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Bonder, Claudine S
Lopez, Angel F
Talbo, Gert H

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<212> PRT
<213> Homo sapiens

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Arg Val Ala Gly Ala Ala Glu Val Phe Gly Asn Ser Ser Glu Gly Leu
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Ile Glu Phe Ser Val Gly Lys Phe Arg Tyr Phe Glu Leu Asn Arg Pro
35 40 45

Phe Pro Glu Glu Ala Ile Leu His Asp Ile Ser Ser Asn Val Thr Phe
50 55 60

Leu Ile Phe Gln Ile His Ser Gln Tyr Gln Asn Thr Thr Val Ser Phe
65 70 75 80

Ser Pro Thr Leu Leu Ser Asn Ser Ser Glu Thr Gly Thr Ala Ser Gly
85 90 95

Leu Val Phe Ile Leu Arg Pro Glu Gln Ser Thr Cys Thr Trp Tyr Leu
100 105 110

Gly Thr Ser Gly Ile Gln Pro Val Gln Asn Met Ala Ile Leu Leu Ser
115 120 125

```
Tyr Ser Glu Arg Asp Pro Val Pro Gly Gly Cys Asn Leu Glu Phe Asp
    130                 135                 140

Leu Asp Ile Asp Pro Asn Ile Tyr Leu Glu Tyr Asn Phe Phe Glu Thr
145                 150                 155                 160

Thr Ile Lys Phe Ala Pro Ala Asn Leu Gly Tyr Ala Arg Gly Val Asp
                165                 170                 175

Pro Pro Pro Cys Asp Ala Gly Thr Asp Gln Asp Ser Arg Trp Arg Leu
            180                 185                 190

Gln Tyr Asp Val Tyr Gln Tyr Phe Leu Pro Glu Asn Asp Leu Thr Glu
        195                 200                 205

Glu Met Leu Leu Lys His Leu Gln Arg Met Val Ser Val Pro Gln Val
    210                 215                 220

Lys Ala Ser Ala Leu Lys Val Val Thr Leu Thr Ala Asn Asp Lys Thr
225                 230                 235                 240

Ser Val Ser Phe Ser Ser Leu Pro Gly Gln Gly Val Ile Tyr Asn Val
                245                 250                 255

Ile Val Trp Asp Pro Phe Leu Asn Thr Ser Ala Ala Tyr Ile Pro Ala
            260                 265                 270

His Thr Tyr Ala Cys Ser Phe Glu Ala Gly Glu Gly Ser Cys Ala Ser
        275                 280                 285

Leu Gly Arg Val Ser Ser Lys Val Phe Phe Thr Leu Phe Ala Leu Leu
    290                 295                 300

Gly Phe Phe Ile Cys Phe Phe Gly His Arg Phe Trp Lys Thr Glu Leu
305                 310                 315                 320

Phe Phe Ile Gly Phe Ile Ile Met Gly Phe Phe Phe Tyr Ile Leu Ile
                325                 330                 335

Thr Arg Leu Thr Pro Ile Lys Tyr Asp Val Asn Leu Ile Leu Thr Ala
            340                 345                 350

Val Thr Gly Ser Val Gly Gly Met Phe Leu Val Ala Val Trp Trp Arg
        355                 360                 365

Phe Gly Ile Leu Ser Ile Cys Met Leu Cys Val Gly Leu Val Leu Gly
    370                 375                 380
```

```
Phe Leu Ile Ser Ser Val Thr Phe Phe Thr Pro Leu Gly Asn Leu Lys
385                 390                 395                 400

Ile Phe His Asp Asp Gly Val Phe Trp Val Thr Phe Ser Cys Ile Ala
                405                 410                 415

Ile Leu Ile Pro Val Val Phe Met Gly Cys Leu Arg Ile Leu Asn Ile
            420                 425                 430

Leu Thr Cys Gly Val Ile Gly Ser Tyr Ser Val Val Leu Ala Ile Asp
        435                 440                 445

Ser Tyr Trp Ser Thr Ser Leu Ser Tyr Ile Thr Leu Asn Val Leu Lys
    450                 455                 460

Arg Ala Leu Asn Lys Asp Phe His Arg Ala Phe Thr Asn Val Pro Phe
465                 470                 475                 480

Gln Thr Asn Asp Phe Ile Ile Leu Ala Val Trp Gly Met Leu Ala Val
                485                 490                 495

