccagaaatta ctgcctccac 4971

catccctaat atcttctaat tggtatcata taatgaccca ctcttcttat gttatccaaa 5031

cagttatgtg gcatttagta atggaatgta catggaattt cccactgact tacctttctg 5091

tccttgggaa gcttaaactc tgaatcttct catctgtaaa atgtgaatta aagtatctac 5151

ctaactgagt tgtgattgta gtgaaagaaa ggcaatatat ttaaatcttg aatttagcaa 5211

gcccacgctc gatttttatg tcctttcctc ttgccttgta ttgagtttaa gatctctact 5271

gattaaaact cttttgctat caaaaaaaaa aaaaaaaaaa aaaaaaa 5318

<210> 4
<211> 811
<212> PRT
<213> Homo sapiens

<400> 4

Met Glu Ser Gln Gly Val Pro Pro Gly Pro Tyr Arg Ala Thr Lys Leu
1 5 10 15

Trp Asn Glu Val Thr Thr Ser Phe Arg Ala Gly Met Pro Leu Arg Lys

20 25 30

His Arg Gln His Phe Lys Lys Tyr Gly Asn Cys Phe Thr Ala Gly Glu
35 40 45

Ala Val Asp Trp Leu Tyr Asp Leu Leu Arg Asn Asn Ser Asn Phe Gly
50 55 60

Pro Glu Val Thr Arg Gln Gln Thr Ile Gln Leu Leu Arg Lys Phe Leu
65 70 75 80

Lys Asn His Val Ile Glu Asp Ile Lys Gly Arg Trp Gly Ser Glu Asn
85 90 95

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

Lys Thr Leu Pro Arg Arg Tyr Pro Glu Leu Arg Lys Asn Asn Ile Glu
115 120 125

Asn Phe Ser Lys Asp Lys Asp Ser Ile Phe Lys Leu Arg Asn Leu Ser
130 135 140

Arg Arg Thr Pro Lys Arg His Gly Leu His Leu Ser Gln Glu Asn Gly
145 150 155 160

Glu Lys Ile Lys His Glu Ile Ile Asn Glu Asp Gln Glu Asn Ala Ile
165 170 175

Asp Asn Arg Glu Leu Ser Gln Glu Asp Val Glu Glu Val Trp Arg Tyr
180 185 190

Val Ile Leu Ile Tyr Leu Gln Thr Ile Leu Gly Val Pro Ser Leu Glu
195 200 205

Glu Val Ile Asn Pro Lys Gln Val Ile Pro Gln Tyr Ile Met Tyr Asn
210 215 220

Met Ala Asn Thr Ser Lys Arg Gly Val Val Ile Leu Gln Asn Lys Ser
225 230 235 240

Asp Asp Leu Pro His Trp Val Leu Ser Ala Met Lys Cys Leu Ala Asn
245 250 255

Trp Pro Arg Ser Asn Asp Met Asn Asn Pro Thr Tyr Val Gly Phe Glu
260 265 270

Arg Asp Val Phe Arg Thr Ile Ala Asp Tyr Phe Leu Asp Leu Pro Glu
275 280 285

Pro Leu Leu Thr Phe Glu Tyr Tyr Glu Leu Phe Val Asn Ile Leu Val
290 295 300

Val Cys Gly Tyr Ile Thr Val Ser Asp Arg Ser Ser Gly Ile His Lys
305 310 315 320

Ile Gln Asp Asp Pro Gln Ser Ser Lys Phe Leu His Leu Asn Asn Leu
325 330 335

Asn Ser Phe Lys Ser Thr Glu Cys Leu Leu Leu Ser Leu Leu His Arg
340 345 350

Glu Lys Asn Lys Glu Glu Ser Asp Ser Thr Glu Arg Leu Gln Ile Ser
355 360 365

Asn Pro Gly Phe Gln Glu Arg Cys Ala Lys Lys Met Gln Leu Val Asn
370 375 380

Leu Arg Asn Arg Arg Val Ser Ala Asn Asp Ile Met Gly Gly Ser Cys
385 390 395 400

His Asn Leu Ile Gly Leu Ser Asn Met His Asp Leu Ser Ser Asn Ser
405 410 415

Lys Pro Arg Cys Cys Ser Leu Glu Gly Ile Val Asp Val Pro Gly Asn
420 425 430

Ser Ser Lys Glu Ala Ser Ser Val Phe His Gln Ser Phe Pro Asn Ile
435 440 445

Glu Gly Gln Asn Asn Lys Leu Phe Leu Glu Ser Lys Pro Lys Gln Glu
450 455 460

Phe Leu Leu Asn Leu His Ser Glu Glu Asn Ile Gln Lys Pro Phe Ser
465 470 475 480

Ala Gly Phe Lys Arg Thr Ser Thr Leu Thr Val Gln Asp Gln Glu Glu
485 490 495

Leu Cys Asn Gly Lys Cys Lys Ser Lys Gln Leu Cys Arg Ser Gln Ser
500 505 510

Leu Leu Leu Arg Ser Ser Thr Arg Arg Asn Ser Tyr Ile Asn Thr Pro
515 520 525

Val Ala Glu Ile Ile Met Lys Pro Asn Val Gly Gln Gly Ser Thr Ser
530 535 540

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

Asn Lys Arg Leu Cys Lys Ser Thr Ile Glu Leu Ser Glu Asn Ser Leu
565 570 575

```
Leu Pro Ala Ser Ser Met Leu Thr Gly Thr Gln Ser Leu Leu Gln Pro
            580                 585                 590

His Leu Glu Arg Val Ala Ile Asp Ala Leu Gln Leu Cys Cys Leu Leu
        595                 600                 605

Leu Pro Pro Pro Asn Arg Arg Lys Leu Gln Leu Leu Met Arg Met Ile
    610                 615                 620

Ser Arg Met Ser Gln Asn Val Asp Met Pro Lys Leu His Asp Ala Met
625                 630                 635                 640

Gly Thr Arg Ser Leu Met Ile His Thr Phe Ser Arg Cys Val Leu Cys
                645                 650                 655

Cys Ala Glu Glu Val Asp Leu Asp Glu Leu Leu Ala Gly Arg Leu Val
            660                 665                 670

Ser Phe Leu Met Asp His His Gln Glu Ile Leu Gln Val Pro Ser Tyr
        675                 680                 685

Leu Gln Thr Ala Val Glu Lys His Leu Asp Tyr Leu Lys Lys Gly His
    690                 695                 700

Ile Glu Asn Pro Gly Asp Gly Leu Phe Ala Pro Leu Pro Thr Tyr Ser
705                 710                 715                 720

Tyr Cys Lys Gln Ile Ser Ala Gln Glu Phe Asp Glu Gln Lys Val Ser
                725                 730                 735

Thr Ser Gln Ala Ala Ile Ala Glu Leu Leu Glu Asn Ile Ile Lys Asn
            740                 745                 750

Arg Ser Leu Pro Leu Lys Glu Lys Arg Lys Lys Leu Lys Gln Phe Gln
        755                 760                 765

Lys Glu Tyr Pro Leu Ile Tyr Gln Lys Arg Phe Pro Thr Thr Glu Ser
    770                 775                 780

Glu Ala Ala Leu Phe Gly Asp Lys Pro Thr Ile Lys Gln Pro Met Leu
785                 790                 795                 800

Ile Leu Arg Lys Pro Lys Phe Arg Ser Leu Arg
                805                 810
```

<210> 5
<211> 8666
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (79)..(1659)