Ser Gly Ile Thr Leu Gln Ile Arg Arg Glu Arg Gly Arg Pro Phe Phe
            500                 505                 510

Pro Pro His Pro Tyr Lys Leu Trp Lys Gln Glu Arg Glu Arg Arg Val
        515                 520                 525

Thr Asn Ile Leu Asp Pro Ser Tyr His Ile Pro Pro Leu Arg Glu Arg
    530                 535                 540

Leu Tyr Gly Arg Leu Thr Gln Ile Lys Gly Leu Phe Gln Lys Glu Gln
545                 550                 555                 560

Pro Ala Gly Glu Arg Thr Pro Leu Leu Leu
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<210> 7
<211> 5121
<212> DNA
<213> Homo sapiens

<400> 7

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ggatggggcg gccgcgggag cccgagcgcg cgcaggaacc gccgccgccg ccgcccgcgt      180

ctccgttgcc gcgcgcctga gccgccgtcg ccgccgcgcg ccctgcccgg gggcggcccc      240
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<210> 8
<211> 1568
<212> PRT
<213> Homo sapiens

<400> 8

Met Glu Val Ser Arg Arg Lys Ala Pro Pro Arg Pro Pro Arg Pro Ala
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Ala Pro Leu Pro Leu Leu Ala Tyr Leu Leu Ala Leu Ala Ala Pro Gly
20 25 30

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

Ile Ala Ala Ser Gln Glu Asp Gly Val Phe Val Ala Ser Gly Ser Cys
50 55 60

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Leu Asp Gln Leu Asp Tyr Ser Leu Glu His Ser Leu Ser Arg Leu Tyr
65                  70                  75                  80

Arg Asp Gln Ala Gly Asn Cys Thr Glu Pro Val Ser Leu Ala Pro Pro
                85                  90                  95

Ala Arg Pro Arg Pro Gly Ser Ser Phe Ser Lys Leu Leu Leu Pro Tyr
            100                 105                 110

Arg Glu Gly Ala Ala Gly Leu Gly Gly Leu Leu Leu Thr Gly Trp Thr
        115                 120                 125

Phe Asp Arg Gly Ala Cys Glu Val Arg Pro Leu Gly Asn Leu Ser Arg
    130                 135                 140

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

Ser Thr Ala Gly Val Val Tyr Arg Ala Gly Arg Asn Asn Arg Trp Tyr
                165                 170                 175

Leu Ala Val Ala Ala Thr Tyr Val Leu Pro Glu Pro Glu Thr Ala Ser
            180                 185                 190

Arg Cys Asn Pro Ala Ala Ser Asp His Asp Thr Ala Ile Ala Leu Lys
        195                 200                 205

Asp Thr Glu Gly Arg Ser Leu Ala Thr Gln Glu Leu Gly Arg Leu Lys
    210                 215                 220

Leu Cys Glu Gly Ala Gly Ser Leu His Phe Val Asp Ala Phe Leu Trp
225                 230                 235                 240

Asn Gly Ser Ile Tyr Phe Pro Tyr Tyr Pro Tyr Asn Tyr Thr Ser Gly
                245                 250                 255

Ala Ala Thr Gly Trp Pro Ser Met Ala Arg Ile Ala Gln Ser Thr Glu
            260                 265                 270

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

Asp Gly Arg Arg Leu Leu Leu Ser Ser Ser Leu Val Glu Ala Leu Asp
    290                 295                 300

Val Trp Ala Gly Val Phe Ser Ala Ala Ala Gly Glu Gly Gln Glu Arg
305                 310                 315                 320
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Arg Ser Pro Thr Thr Thr Ala Leu Cys Leu Phe Arg Met Ser Glu Ile
                325                 330                 335

Gln Ala Arg Ala Lys Arg Val Ser Trp Asp Phe Lys Thr Ala Glu Ser
            340                 345                 350

His Cys Lys Glu Gly Asp Gln Pro Glu Arg Val Gln Pro Ile Ala Ser
        355                 360                 365

Ser Thr Leu Ile His Ser Asp Leu Thr Ser Val Tyr Gly Thr Val Val