<400> 5
gagactcgcc actgccgcgg ccgctgggcc tgagtgtcgc cttcgccgcc atggacgcca 60

ccgggcgctg acagacct atg gag agt cag ggt gtg cct ccc ggg cct tat 111
Met Glu Ser Gln Gly Val Pro Pro Gly Pro Tyr
1 5 10

cgg gcc acc aag ctg tgg aat gaa gtt acc aca tct ttt cga gca gga 159
Arg Ala Thr Lys Leu Trp Asn Glu Val Thr Thr Ser Phe Arg Ala Gly
15 20 25

atg cct cta aga aaa cac aga caa cac ttt aaa aaa tat ggc aat tgt 207
Met Pro Leu Arg Lys His Arg Gln His Phe Lys Lys Tyr Gly Asn Cys
30 35 40

ttc aca gca gga gaa gca gtg gat tgg ctt tat gac cta tta aga aat 255
Phe Thr Ala Gly Glu Ala Val Asp Trp Leu Tyr Asp Leu Leu Arg Asn
45 50 55

aat agc aat ttt ggt cct gaa gtt aca agg caa cag act atc caa ctg 303
Asn Ser Asn Phe Gly Pro Glu Val Thr Arg Gln Gln Thr Ile Gln Leu
60 65 70 75

ttg agg aaa ttt ctt aag aat cat gta att gaa gat atc aaa ggg agg 351
Leu Arg Lys Phe Leu Lys Asn His Val Ile Glu Asp Ile Lys Gly Arg
80 85 90

tgg gga tca gaa aat gtt gat gat aac aac cag ctc ttc aga ttt cct 399
Trp Gly Ser Glu Asn Val Asp Asp Asn Asn Gln Leu Phe Arg Phe Pro
95 100 105

gca act tcg cca ctt aaa act cta cca cga agg tat cca gaa ttg aga 447
Ala Thr Ser Pro Leu Lys Thr Leu Pro Arg Arg Tyr Pro Glu Leu Arg
110 115 120

aaa aac aac ata gag aac ttt tcc aaa gat aaa gat agc att ttt aaa 495
Lys Asn Asn Ile Glu Asn Phe Ser Lys Asp Lys Asp Ser Ile Phe Lys
125 130 135

tta cga aac tta tct cgt aga act cct aaa agg cat gga tta cat tta 543
Leu Arg Asn Leu Ser Arg Arg Thr Pro Lys Arg His Gly Leu His Leu
140 145 150 155

tct cag gaa aat ggc gag aaa ata aag cat gaa ata atc aat gaa gat 591
Ser Gln Glu Asn Gly Glu Lys Ile Lys His Glu Ile Ile Asn Glu Asp
160 165 170

caa gaa aat gca att gat aat aga gaa cta agc cag gaa gat gtt gaa 639
Gln Glu Asn Ala Ile Asp Asn Arg Glu Leu Ser Gln Glu Asp Val Glu
175 180 185

gaa gtt tgg aga tat gtt att ctg atc tac ctg caa acc att tta ggt 687
Glu Val Trp Arg Tyr Val Ile Leu Ile Tyr Leu Gln Thr Ile Leu Gly
190 195 200

gtg cca tcc cta gaa gaa gtc ata aat cca aaa caa gta att ccc caa 735
Val Pro Ser Leu Glu Glu Val Ile Asn Pro Lys Gln Val Ile Pro Gln
205 210 215

tat ata atg tac aac atg gcc aat aca agt aaa cgt gga gta gtt ata 783
Tyr Ile Met Tyr Asn Met Ala Asn Thr Ser Lys Arg Gly Val Val Ile
220 225 230 235

cta caa aac aaa tca gat gac ctc cct cac tgg gta tta tct gcc atg 831
Leu Gln Asn Lys Ser Asp Asp Leu Pro His Trp Val Leu Ser Ala Met
240 245 250

aag tgc cta gca aat tgg cca aga agc aat gat atg aat aat cca act 879

```
Lys Cys Leu Ala Asn Trp Pro Arg Ser Asn Asp Met Asn Asn Pro Thr
            255                 260                 265

tat gtt gga ttt gaa cga gat gta ttc aga aca atc gca gat tat ttt      927
Tyr Val Gly Phe Glu Arg Asp Val Phe Arg Thr Ile Ala Asp Tyr Phe
        270                 275                 280

cta gat ctc cct gaa cct cta ctt act ttt gaa tat tac gaa tta ttt      975
Leu Asp Leu Pro Glu Pro Leu Leu Thr Phe Glu Tyr Tyr Glu Leu Phe
    285                 290                 295

gta aac att ttg gtt gtt tgt ggc tac atc aca gtt tca gat aga tcc     1023
Val Asn Ile Leu Val Val Cys Gly Tyr Ile Thr Val Ser Asp Arg Ser
300                 305                 310                 315

agt ggg ata cat aaa att caa gat gat cca cag tct tca aaa ttc ctt     1071
Ser Gly Ile His Lys Ile Gln Asp Asp Pro Gln Ser Ser Lys Phe Leu
                320                 325                 330

cac tta aac aat ttg aat tcc ttc aaa tca act gag tgc ctt ctt ctc     1119
His Leu Asn Asn Leu Asn Ser Phe Lys Ser Thr Glu Cys Leu Leu Leu
            335                 340                 345

agt ctg ctt cat aga gaa aaa aac aaa gaa gaa tca gat tct act gag     1167
Ser Leu Leu His Arg Glu Lys Asn Lys Glu Glu Ser Asp Ser Thr Glu
        350                 355                 360

aga cta cag ata agc aat cca gga ttt caa gaa aga tgt gct aag aaa     1215
Arg Leu Gln Ile Ser Asn Pro Gly Phe Gln Glu Arg Cys Ala Lys Lys
    365                 370                 375

atg cag cta gtt aat tta aga aac aga aga gtg agt gct aat gac ata     1263
Met Gln Leu Val Asn Leu Arg Asn Arg Arg Val Ser Ala Asn Asp Ile
380                 385                 390                 395

atg gga gga agt tgt cat aat tta ata ggg tta agt aat atg cat gat     1311
Met Gly Gly Ser Cys His Asn Leu Ile Gly Leu Ser Asn Met His Asp
                400                 405                 410

cta tcc tct aac agc aaa cca agg tgc tgt tct ttg gaa gga att gta     1359
Leu Ser Ser Asn Ser Lys Pro Arg Cys Cys Ser Leu Glu Gly Ile Val
            415                 420                 425

gat gtg cca ggg aat tca agt aaa gag gca tcc agt gtc ttt cat caa     1407
Asp Val Pro Gly Asn Ser Ser Lys Glu Ala Ser Ser Val Phe His Gln
        430                 435                 440

tct ttt ccg aac ata gaa gga caa aat aat aaa ctg ttt tta gag tct     1455
Ser Phe Pro Asn Ile Glu Gly Gln Asn Asn Lys Leu Phe Leu Glu Ser
    445                 450                 455

aag ccc aaa cag gaa ttc ctg ttg aat ctt cat tca gag gaa aat att     1503
Lys Pro Lys Gln Glu Phe Leu Leu Asn Leu His Ser Glu Glu Asn Ile
460                 465                 470                 475

caa aag cca ttc agt gct ggt ttt aag aga acc tct act ttg act gtt     1551
Gln Lys Pro Phe Ser Ala Gly Phe Lys Arg Thr Ser Thr Leu Thr Val
                480                 485                 490

caa gac caa gag gag ttg tgt aat ggg aaa tgc aag tca aaa cag ctt     1599
Gln Asp Gln Glu Glu Leu Cys Asn Gly Lys Cys Lys Ser Lys Gln Leu
            495                 500                 505

tgt agg tct cag agt ttg ctt tta aga agt agt aca aga agg aat agt     1647
Cys Arg Ser Gln Ser Leu Leu Leu Arg Ser Ser Thr Arg Arg Asn Ser
        510                 515                 520

tat atc aat aca ccagtggctg aaattatcat gaaaccaaat gttggacaag        1699
Tyr Ile Asn Thr
```