    370                 375                 380

Met Asn Arg Thr Val Leu Phe Leu Gly Thr Gly Asp Gly Gln Leu Leu
385                 390                 395                 400

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

Tyr Glu Ile Lys Glu Glu Thr Pro Val Phe Tyr Lys Leu Val Pro Asp
            420                 425                 430

Pro Val Lys Asn Ile Tyr Ile Tyr Leu Thr Ala Gly Lys Glu Val Arg
        435                 440                 445

Arg Ile Arg Val Ala Asn Cys Asn Lys His Lys Ser Cys Ser Glu Cys
    450                 455                 460

Leu Thr Ala Thr Asp Pro His Cys Gly Trp Cys His Ser Leu Gln Arg
465                 470                 475                 480

Cys Thr Phe Gln Gly Asp Cys Val His Ser Glu Asn Leu Glu Asn Trp
                485                 490                 495

Leu Asp Ile Ser Ser Gly Ala Lys Lys Cys Pro Lys Ile Gln Ile Ile
            500                 505                 510

Arg Ser Ser Lys Glu Lys Thr Thr Val Thr Met Val Gly Ser Phe Ser
        515                 520                 525

Pro Arg His Ser Lys Cys Met Val Lys Asn Val Asp Ser Ser Arg Glu
    530                 535                 540

Leu Cys Gln Asn Lys Ser Gln Pro Asn Arg Thr Cys Thr Cys Ser Ile
545                 550                 555                 560

Pro Thr Arg Ala Thr Tyr Lys Asp Val Ser Val Val Asn Val Met Phe
                565                 570                 575
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Ser Phe Gly Ser Trp Asn Leu Ser Asp Arg Phe Asn Phe Thr Asn Cys
            580                 585                 590

Ser Ser Leu Lys Glu Cys Pro Ala Cys Val Glu Thr Gly Cys Ala Trp
        595                 600                 605

Cys Lys Ser Ala Arg Arg Cys Ile His Pro Phe Thr Ala Cys Asp Pro
    610                 615                 620

Ser Asp Tyr Glu Arg Asn Gln Glu Gln Cys Pro Val Ala Val Glu Lys
625                 630                 635                 640

Thr Ser Gly Gly Gly Arg Pro Lys Glu Asn Lys Gly Asn Arg Thr Asn
                645                 650                 655

Gln Ala Leu Gln Val Phe Tyr Ile Lys Ser Ile Glu Pro Gln Lys Val
            660                 665                 670

Ser Thr Leu Gly Lys Ser Asn Val Ile Val Thr Gly Ala Asn Phe Thr
        675                 680                 685

Arg Ala Ser Asn Ile Thr Met Ile Leu Lys Gly Thr Ser Thr Cys Asp
    690                 695                 700

Lys Asp Val Ile Gln Val Ser His Val Leu Asn Asp Thr His Met Lys
705                 710                 715                 720

Phe Ser Leu Pro Ser Ser Arg Lys Glu Met Lys Asp Val Cys Ile Gln
                725                 730                 735

Phe Asp Gly Gly Asn Cys Ser Ser Val Gly Ser Leu Ser Tyr Ile Ala
            740                 745                 750

Leu Pro His Cys Ser Leu Ile Phe Pro Ala Thr Thr Trp Ile Ser Gly
        755                 760                 765

Gly Gln Asn Ile Thr Met Met Gly Arg Asn Phe Asp Val Ile Asp Asn
    770                 775                 780

Leu Ile Ile Ser His Glu Leu Lys Gly Asn Ile Asn Val Ser Glu Tyr
785                 790                 795                 800

Cys Val Ala Thr Tyr Cys Gly Phe Leu Ala Pro Ser Leu Lys Ser Ser
                805                 810                 815

Lys Val Arg Thr Asn Val Thr Val Lys Leu Arg Val Gln Asp Thr Tyr
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            820                 825                 830

Leu Asp Cys Gly Thr Leu Gln Tyr Arg Glu Asp Pro Arg Phe Thr Gly
        835                 840                 845

Tyr Arg Val Glu Ser Glu Val Asp Thr Glu Leu Glu Val Lys Ile Gln
    850                 855                 860

Lys Glu Asn Asp Asn Phe Asn Ile Ser Lys Lys Asp Ile Glu Ile Thr
865                 870                 875                 880

Leu Phe His Gly Glu Asn Gly Gln Leu Asn Cys Ser Phe Glu Asn Ile
                885                 890                 895

Thr Arg Asn Gln Asp Leu Thr Thr Ile Leu Cys Lys Ile Lys Gly Ile
            900                 905                 910

Lys Thr Ala Ser Thr Ile Ala Asn Ser Ser Lys Lys Val Arg Val Lys
        915                 920                 925

Leu Gly Asn Leu Glu Leu Tyr Val Glu Gln Glu Ser Val Pro Ser Thr
    930                 935                 940

Trp Tyr Phe Leu Ile Val Leu Pro Val Leu Leu Val Ile Val Ile Phe
945                 950                 955                 960

Ala Ala Val Gly Val Thr Arg His Lys Ser Lys Glu Leu Ser Arg Lys
                965                 970                 975

Gln Ser Gln Gln Leu Glu Leu Leu Glu Ser Glu Leu Arg Lys Glu Ile
            980                 985                 990

Arg Asp Gly Phe Ala Glu Leu Gln  Met Asp Lys Leu Asp  Val Val Asp
        995                 1000                1005

Ser Phe  Gly Thr Val Pro Phe  Leu Asp Tyr Lys His  Phe Ala Leu
    1010                1015                1020

Arg Thr  Phe Phe Pro Glu Ser  Gly Gly Phe Thr His  Ile Phe Thr
    1025                1030                1035

Glu Asp  Met His Asn Arg Asp  Ala Asn Asp Lys Asn  Glu Ser Leu
    1040                1045                1050

Thr Ala  Leu Asp Ala Leu Ile  Cys Asn Lys Ser Phe  Leu Val Thr
    1055                1060                1065
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Val Ile  His Thr Leu Glu Lys  Gln Lys Asn Phe Ser  Val Lys Asp
    1070                 1075                 1080

Arg Cys  Leu Phe Ala Ser Phe  Leu Thr Ile Ala Leu  Gln Thr Lys
    1085                 1090                 1095

Leu Val  Tyr Leu Thr Ser Ile  Leu Glu Val Leu Thr  Arg Asp Leu
    1100                 1105                 1110

Met Glu  Gln Cys Ser Asn Met  Gln Pro Lys Leu Met  Leu Arg Arg
    1115                 1120                 1125

Thr Glu  Ser Val Val Glu Lys  Leu Leu Thr Asn Trp  Met Ser Val
    1130                 1135                 1140

Cys Leu  Ser Gly Phe Leu Arg  Glu Thr Val Gly Glu  Pro Phe Tyr
    1145                 1150                 1155

Leu Leu  Val Thr Thr Leu Asn  Gln Lys Ile Asn Lys  Gly Pro Val
    1160                 1165                 1170

Asp Val  Ile Thr Cys Lys Ala  Leu Tyr Thr Leu Asn  Glu Asp Trp
    1175                 1180                 1185

Leu Leu  Trp Gln Val Pro Glu  Phe Ser Thr Val Ala  Leu Asn Val
    1190                 1195                 1200

Val Phe  Glu Lys Ile Pro Glu  Asn Glu Ser Ala Asp  Val Cys Arg
    1205                 1210                 1215

Asn Ile  Ser Val Asn Val Leu  Asp Cys Asp Thr Ile  Gly Gln Ala
    1220                 1225                 1230

Lys Glu  Lys Ile Phe Gln Ala  Phe Leu Ser Lys Asn  Gly Ser Pro
    1235                 1240                 1245

Tyr Gly  Leu Gln Leu Asn Glu  Ile Gly Leu Glu Leu  Gln Met Gly
    1250                 1255                 1260

Thr Arg  Gln Lys Glu Leu Leu  Asp Ile Asp Ser Ser  Ser Val Ile
    1265                 1270                 1275

Leu Glu  Asp Gly Ile Thr Lys  Leu Asn Thr Ile Gly  His Tyr Glu
    1280                 1285                 1290

Ile Ser  Asn Gly Ser Thr Ile  Lys Val Phe Lys Lys  Ile Ala Asn
    1295                 1300                 1305
```