525

gcagcacaag tgtgcaaaca gctatggaaa gtgaactcgg agagtctagt gccacaatca 1759

ataaaagact ctgcaaaagt acaatagaac tttcagaaaa ttctttactt ccagcttctt 1819

ctatgttgac tggcacacaa agcttgctgc aacctcattt agagagggtt gccatcgatg 1879

ctctacagtt atgttgtttg ttacttcccc caccaaatcg tagaaagctt caacttttaa 1939

tgcgtatgat ttcccgaatg agtcaaaatg ttgatatgcc caaacttcat gatgcaatgg 1999

gtacgaggtc actgatgata catacctttt ctcgatgtgt gttatgctgt gctgaagaag 2059

tggatcttga tgagcttctt gctggaagat tagtttcttt cttaatggat catcatcagg 2119

aaattcttca agtaccctct tacttacaga ctgcagtgga aaaacatctt gactacttaa 2179

aaaagggaca tattgaaaat cctggagatg gactatttgc tcctttgcca acttactcat 2239

actgtaagca gattagtgct caggagtttg atgagcaaaa agtttctacc tctcaagctg 2299

caattgcaga acttttagaa aatattatta aaaacaggag tttacctcta aaggagaaaa 2359

gaaaaaaact aaaacagttt cagaaggaat atcctttgat atatcagaaa agatttccaa 2419

ccacggagag tgaagcagca ctttttggtg acaaacctac aatcaagcaa ccaatgctga 2479

ttttaagaaa accaaagttc cgtagtctaa gataactaac tgaattaaaa attatgtaat 2539

acttgtggaa ctttgataaa tgaagccata tctgagaatg tagctactca aaaggaagtc 2599

tgtcattaat aaggtatttc taaataaaca cattatgtaa ggaagtgcca aaatagttat 2659

caatgtgaga ctcttaggaa actaactaga tctcaattga gagcacataa caatagatga 2719

taccaaatac tttttgtttt taacacagct atccagtaag gctatcatga tgtgtgctaa 2779

aattttattt acttgaattt tgaaaactga gctgtgttag ggattaaact ataattctgt 2839

tcttaaaaga aaatttatct gcaaatgtgc aagttctgag atattagcta atgaattagt 2899

tgtttggggt tacttctttg tttctaagta taagaatgtg aagaatattt gaaaactcaa 2959

tgaaataatt ctcagctgcc aaatgttgca ctcttttata tattcttttt ccacttttga 3019

tctatttata tatatgtatg tgtttttaaa atatgtgtat attttatcag atttggtttt 3079

gccttaaata ttatccccaa ttgcttcagt cattcatttg ttcagtatat atattttgaa 3139

ttctagtttt cataatctat tagaagatgg ggatataaaa gaagtataag gcaatcatat 3199

attcattcaa aagatattta tttagcaact gctatgtgcc tttcgttgtt ccagatatgc 3259

agagacaatg ataaataaaa catataatct cttccataag gtatttattt tttaatcaag 3319

ggagatacac ctatcagatg tttaaaataa caacactacc cactgaaatc agggcatata 3379

gaatcattca gctaaagagt gacttctatg atgatggaac aggtctctaa gctagtggtt 3439

ttcaaactgg tacacattag actcacccga ggaattttaa aacagcctat atgcccaggg 3499

cctaacttac actaattaaa tctgaatttt ggggatgttg tatagggatt agtatttttt 3559

ttaatctagg tgattccaat attcagccaa ctgtgagaat caatggccta aatgcttttt 3619

ataaacattt ttataagtgt caagataatg gcacattgac tttatttttt cattggaaga 3679

aaatgcctgc caagtataaa tgactctcat cttaaaacaa ggttcttcag gtttctgctt 3739

gattgacttg gtacaaactt gaagcaagtt gccttctaat ttttactcca agattgtttc 3799
atatctattc cttaagtgta aagaaatata taatgcatgg tttgtaataa aatcttaatg 3859
tttaatgact gttctcattt ctcaatgtaa tttcatactg tttctctata aaatgatagt 3919
attccattta acattactga tttttattaa aaacctggac agaaaattat aaattataaa 3979
tatgacttta tcctggctat aaaattattg aaccaaaatg aattctttct aaggcatttg 4039
aatactaaaa cgtttattgt ttatagatat gtaaaatgtg gattatgttg caaattgaga 4099
ttaaaattat ttggggtttt gtaacaatat aattttgctt ttgtattata gacaaatata 4159
taaataataa aggcaggcaa ctttcatttg cactaatgta cgagactcgc cactgccgcg 4219
gccgctgggc ctgagtgtcg ccttcgccgc catggacgcc accgggcgct gacagaccta 4279
tggagagtca gggtgtgcct cccgggcctt atcgggccac caagctgtgg aatgaagtta 4339
ccacatcttt tcgagcagga atgcctctaa gaaaacacag acaacacttt aaaaaatatg 4399
gcaattgttt cacagcagga gaagcagtgg attggcttta tgacctatta agaaataata 4459
gcaattttgg tcctgaagtt acaaggcaac agactatcca actgttgagg aaatttctta 4519
agaatcatgt aattgaagat atcaaaggga ggtggggatc agaaaatgtt gatgataaca 4579
accagctctt cagatttcct gcaacttcgc cacttaaaac tctaccacga aggtatccag 4639
aattgagaaa aaacaacata gagaactttt ccaaagataa agatagcatt tttaaattac 4699
gaaacttatc tcgtagaact cctaaaaggc atggattaca tttatctcag gaaaatggcg 4759
agaaaataaa gcatgaaata atcaatgaag atcaagaaaa tgcaattgat aatagagaac 4819
taagccagga agatgttgaa gaagtttgga gatatgttat tctgatctac ctgcaaacca 4879
ttttaggtgt gccatcccta gaagaagtca taaatccaaa acaagtaatt ccccaatata 4939
taatgtacaa catggccaat acaagtaaac gtggagtagt tatactacaa aacaaatcag 4999
atgacctccc tcactgggta ttatctgcca tgaagtgcct agcaaattgg ccaagaagca 5059
atgatatgaa taatccaact tatgttggat ttgaacgaga tgtattcaga acaatcgcag 5119
attatttttct agatctccct gaacctctac ttacttttga atattacgaa ttatttgtaa 5179
acattttggg cttgctgcaa cctcatttag agagggttgc catcgatgct ctacagttat 5239
gttgtttgtt acttccccca ccaaatcgta gaaagcttca acttttaatg cgtatgattt 5299
cccgaatgag tcaaaatgtt gatatgccca aacttcatga tgcaatgggt acgaggtcac 5359
tgatgataca tacctttttct cgatgtgtgt tatgctgtgc tgaagaagtg gatcttgatg 5419
agcttcttgc tggaagatta gtttctttct taatggatca tcatcaggaa attcttcaag 5479
taccctctta cttacagact gcagtggaaa aacatcttga ctacttaaaa aagggacata 5539
ttgaaaatcc tggagatgga ctatttgctc ctttgccaac ttactcatac tgtaagcaga 5599
ttagtgctca ggagtttgat gagcaaaaag tttctacctc tcaagctgca attgcagaac 5659
ttttagaaaa tattattaaa aacaggagtt tacctctaaa ggagaaaaga aaaaaactaa 5719
aacagtttca gaaggaatat cctttgatat atcagaaaag atttccaacc acggagagtg 5779