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Phe Thr  Ser Asp Val Glu Tyr  Ser Asp Asp His Cys  His Leu Ile
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Leu Pro  Asp Ser Glu Ala Phe  Gln Asp Val Gln Gly  Lys Arg His
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Arg Gly  Lys His Lys Phe Lys  Val Lys Glu Met Tyr  Leu Thr Lys
    1340                 1345                 1350

Leu Leu  Ser Thr Lys Val Ala  Ile His Ser Val Leu  Glu Lys Leu
    1355                 1360                 1365

Phe Arg  Ser Ile Trp Ser Leu  Pro Asn Ser Arg Ala  Pro Phe Ala
    1370                 1375                 1380

Ile Lys  Tyr Phe Phe Asp Phe  Leu Asp Ala Gln Ala  Glu Asn Lys
    1385                 1390                 1395

Lys Ile  Thr Asp Pro Asp Val  Val His Ile Trp Lys  Thr Asn Ser
    1400                 1405                 1410

Leu Pro  Leu Arg Phe Trp Val  Asn Ile Leu Lys Asn  Pro Gln Phe
    1415                 1420                 1425

Val Phe  Asp Ile Lys Lys Thr  Pro His Ile Asp Gly  Cys Leu Ser
    1430                 1435                 1440

Val Ile  Ala Gln Ala Phe Met  Asp Ala Phe Ser Leu  Thr Glu Gln
    1445                 1450                 1455

Gln Leu  Gly Lys Glu Ala Pro  Thr Asn Lys Leu Leu  Tyr Ala Lys
    1460                 1465                 1470

Asp Ile  Pro Thr Tyr Lys Glu  Glu Val Lys Ser Tyr  Tyr Lys Ala
    1475                 1480                 1485

Ile Arg  Asp Leu Pro Pro Leu  Ser Ser Ser Glu Met  Glu Glu Phe
    1490                 1495                 1500

Leu Thr  Gln Glu Ser Lys Lys  His Glu Asn Glu Phe  Asn Glu Glu
    1505                 1510                 1515

Val Ala  Leu Thr Glu Ile Tyr  Lys Tyr Ile Val Lys  Tyr Phe Asp
    1520                 1525                 1530

Glu Ile  Leu Asn Lys Leu Glu  Arg Glu Arg Gly Leu  Glu Glu Ala
    1535                 1540                 1545
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Lys Cys Lys Trp Met
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<213> Homo sapiens

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gatcagcagc ctcttcctcc tccaggaccc agaagccctg agcttatccc catggagctc 180

tgccggtccc tggccctgct gggggggctcc ctgggcctga tgttctgcct gattgctttg 240

agcaccgatt tctggtttga ggctgtgggt cccacccact cagctcactc gggcctctgg 300

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accttgtgag cagaaggcaa gagcggcaag atgagttttg agcgttgtat tccaaaggcc 720

tcatctggag cctcgggaaa gtctggtccc acatctgccc gcccttccag cccttcccca 780

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<212> PRT
<213> Homo sapiens

<400> 10

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1 5 10 15

Met Phe Cys Leu Ile Ala Leu Ser Thr Asp Phe Trp Phe Glu Ala Val
20 25 30

Gly Pro Thr His Ser Ala His Ser Gly Leu Trp Pro Thr Gly His Gly
35 40 45

```
Asp Ile Ile Ser Gly Tyr Ile His Val Thr Gln Thr Phe Ser Ile Met
    50                  55                  60

Ala Val Leu Trp Ala Leu Val Ser Val Ser Phe Leu Val Leu Ser Cys
65                  70                  75                  80

Phe Pro Ser Leu Phe Pro Pro Gly His Gly Pro Leu Val Ser Thr Thr
                85                  90                  95

Ala Ala Phe Ala Ala Ala Ile Ser Met Val Val Ala Met Ala Val Tyr
            100                 105                 110

Thr Ser Glu Arg Trp Asp Gln Pro Pro His Pro Gln Ile Gln Thr Phe
        115                 120                 125

Phe Ser Trp Ser Phe Tyr Leu Gly Trp Val Ser Ala Ile Leu Leu Leu
    130                 135                 140

Cys Thr Gly Ala Leu Ser Leu Gly Ala His Cys Gly Gly Pro Arg Pro
145                 150                 155                 160

Gly Tyr Glu Thr Leu
                165
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ggcaatggca tcctaatttg tgtcatcctc tcccaggcaa tcctgcatga gcccatgtac      240

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gccctggcca atttgtggct aggttatagc ctcatttcct ttgatggctg cctcactcag      360

atgttcttca ttcacttcct cttcattcac tctgctgtcc tgctggccat ggcctttgac      420

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gttgtcattc ctcctatgct caatcccgtt atttatggag tgaggactaa gccaatactg 960

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<400> 12

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1 5 10 15

Asn Ser Ile Gly Ala Met Asn Asn Ser Asp Thr Arg Ile Ala Gly Cys
20 25 30

Phe Leu Thr Gly Ile Pro Gly Leu Glu Gln Leu His Ile Trp Leu Ser
35 40 45

Ile Pro Phe Cys Ile Met Tyr Ile Thr Ala Leu Glu Gly Asn Gly Ile
50 55 60

Leu Ile Cys Val Ile Leu Ser Gln Ala Ile Leu His Glu Pro Met Tyr
65 70 75 80

Ile Phe Leu Ser Met Leu Ala Ser Ala Asp Val Leu Leu Ser Thr Thr
85 90 95

Thr Met Pro Lys Ala Leu Ala Asn Leu Trp Leu Gly Tyr Ser Leu Ile
100 105 110

Ser Phe Asp Gly Cys Leu Thr Gln Met Phe Phe Ile His Phe Leu Phe
115 120 125

Ile His Ser Ala Val Leu Leu Ala Met Ala Phe Asp Arg Tyr Val Ala
130 135 140

Ile Cys Ser Pro Leu Arg Tyr Val Thr Ile Leu Thr Ser Lys Val Ile
145 150 155 160

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

Pro Ser Ile Phe Leu Leu Glu His Leu His Tyr Cys Gln Ile Asn Ile

180 185 190

Ile Ala His Thr Phe Cys Glu His Met Gly Ile Ala His Leu Ser Cys
195 200 205

Ser Asp Ile Ser Ile Asn Val Trp Tyr Gly Leu Ala Ala Ala Leu Leu
210 215 220

Ser Thr Gly Leu Asp Ile Met Leu Ile Thr Val Ser Tyr Ile His Ile
225 230 235 240

Leu Gln Ala Val Phe Arg Leu Leu Ser Gln Asp Ala Arg Ser Lys Ala
245 250 255

Leu Ser Thr Cys Gly Ser His Ile Cys Val Ile Leu Leu Phe Tyr Val
260 265 270

Pro Ala Leu Phe Ser Val Phe Ala Tyr Arg Phe Gly Gly Arg Ser Val
275 280 285

Pro Cys Tyr Val His Ile Leu Leu Ala Ser Leu Tyr Val Val Ile Pro
290 295 300

Pro Met Leu Asn Pro Val Ile Tyr Gly Val Arg Thr Lys Pro Ile Leu
305 310 315 320

Glu Gly Ala Lys Gln Met Phe Ser Asn Leu Ala Lys Gly Ser Lys
325 330 335

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

<400> 14

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Asp Gln Asp Ala Leu Tyr Glu Lys Tyr Gln Leu Thr Ser Gln His Gly