aagcagcact ttttggtgac aaacctacaa tcaagcaacc aatgctgatt ttaagaaaac 5839

caaagttccg tagtctaaga taactaactg aattaaaaat tatgtaatac ttgtggaact 5899

ttgataaatg aagccatatc tgagaatgta gctactcaaa aggaagtctg tcattaataa 5959

ggtatttcta aataaacaca ttatgtaagg aagtgccaaa atagttatca atgtgagact 6019

cttaggaaac taactagatc tcaattgaga gcacataaca atagatgata ccaaatactt 6079

tttgttttta acacagctat ccagtaaggc tatcatgatg tgtgctaaaa ttttatttac 6139

ttgaattttg aaaactgagc tgtgttaggg attaaactat aattctgttc ttaaaagaaa 6199

atttatctgc aaatgtgcaa gttctgagat attagctaat gaattagttg tttggggtta 6259

cttctttgtt tctaagtata agaatgtgaa gaatatttga aaactcaatg aaataattct 6319

cagctgccaa atgttgcact cttttatata ttctttttcc acttttgatc tatttatata 6379

tatgtatgtg tttttaaaat atgtgtatat tttatcagat ttggttttgc cttaaatatt 6439

atccccaatt gcttcagtca ttcatttgtt cagtatatat attttgaatt ctagttttca 6499

taatctatta gaagatgggg atataaaaga agtataaggc aatcatatat tcattcaaaa 6559

gatatttatt tagcaactgc tatgtgcctt tcgttgttcc agatatgcag agacaatgat 6619

aaataaaaca tataatctct tccataaggt atttatttttt taatcaaggg agatacacct 6679

atcagatgtt taaaataaca acactaccca ctgaaatcag ggcatataga atcattcagc 6739

taaagagtga cttctatgat gatggaacag gtctctaagc tagtggtttt caaactggta 6799

cacattagac tcacccgagg aattttaaaa cagcctatat gcccagggcc taacttacac 6859

taattaaatc tgaattttgg ggatgttgta tagggattag tatttttttt aatctaggtg 6919

attccaatat tcagccaact gtgagaatca atggcctaaa tgctttttat aaacattttt 6979

ataagtgtca agataatggc acattgactt tatttttca ttggaagaaa atgcctgcca 7039

agtataaatg actctcatct taaaacaagg ttcttcaggt ttctgcttga ttgacttggt 7099

acaaacttga agcaagttgc cttctaattt ttactccaag attgtttcat atctattcct 7159

taagtgtaaa gaaatatata atgcatggtt tgtaataaaa tcttaatgtt taatgactgt 7219

tctcatttct caatgtaatt tcatactgtt tctctataaa atgatagtat tccatttaac 7279

attactgatt tttattaaaa acctggacag aaaattataa attataaata tgactttatc 7339

ctggctataa aattattgaa ccaaaatgaa ttctttctaa ggcatttgaa tactaaaacg 7399

tttattgttt atagatatgt aaaatgtgga ttatgttgca aattgagatt aaaattattt 7459

ggggttttgt aacaatataa ttttgctttt gtattataga caaatatata aataataaag 7519

gcaggcaact ttcatttgca ctaatgtaca tgcaattgag attacaaaat acatggtaca 7579

atgctttaat aacaaactct gccagtcagg tttgaatcct actgtgctat taactagcta 7639

gtaaactcag acaagttact taacttctct aagccccagt tttgttatct ataaaatgaa 7699

tattataata gtacctcttt ttaggattgc gaggattaag caggataatg catgtaaagt 7759

gttagcacag tgtctcacat agaataagca ctctataaat attttactag aatcacctag 7819

gattatagca ctagaagaga tcttagcaaa aatgtggtcc tttctgttgc tttggacaga 7879

catgaaccaa aacaaaatta cggacaattg atgagcctta ttaactatct tttcattatg 7939

agacaaaggt tctgattatg cctactggtt gaaatttttt aatctagtca agaaggaaaa 7999

tttgatgagg aaggaaggaa tggatatctt cagaagggct tcgcctaagc tggaacatgg 8059

atagattcca ttctaacata aagatcttta agttcaaata tagatgagtt gactggtaga 8119

tttggtggta gttgctttct cgggatataa gaagcaaaat caactgctac aagtaaagag 8179

gggatgggga aggtgttgca catttaaaga gagaaagtgt gaaaaagcct aattgtggga 8239

atgcacaggt ttcaccagat cagatgatgt ctggttattc tgtaaattat agttcttatc 8299

ccagaaatta ctgcctccac catccctaat atcttctaat tggtatcata taatgaccca 8359

ctcttcttat gttatccaaa cagttatgtg gcatttagta atggaatgta catggaattt 8419

cccactgact tacctttctg tccttgggaa gcttaaactc tgaatcttct catctgtaaa 8479

atgtgaatta aagtatctac ctaactgagt tgtgattgta gtgaaagaaa ggcaatatat 8539

ttaaatcttg aatttagcaa gcccacgctc gatttttatg tcctttcctc ttgccttgta 8599

ttgagtttaa gatctctact gattaaaact cttttgctat caaaaaaaaa aaaaaaaaaa 8659

aaaaaaa 8666

<210> 6
<211> 527
<212> PRT
<213> Homo sapiens

<400> 6

Met Glu Ser Gln Gly Val Pro Pro Gly Pro Tyr Arg Ala Thr Lys Leu
1 5 10 15

Trp Asn Glu Val Thr Thr Ser Phe Arg Ala Gly Met Pro Leu Arg Lys
20 25 30

His Arg Gln His Phe Lys Lys Tyr Gly Asn Cys Phe Thr Ala Gly Glu
35 40 45

Ala Val Asp Trp Leu Tyr Asp Leu Leu Arg Asn Asn Ser Asn Phe Gly
50 55 60

Pro Glu Val Thr Arg Gln Gln Thr Ile Gln Leu Leu Arg Lys Phe Leu
65 70 75 80

Lys Asn His Val Ile Glu Asp Ile Lys Gly Arg Trp Gly Ser Glu Asn
85 90 95

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

Lys Thr Leu Pro Arg Arg Tyr Pro Glu Leu Arg Lys Asn Asn Ile Glu
115 120 125

```
Asn Phe Ser Lys Asp Lys Asp Ser Ile Phe Lys Leu Arg Asn Leu Ser
    130                 135                 140

Arg Arg Thr Pro Lys Arg His Gly Leu His Leu Ser Gln Glu Asn Gly
145                 150                 155                 160

Glu Lys Ile Lys His Glu Ile Ile Asn Glu Asp Gln Glu Asn Ala Ile
                165                 170                 175

Asp Asn Arg Glu Leu Ser Gln Glu Asp Val Glu Glu Val Trp Arg Tyr
            180                 185                 190

Val Ile Leu Ile Tyr Leu Gln Thr Ile Leu Gly Val Pro Ser Leu Glu
        195                 200                 205

Glu Val Ile Asn Pro Lys Gln Val Ile Pro Gln Tyr Ile Met Tyr Asn
    210                 215                 220

Met Ala Asn Thr Ser Lys Arg Gly Val Val Ile Leu Gln Asn Lys Ser
225                 230                 235                 240

Asp Asp Leu Pro His Trp Val Leu Ser Ala Met Lys Cys Leu Ala Asn
                245                 250                 255

Trp Pro Arg Ser Asn Asp Met Asn Asn Pro Thr Tyr Val Gly Phe Glu
            260                 265                 270

Arg Asp Val Phe Arg Thr Ile Ala Asp Tyr Phe Leu Asp Leu Pro Glu
        275                 280                 285

Pro Leu Leu Thr Phe Glu Tyr Tyr Glu Leu Phe Val Asn Ile Leu Val
    290                 295                 300

Val Cys Gly Tyr Ile Thr Val Ser Asp Arg Ser Ser Gly Ile His Lys
305                 310                 315                 320

Ile Gln Asp Asp Pro Gln Ser Ser Lys Phe Leu His Leu Asn Asn Leu
                325                 330                 335

Asn Ser Phe Lys Ser Thr Glu Cys Leu Leu Leu Ser Leu Leu His Arg
            340                 345                 350

Glu Lys Asn Lys Glu Glu Ser Asp Ser Thr Glu Arg Leu Gln Ile Ser
        355                 360                 365

Asn Pro Gly Phe Gln Glu Arg Cys Ala Lys Lys Met Gln Leu Val Asn
    370                 375                 380

Leu Arg Asn Arg Arg Val Ser Ala Asn Asp Ile Met Gly Gly Ser Cys
385                 390                 395                 400

His Asn Leu Ile Gly Leu Ser Asn Met His Asp Leu Ser Ser Asn Ser
```

405 410 415

Lys Pro Arg Cys Cys Ser Leu Glu Gly Ile Val Asp Val Pro Gly Asn
420 425 430

Ser Ser Lys Glu Ala Ser Ser Val Phe His Gln Ser Phe Pro Asn Ile
435 440 445

Glu Gly Gln Asn Asn Lys Leu Phe Leu Glu Ser Lys Pro Lys Gln Glu
450 455 460

Phe Leu Leu Asn Leu His Ser Glu Glu Asn Ile Gln Lys Pro Phe Ser
465 470 475 480

Ala Gly Phe Lys Arg Thr Ser Thr Leu Thr Val Gln Asp Gln Glu Glu
485 490 495

Leu Cys Asn Gly Lys Cys Lys Ser Lys Gln Leu Cys Arg Ser Gln Ser
500 505 510

Leu Leu Leu Arg Ser Ser Thr Arg Arg Asn Ser Tyr Ile Asn Thr
515 520 525

<210> 7
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 7

Ile Tyr Asn Glu Tyr Ile Tyr Asp Leu
1 5

<210> 8
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 8

Ile Tyr Asn Glu Tyr Ile Tyr Asp Leu Phe
1 5 10

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

<220>
<223> An artificially synthesized peptide sequence

<400> 9

Tyr Ile Tyr Asp Leu Phe Val Pro Val
1 5

<210> 10
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 10

Arg Leu Ala Ile Phe Lys Asp Leu Val
1 5

<210> 11
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 11

Thr Met Ser Ser Ser Lys Leu Ser Asn Val
1 5 10

<210> 12
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 12

Glu Tyr Tyr Glu Leu Phe Val Asn Ile
1 5

<210> 13
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 13

Asp Tyr Ala Asp Leu Lys Glu Lys Leu
1 5

<210> 14
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 14

Gln Tyr Glu Arg Ala Cys Lys Asp Leu
1 5

<210> 15
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 15

Cys Tyr Leu Ala Tyr Asp Glu Thr Leu
1 5

<210> 16
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 16

Ala Tyr Asp Glu Thr Leu Asn Val Leu
1 5

<210> 17
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 17

Gly Tyr Lys Asp Glu Asn Asn Arg Leu
1 5

<210> 18
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 18

Leu Tyr Gly Ser Leu Thr Asn Ser Leu
1 5

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

<220>
<223> An artificially synthesized peptide sequence

<400> 19

Lys Tyr Ala Glu Asp Arg Glu Arg Phe
1 5

<210> 20
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 20

Asn Tyr Asp Ile Ala Ile Ala Glu Leu
1 5

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

<220>
<223> An artificially synthesized peptide sequence

<400> 21

Cys Tyr Lys Ala Lys Ile Lys Glu Leu
1 5

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

<220>
<223> An artificially synthesized peptide sequence

<400> 22

Asp Tyr Leu Gln Val Cys Leu Arg Ile
1 5

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

<220>
<223> An artificially synthesized peptide sequence

<400> 23

Lys Phe Asn Gln Ile Lys Ala Glu Leu
1 5

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

<220>
<223> An artificially synthesized peptide sequence

<400> 24

Ser Tyr Val Phe Ser Ala Asp Pro Ile
1 5

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

<220>
<223> An artificially synthesized peptide sequence

<400> 25

Ala Tyr Arg Leu Leu Lys Leu Gly Ile
1 5

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

<220>
<223> An artificially synthesized peptide sequence

<400> 26

Asp Tyr Glu Gln Ala Asn Leu Asn Met
1 5

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

<220>
<223> An artificially synthesized peptide sequence

<400> 27

Asn Phe Asp Gly Ile Lys Leu Asp Leu
1 5

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

<220>
<223> An artificially synthesized peptide sequence

<400> 28

Leu Phe Val Pro Val Ser Ser Lys Phe
1 5

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

<220>

<223> An artificially synthesized peptide sequence

<400> 29

Leu Phe Asp Ser Leu Gln Glu Arg Leu
1 5

<210> 30
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 30

Lys Phe Ser Val Trp Val Ser Phe Phe
1 5

<210> 31
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 31

Lys Leu Leu Asp Leu Ile Glu Asp Leu
1 5

<210> 32
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 32

Arg Phe Pro Lys Pro Glu Leu Glu Ile
1 5

<210> 33
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 33

Lys Tyr Asn Ala Asp Arg Lys Lys Trp
1 5

<210> 34
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 34

Arg Thr Gln Asn Leu Lys Ala Asp Leu
1 5

<210> 35
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 35

Lys Trp Leu Glu Glu Lys Met Met Leu
1 5

<210> 36
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 36

Lys Ser Asn Glu Met Glu Glu Asp Leu
1 5

<210> 37
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 37

Lys Ile Glu Asp Gly Ser Val Val Leu
1 5

<210> 38
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 38

Lys Gln Gln Asn Glu Met Glu Ile Leu
1 5

<210> 39
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 39

Lys Thr Gln Asn Glu Gly Glu Arg Leu
1 5

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

<220>
<223> An artificially synthesized peptide sequence

<400> 40

Lys Trp Lys Glu Lys Cys Asn Asp Leu
1 5

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

<220>
<223> An artificially synthesized peptide sequence

<400> 41

Lys Ile Lys Glu Leu Glu Thr Ile Leu
1 5

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

<220>
<223> An artificially synthesized peptide sequence

<400> 42

Phe Leu Leu Thr Ile Glu Asn Glu Leu
1 5

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

<220>
<223> An artificially synthesized peptide sequence

<400> 43

Ser Ser Leu Ile Ile Asn Asn Lys Leu
1 5

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

<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 44

Lys Leu Thr Asn Leu Gln Asp Glu Leu
1 5

<210> 45
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 45

Ile Met Gln Pro Val Lys Asp Leu Leu
1 5

<210> 46
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 46

Lys Tyr Asn Ala Asp Arg Lys Lys Trp Leu
1 5 10

<210> 47
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 47

Lys Tyr Ala Glu Asp Arg Glu Arg Phe Phe
1 5 10

<210> 48
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 48

Gln Tyr Trp Ala Gln Arg Glu Ala Asp Phe
1 5 10

<210> 49
<211> 10

<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 49

Leu Tyr Thr Ser Glu Ile Ser Ser Pro Ile
1 5 10

<210> 50
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 50

Lys Phe Gln Lys Arg Lys Met Leu Arg Leu
1 5 10

<210> 51
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 51

Ala Phe Leu Leu Thr Ile Glu Asn Glu Leu
1 5 10

<210> 52
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 52

Thr Tyr Ser Leu Arg Ser Gln Ala Ser Ile
1 5 10

<210> 53
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 53

Asp Phe Leu Gln His Ser Pro Ser Ile Leu
1 5 10

<210> 54

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

<220>
<223> An artificially synthesized peptide sequence

<400> 54

Arg Thr Leu Asn Val Leu Phe Asp Ser Leu
1 5 10

<210> 55
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 55

Lys Gln Ile Val His Phe Gln Gln Glu Leu
1 5 10

<210> 56
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 56

Lys Leu Leu Arg Ile Lys Ile Asn Glu Leu
1 5 10

<210> 57
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 57

Lys Ile Ile Glu Asp Met Arg Met Thr Leu
1 5 10

<210> 58
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 58

Arg Thr Ile Gln Gln Leu Lys Glu Gln Leu
1 5 10

<210> 59
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 59

Lys Val Glu Cys Ser His Ser Ala Lys Leu
1 5 10

<210> 60
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 60

Lys Asn Glu Lys Glu Glu Lys Ala Glu Leu
1 5 10

<210> 61
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 61