            20                  25                  30

Pro Leu Leu Leu Thr Leu Leu Leu Val Ala Ala Thr Ala Cys Val Ala
        35                  40                  45

Leu Ile Ile Ile Ala Phe Ser Gln Gly Asp Pro Ser Arg His Gln Ala
    50                  55                  60

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

Val Leu Met Tyr Val Glu Cys Leu Leu Arg Arg Trp Leu Arg Ala Leu
                85                  90                  95

Ala Leu Leu Thr Trp Ala Cys Leu Val Ala Leu Gly Tyr Val Leu Val
            100                 105                 110

Phe Asp Ala Trp Thr Lys Ala Ala Cys Ala Trp Glu Gln Val Pro Phe
        115                 120                 125

Phe Leu Phe Ile Val Phe Val Val Tyr Thr Leu Leu Pro Phe Ser Met
    130                 135                 140

Arg Gly Ala Val Ala Val Gly Ala Val Ser Thr Ala Ser His Leu Leu
145                 150                 155                 160

Val Leu Gly Ser Leu Met Gly Gly Phe Thr Thr Pro Ser Val Arg Val
                165                 170                 175

Gly Leu Gln Leu Leu Ala Asn Ala Val Ile Phe Leu Cys Gly Asn Leu
            180                 185                 190

Thr Gly Ala Phe His Lys His Gln Met Gln Asp Ala Ser Arg Asp Leu
        195                 200                 205

Phe Thr Tyr Thr Val Lys Cys Ile Gln Ile Arg Arg Lys Leu Arg Ile
    210                 215                 220
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Glu Lys Arg Gln Gln Glu Asn Leu Leu Leu Ser Val Leu Pro Ala His
225                 230                 235                 240

Ile Ser Met Gly Met Lys Leu Ala Ile Ile Glu Arg Leu Lys Glu His
                245                 250                 255

Gly Asp Arg Arg Cys Met Pro Asp Asn Asn Phe His Ser Leu Tyr Val
            260                 265                 270

Lys Arg His Gln Asn Val Ser Ile Leu Tyr Ala Asp Ile Val Gly Phe
        275                 280                 285

Thr Gln Leu Ala Ser Asp Cys Ser Pro Lys Glu Leu Val Val Val Leu
    290                 295                 300

Asn Glu Leu Phe Gly Lys Phe Asp Gln Ile Ala Lys Ala Asn Glu Cys
305                 310                 315                 320

Met Arg Ile Lys Ile Leu Gly Asp Cys Tyr Tyr Cys Val Ser Gly Leu
                325                 330                 335

Pro Val Ser Leu Pro Thr His Ala Arg Asn Cys Val Lys Met Gly Leu
            340                 345                 350

Asp Met Cys Gln Ala Ile Lys Gln Val Arg Glu Ala Thr Gly Val Asp
        355                 360                 365

Ile Asn Met Arg Val Gly Ile His Ser Gly Asn Val Leu Cys Gly Val
    370                 375                 380

Ile Gly Leu Arg Lys Trp Gln Tyr Asp Val Trp Ser His Asp Val Ser
385                 390                 395                 400

Leu Ala Asn Arg Met Glu Ala Ala Gly Val Pro Gly Arg Val His Ile
                405                 410                 415

Thr Glu Ala Thr Leu Lys His Leu Asp Lys Ala Tyr Glu Val Glu Asp
            420                 425                 430

Gly His Gly Gln Gln Arg Asp Pro Tyr Leu Lys Glu Met Asn Ile Arg
        435                 440                 445

Thr Tyr Leu Val Ile Asp Pro Arg Ser Gln Gln Pro Pro Pro Pro Ser
    450                 455                 460

Gln His Leu Pro Arg Pro Lys Gly Asp Ala Ala Leu Lys Met Arg Ala
465                 470                 475                 480
```