Lys Leu Ile Asn Glu Lys Lys Glu Lys Leu
1 5 10

<210> 62
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 62

Lys Leu Met His Thr Lys Ile Asp Glu Leu
1 5 10

<210> 63
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 63

Arg Val Leu Gln Glu Asn Asn Glu Gly Leu
1 5 10

<210> 64
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 64

Arg Val Ile Arg Val Ser Glu Leu Ser Leu
1 5 10

<210> 65
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 65

Arg Asn Leu Lys Glu Phe Gln Glu His Leu
1 5 10

<210> 66
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 66

Glu Tyr Ile Tyr Asp Leu Phe Val Pro Val
1 5 10

<210> 67
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 67

Lys Met Leu Arg Leu Ser Gln Asp Val
1 5

<210> 68
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 68

Ala Leu Leu Arg Gln Ile Lys Glu Val
1 5

<210> 69
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 69

Ala Leu Ser Glu Leu Thr Gln Gly Val
1 5

<210> 70
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 70

Lys Leu Gly Ile Lys His Gln Ser Val
1 5

<210> 71
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 71

Thr Leu Gln Lys Phe Gly Asp Phe Leu
1 5

<210> 72
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 72

Lys Leu Thr Asp Ala Lys Lys Gln Ile
1 5

<210> 73
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 73

Gln Leu Thr Glu Lys Asp Ser Asp Leu

1 5

<210> 74
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 74

Asn Leu Gln Asp Met Lys His Leu Leu
1 5

<210> 75
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 75

Ser Val Trp Val Ser Phe Phe Glu Ile
1 5

<210> 76
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 76

Phe Gln Gly Cys Ile Met Gln Pro Val
1 5

<210> 77
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 77

Val Leu Gln Glu Asn Asn Glu Gly Leu
1 5

<210> 78
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 78

Thr Leu Asp Val Gln Ile Gln His Val
1 5

<210> 79
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 79

Ala Ile Trp Glu Glu Cys Lys Glu Ile
1 5

<210> 80
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 80

Phe Leu Gln His Ser Pro Ser Ile Leu
1 5

<210> 81
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 81

Asp Leu Met Glu Asp Glu Asp Leu Val
1 5

<210> 82
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 82

Ser Leu Leu Thr Leu Gly Lys Cys Ile
1 5

<210> 83
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 83

Gly Ile Leu Pro Arg Thr Leu Asn Val
1 5

<210> 84
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 84

Ile Leu Pro Arg Thr Leu Asn Val Leu
1 5

<210> 85
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 85

Lys Ile Cys Ser Glu Arg Lys Arg Val
1 5

<210> 86
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 86

Ser Leu Ser Glu Lys Lys Asn Leu Thr
1 5

<210> 87
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 87

Leu Met His Thr Lys Ile Asp Glu Leu
1 5

<210> 88
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 88

Trp Leu Glu Glu Lys Met Met Leu Ile
1 5

<210> 89
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 89

Thr Leu Asn Val Leu Lys Phe Ser Ala
1 5

<210> 90
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 90

Lys Leu Gln Thr Glu Pro Leu Ser Thr
1 5

<210> 91
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 91

Cys Ile Met Gln Pro Val Lys Asp Leu
1 5

<210> 92
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 92

Lys Gln Val Gln Lys Glu Val Ser Val
1 5

<210> 93
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 93

Lys Leu Lys Glu Glu Ile Thr Gln Leu
1 5

<210> 94
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 94

Thr Leu Ser Lys Glu Val Gln Gln Ile
1 5

<210> 95
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 95

Asn Glu Tyr Ile Tyr Asp Leu Phe Val
1 5

<210> 96
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 96

Leu Leu Asp Glu Asp Leu Asp Lys Thr
1 5

<210> 97
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 97

Leu Ala Tyr Asp Glu Thr Leu Asn Val
1 5

<210> 98
<211> 9
<212> PRT
<213> Artificial

<220>

<223> An artificially synthesized peptide sequence

<400> 98

Asn Leu Pro Asn Thr Gln Leu Asp Leu
1 5

<210> 99
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 99

Thr Leu Gly Lys Cys Ile Asn Val Leu
1 5

<210> 100
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 100

Thr Leu Asn Val Leu Phe Asp Ser Leu
1 5

<210> 101
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 101

Lys Leu Ser Asn Glu Ile Glu Thr Ala
1 5

<210> 102
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 102

Lys Glu His Glu Asn Asn Thr Asp Val
1 5

<210> 103
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 103

Asp Leu Leu Gly Asn Asp Tyr Leu Val
1 5

<210> 104
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 104

Lys Ile Met Lys Leu Ser Asn Glu Ile
1 5

<210> 105
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 105

Ile Leu Gln Ser Lys Ala Lys Lys Ile
1 5

<210> 106
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 106

Ile Leu Asn Val Lys Arg Ala Thr Ile
1 5

<210> 107
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 107

Lys Glu Leu Glu Thr Ile Leu Glu Thr
1 5

<210> 108
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 108

Ile Val Asn Ile Ser Gln Cys Tyr Leu
1 5

<210> 109
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 109

Leu Ile Cys Asn Glu Thr Val Glu Val
1 5

<210> 110
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 110

Thr Leu Leu Gln Glu Arg Glu Ile Leu
1 5

<210> 111
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 111

Thr Leu Glu Glu Asn Lys Ala Phe Ile
1 5

<210> 112
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 112

Tyr Asn Ala Asp Arg Lys Lys Trp Leu
1 5

<210> 113
<211> 9
<212> PRT

<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 113

Lys Gly Tyr Ser Phe Ile Lys Asp Leu
1 5

<210> 114
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 114

Lys Met Ala Val Lys His Pro Gly Cys
1 5

<210> 115
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 115

Ser Glu Met Ser Arg Val Ile Arg Val
1 5

<210> 116
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 116

Gln Leu Thr Asn Asn Leu Gln Asp Met
1 5

<210> 117
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 117

Gln Ile Val His Phe Gln Gln Glu Leu
1 5

<210> 118
<211> 9

<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 118

Asn Ile Ser Glu Phe Glu Glu Ser Ile
1 5

<210> 119
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 119

Thr Leu Asn Ser Ser Gln Glu Lys Leu
1 5

<210> 120
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 120

Ser Leu Ile Ile Asn Asn Lys Leu Ile
1 5

<210> 121
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 121

Leu Ile Asn Glu Lys Lys Glu Lys Leu
1 5

<210> 122
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 122

Lys Leu Leu Asp Glu Asp Leu Asp Lys Thr
1 5 10

<210> 123

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

<220>
<223> An artificially synthesized peptide sequence

<400> 123

Tyr Leu Ala Tyr Asp Glu Thr Leu Asn Val
1 5 10

<210> 124
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 124

Asn Met Ala Asn Ser Ile Lys Phe Ser Val
1 5 10

<210> 125
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 125

Val Leu Phe Asp Ser Leu Gln Glu Arg Leu
1 5 10

<210> 126
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 126

Lys Leu Ile Cys Asn Glu Thr Val Glu Val
1 5 10

<210> 127
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 127

Lys Leu Asp Leu Ser His Glu Phe Ser Leu
1 5 10

<210> 128
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 128

Leu Leu Thr Leu Gly Lys Cys Ile Asn Val
1 5 10

<210> 129
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 129

Gln Val Leu Glu Ala Lys Leu Glu Glu Val
1 5 10

<210> 130
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 130

Ser Leu Ser Glu Lys Lys Asn Leu Thr Leu
1 5 10

<210> 131
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 131

Thr Leu Tyr Gly Ser Leu Thr Asn Ser Leu
1 5 10

<210> 132
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 132

Ala Ile Trp Glu Glu Cys Lys Glu Ile Val
1 5 10

<210> 133
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 133

Leu Leu Asp Glu Asp Leu Asp Lys Thr Leu
1 5 10

<210> 134
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 134

Val Thr Leu Asp Val Gln Ile Gln His Val
1 5 10

<210> 135
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 135

Lys Thr Leu Glu Glu Asn Lys Ala Phe Ile
1 5 10

<210> 136
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 136

Gly Leu Thr Asn Ser Gly Lys Thr Tyr Thr
1 5 10

<210> 137
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 137

Asn Ile Ala Glu Ile Glu Asp Ile Arg Val
1 5 10

<210> 138
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 138

Ser Leu Gln Glu Arg Leu Tyr Thr Lys Met
1 5 10

<210> 139
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 139

Gln Gln Ile Glu Lys Leu Gln Ala Glu Val
1 5 10

<210> 140
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 140

Gln Gln Tyr Glu Arg Ala Cys Lys Asp Leu
1 5 10

<210> 141
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 141

Met Ile Val Asn Ile Ser Gln Cys Tyr Leu
1 5 10

<210> 142
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 142

Lys Leu Ser Asn Glu Ile Glu Thr Ala Thr

1 5 10

<210> 143
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 143

Lys Gln Ile Lys Gln Val Gln Lys Glu Val
1 5 10

<210> 144
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 144

Asn Leu Pro Asn Thr Gln Leu Asp Leu Leu
1 5 10

<210> 145
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 145

Gln Leu Asp Leu Leu Gly Asn Asp Tyr Leu
1 5 10

<210> 146
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 146

Met Met Leu Ile Thr Gln Ala Lys Glu Ala
1 5 10

<210> 147
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 147

Gln Ile Met Asp Ile Lys Pro Lys Arg Ile
1 5 10

<210> 148
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 148

Gln Leu Val Ala Ala Leu Glu Ile Gln Leu
1 5 10

<210> 149
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 149

Thr Leu Asn Val Leu Lys Phe Ser Ala Ile
1 5 10

<210> 150
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 150

Lys Ile Leu Asn Val Lys Arg Ala Thr Ile
1 5 10

<210> 151
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 151

Thr Leu Glu Glu Gln Glu Gln Thr Gln Val
1 5 10

<210> 152
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 152

Arg Val Ser Glu Leu Ser Leu Cys Asp Leu
1 5 10

<210> 153
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 153

Val Val Leu Asp Ser Cys Glu Val Ser Thr
1 5 10

<210> 154
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 154

Tyr Ser Phe Ile Lys Asp Leu Gln Trp Ile
1 5 10

<210> 155
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 155

Ser Ile Phe Thr Val Lys Ile Leu Gln Ile
1 5 10

<210> 156
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 156

Thr Leu Asp Val Gln Ile Gln His Val Val
1 5 10

<210> 157
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 157

Gly Thr Leu Gln Lys Phe Gly Asp Phe Leu
1 5 10

<210> 158
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 158

Phe Ile Lys Asp Leu Gln Trp Ile Gln Val
1 5 10

<210> 159
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 159

Thr Leu Ile Gln Gln Leu Lys Glu Glu Leu
1 5 10

<210> 160
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 160

Thr Ile Leu Glu Thr Gln Lys Val Glu Cys
1 5 10

<210> 161
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 161

Ala Ala Leu Glu Ile Gln Leu Lys Ala Leu
1 5 10

<210> 162
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 162

Gly Ile Leu Pro Arg Thr Leu Asn Val Leu
1 5 10

<210> 163
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 163

Tyr Tyr Glu Leu Phe Val Asn Ile Leu
1 5

<210> 164
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 164

Tyr Phe Leu Asp Leu Pro Glu Pro Leu
1 5

<210> 165
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 165

Arg Tyr Pro Glu Leu Arg Lys Asn Asn
1 5

<210> 166
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 166

Ser Phe Lys Ser Thr Glu Cys Leu Leu
1 5

<210> 167
<211> 9
<212> PRT
<213> Artificial

<220>

<223> An artificially synthesized peptide sequence

<400> 167

Lys Gln Leu Cys Arg Ser Gln Ser Leu
1 5

<210> 168
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 168

Val Phe Arg Thr Ile Ala Asp Tyr Phe
1 5

<210> 169
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 169

His Phe Lys Lys Tyr Gly Asn Cys Phe
1 5

<210> 170
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 170

Gly Tyr Ile Thr Val Ser Asp Arg Ser
1 5

<210> 171
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 171

Leu Phe Val Asn Ile Leu Gly Leu Leu
1 5

<210> 172
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 172

Glu Tyr Tyr Glu Leu Phe Val Asn Ile Leu
1 5 10

<210> 173
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 173

Asp Tyr Phe Leu Asp Leu Pro Glu Pro Leu
1 5 10

<210> 174
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 174

Arg Tyr Pro Glu Leu Arg Lys Asn Asn Ile
1 5 10

<210> 175
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 175

Glu Tyr Pro Leu Ile Tyr Gln Lys Arg Phe
1 5 10

<210> 176
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 176

Thr Tyr Val Gly Phe Glu Arg Asp Val Phe
1 5 10

<210> 177
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 177

Ser Tyr Ile Asn Thr Pro Val Ala Glu Ile
1 5 10

<210> 178
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 178

Tyr Phe Leu Asp Leu Pro Glu Pro Leu Leu
1 5 10

<210> 179
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 179

Arg Tyr Val Ile Leu Ile Tyr Leu Gln Thr
1 5 10

<210> 180
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 180

Ser Phe Lys Ser Thr Glu Cys Leu Leu Leu
1 5 10

<210> 181
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 181

Leu Phe Arg Phe Pro Ala Thr Ser Pro Leu
1 5 10

<210> 182
<211> 10
<212> PRT

<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 182

Val Phe Arg Thr Ile Ala Asp Tyr Phe Leu
1 5 10

<210> 183
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 183

Lys Thr Leu Pro Arg Arg Tyr Pro Glu Leu
1 5 10

<210> 184
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 184

Arg Thr Ile Ala Asp Tyr Phe Leu Asp Leu
1 5 10

<210> 185
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 185

Gly Phe Glu Arg Asp Val Phe Arg Thr Ile
1 5 10

<210> 186
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 186

Arg Thr Pro Lys Arg His Gly Leu His Leu
1 5 10

<210> 187
<211> 10

<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 187

Lys Gln Leu Cys Arg Ser Gln Ser Leu Leu
1 5 10

<210> 188
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 188

Lys Ser Thr Glu Cys Leu Leu Leu Ser Leu
1 5 10

<210> 189
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 189

Tyr Tyr Glu Leu Phe Val Asn Ile Leu Val
1 5 10

<210> 190
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 190

Asn Phe Ser Lys Asp Lys Asp Ser Ile Phe
1 5 10

<210> 191
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 191

Phe Leu Met Asp His His Gln Glu Ile
1 5

<210> 192

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

<220>
<223> An artificially synthesized peptide sequence

<400> 192

Leu Leu Gln Pro His Leu Glu Arg Val
1 5

<210> 193
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 193

Ser Leu Leu Pro Ala Ser Ser Met Leu
1 5

<210> 194
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 194

Trp Val Leu Ser Ala Met Lys Cys Leu
1 5

<210> 195
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 195

Leu Leu Met Arg Met Ile Ser Arg Met
1 5

<210> 196
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 196

Ser Met Leu Thr Gly Thr Gln Ser Leu
1 5

<210> 197
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 197

Leu Leu Thr Phe Glu Tyr Tyr Glu Leu
1 5

<210> 198
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 198

Tyr Ile Met Tyr Asn Met Ala Asn Thr
1 5

<210> 199
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 199

Phe Leu Asp Leu Pro Glu Pro Leu Leu
1 5

<210> 200
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 200

Ala Leu Phe Gly Asp Lys Pro Thr Ile
1 5

<210> 201
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 201

Met Leu Thr Gly Thr Gln Ser Leu Leu
1 5

<210> 202
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 202

Leu Ile Tyr Gln Lys Arg Phe Pro Thr
1 5

<210> 203
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 203

Thr Leu Pro Arg Arg Tyr Pro Glu Leu
1 5

<210> 204
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 204

Lys Gln Phe Gln Lys Glu Tyr Pro Leu
1 5

<210> 205
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 205

Ile Met Gly Gly Ser Cys His Asn Leu
1 5

<210> 206
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 206

Tyr Glu Leu Phe Val Asn Ile Leu Val
1 5

<210> 207
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 207

Thr Ile Ala Asp Tyr Phe Leu Asp Leu
1 5

<210> 208
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 208

Ala Leu Gln Leu Cys Cys Leu Leu Leu
1 5

<210> 209
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 209

Arg Leu Cys Lys Ser Thr Ile Glu Leu
1 5

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

<220>
<223> An artificially synthesized peptide sequence

<400> 210

Gln Leu Cys Arg Ser Gln Ser Leu Leu
1 5

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

<220>
<223> An artificially synthesized peptide sequence

<400> 211

Val Ile Leu Ile Tyr Leu Gln Thr Ile

1 5

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

<220>
<223> An artificially synthesized peptide sequence

<400> 212

Glu Leu Phe Val Asn Ile Leu Val Val
1 5

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

<220>
<223> An artificially synthesized peptide sequence

<400> 213

Ile Leu Gln Asn Lys Ser Asp Asp Leu
1 5

<210> 214
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 214

Lys Leu Gln Leu Leu Met Arg Met Ile
1 5

<210> 215
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 215

Met Ile Ser Arg Met Ser Gln Asn Val
1 5

<210> 216
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 216

Thr Ile Gln Leu Leu Arg Lys Phe Leu
1 5

<210> 217
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 217

Cys Ser Leu Glu Gly Ile Val Asp Val
1 5

<210> 218
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 218

Leu Val Val Cys Gly Tyr Ile Thr Val
1 5

<210> 219
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 219

Tyr Ile Asn Thr Pro Val Ala Glu Ile
1 5

<210> 220
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 220

Ile Leu Ile Tyr Leu Gln Thr Ile Leu
1 5

<210> 221
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 221

Lys Ser Asp Asp Leu Pro His Trp Val
1 5

<210> 222
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 222

Leu Leu Pro Ala Ser Ser Met Leu Thr
1 5

<210> 223
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 223

Met Ile His Thr Phe Ser Arg Cys Val
1 5

<210> 224
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 224

Leu Met Ile His Thr Phe Ser Arg Cys
1 5

<210> 225
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 225

Cys Val Leu Cys Cys Ala Glu Glu Val
1 5

<210> 226
<211> 9
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 226

Glu Leu Phe Val Asn Ile Leu Gly Leu
1 5

<210> 227
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 227

Leu Leu Ala Gly Arg Leu Val Ser Phe Leu
1 5 10

<210> 228
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 228

Phe Leu Met Asp His His Gln Glu Ile Leu
1 5 10

<210> 229
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 229

Ser Leu Leu Gln Pro His Leu Glu Arg Val
1 5 10

<210> 230
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 230

Ile Leu Val Val Cys Gly Tyr Ile Thr Val
1 5 10

<210> 231
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 231

Leu Thr Phe Glu Tyr Tyr Glu Leu Phe Val
1 5 10

<210> 232
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 232

Ile Leu Gly Val Pro Ser Leu Glu Glu Val
1 5 10

<210> 233
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 233

Leu Ile Tyr Leu Gln Thr Ile Leu Gly Val
1 5 10

<210> 234
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 234

Tyr Leu Gln Thr Ala Val Glu Lys His Leu
1 5 10

<210> 235
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 235

Leu Met Ile His Thr Phe Ser Arg Cys Val
1 5 10

<210> 236
<211> 10
<212> PRT
<213> Artificial

<220>

<223> An artificially synthesized peptide sequence

<400> 236

Ser Met Leu Thr Gly Thr Gln Ser Leu Leu
1 5 10

<210> 237
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 237

Arg Met Ile Ser Arg Met Ser Gln Asn Val
1 5 10

<210> 238
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 238

Gln Leu Leu Met Arg Met Ile Ser Arg Met
1 5 10

<210> 239
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 239

Val Leu Cys Cys Ala Glu Glu Val Asp Leu
1 5 10

<210> 240
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 240

Ser Leu Met Ile His Thr Phe Ser Arg Cys
1 5 10

<210> 241
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 241

Ser Leu Leu Pro Ala Ser Ser Met Leu Thr
1 5 10

<210> 242
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 242

Tyr Glu Leu Phe Val Asn Ile Leu Val Val
1 5 10

<210> 243
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 243

Gln Leu Cys Arg Ser Gln Ser Leu Leu Leu
1 5 10

<210> 244
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 244

Lys Gln Phe Gln Lys Glu Tyr Pro Leu Ile
1 5 10

<210> 245
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 245

Ile Leu Gln Val Pro Ser Tyr Leu Gln Thr
1 5 10

<210> 246
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 246

Val Gly Phe Glu Arg Asp Val Phe Arg Thr
1 5 10

<210> 247
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 247

Gln Leu Val Asn Leu Arg Asn Arg Arg Val
1 5 10

<210> 248
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 248

Phe Leu Asp Leu Pro Glu Pro Leu Leu Thr
1 5 10

<210> 249
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 249

Ile Met Gly Gly Ser Cys His Asn Leu Ile
1 5 10

<210> 250
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 250

Leu Ile Gly Leu Ser Asn Met His Asp Leu
1 5 10

<210> 251
<211> 10
<212> PRT

<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 251

Leu Ile Tyr Gln Lys Arg Phe Pro Thr Thr
1 5 10

<210> 252
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 252

Thr Leu Thr Val Gln Asp Gln Glu Glu Leu
1 5 10

<210> 253
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 253

Asn Met Ala Asn Thr Ser Lys Arg Gly Val
1 5 10

<210> 254
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 254

Tyr Glu Leu Phe Val Asn Ile Leu Gly Leu
1 5 10

<210> 255
<211> 10
<212> PRT
<213> Artificial

<220>
<223> An artificially synthesized peptide sequence

<400> 255

Asn Ile Leu Gly Leu Leu Gln Pro His Leu
1 5 10