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Ser Val Arg Met Thr Arg Tyr Leu Glu Ser Trp Gly Ala Ala Arg Pro
                485                 490                 495

Phe Ala His Leu Asn His Arg Glu Ser Val Ser Ser Gly Glu Thr His
            500                 505                 510

Val Pro Asn Gly Arg Arg Pro Lys Ser Val Pro Gln Arg His Arg Arg
        515                 520                 525

Thr Pro Asp Arg Ser Met Ser Pro Lys Gly Arg Ser Glu Asp Asp Ser
    530                 535                 540

Tyr Asp Asp Glu Met Leu Ser Ala Ile Glu Gly Leu Ser Ser Thr Arg
545                 550                 555                 560

Pro Cys Cys Ser Lys Ser Asp Asp Phe Tyr Thr Phe Gly Ser Ile Phe
                565                 570                 575

Leu Glu Lys Gly Phe Glu Arg Glu Tyr Arg Leu Ala Pro Ile Pro Arg
            580                 585                 590

Ala Arg His Asp Phe Ala Cys Ala Ser Leu Ile Phe Val Cys Ile Leu
        595                 600                 605

Leu Val His Val Leu Leu Met Pro Arg Thr Ala Ala Leu Gly Val Ser
    610                 615                 620

Phe Gly Leu Val Ala Cys Val Leu Gly Leu Val Leu Gly Leu Cys Phe
625                 630                 635                 640

Ala Thr Lys Phe Ser Arg Cys Cys Pro Ala Arg Gly Thr Leu Cys Thr
                645                 650                 655

Ile Ser Glu Arg Val Glu Thr Gln Pro Leu Leu Arg Leu Thr Leu Ala
            660                 665                 670

Val Leu Thr Ile Gly Ser Leu Leu Thr Val Ala Ile Ile Asn Leu Pro
        675                 680                 685

Leu Met Pro Phe Gln Val Pro Glu Leu Pro Val Gly Asn Glu Thr Gly
    690                 695                 700

Leu Leu Ala Ala Ser Ser Lys Thr Arg Ala Leu Cys Glu Pro Leu Pro
705                 710                 715                 720

Tyr Tyr Thr Cys Ser Cys Val Leu Gly Phe Ile Ala Cys Ser Val Phe
                725                 730                 735
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Leu Arg Met Ser Leu Glu Pro Lys Val Val Leu Leu Thr Val Ala Leu
            740                 745                 750

Val Ala Tyr Leu Val Leu Phe Asn Leu Ser Pro Cys Trp Gln Trp Asp
        755                 760                 765

Cys Cys Gly Gln Gly Leu Gly Asn Leu Thr Lys Pro Asn Gly Thr Thr
    770                 775                 780

Ser Gly Thr Pro Ser Cys Ser Trp Lys Asp Leu Lys Thr Met Thr Asn
785                 790                 795                 800

Phe Tyr Leu Val Leu Phe Tyr Ile Thr Leu Leu Thr Leu Ser Arg Gln
                805                 810                 815

Ile Asp Tyr Tyr Cys Arg Leu Asp Cys Leu Trp Lys Lys Lys Phe Lys
            820                 825                 830

Lys Glu His Glu Glu Phe Glu Thr Met Glu Asn Val Asn Arg Leu Leu
        835                 840                 845

Leu Glu Asn Val Leu Pro Ala His Val Ala Ala His Phe Ile Gly Asp
    850                 855                 860

Lys Leu Asn Glu Asp Trp Tyr His Gln Ser Tyr Asp Cys Val Cys Val
865                 870                 875                 880

Met Phe Ala Ser Val Pro Asp Phe Lys Val Phe Tyr Thr Glu Cys Asp
                885                 890                 895

Val Asn Lys Glu Gly Leu Glu Cys Leu Arg Leu Leu Asn Glu Ile Ile
            900                 905                 910

Ala Asp Phe Asp Glu Leu Leu Leu Lys Pro Lys Phe Ser Gly Val Glu
        915                 920                 925

Lys Ile Lys Thr Ile Gly Ser Thr Tyr Met Ala Ala Ala Gly Leu Ser
    930                 935                 940

Val Ala Ser Gly His Glu Asn Gln Glu Leu Glu Arg Gln His Ala His
945                 950                 955                 960

Ile Gly Val Met Val Glu Phe Ser Ile Ala Leu Met Ser Lys Leu Asp
                965                 970                 975

Gly Ile Asn Arg His Ser Phe Asn Ser Phe Arg Leu Arg Val Gly Ile
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980 985 990

Asn His Gly Pro Val Ile Ala Gly Val Ile Gly Ala Arg Lys Pro Gln
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Arg Ala Trp Ile Thr Ala Pro Val Ala Leu Arg Glu Gly Glu Asp Leu
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Ser Lys Lys Asn Pro Ile Ala Lys Ile His Ser Asp Leu Ala Glu Glu
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Arg Gly Leu Lys Ile Thr Tyr Lys Tyr Thr Gly Lys Gly Ile Thr Glu

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Val Thr Ser Ile Leu Asp Arg Glu Glu Thr Pro Phe Phe Leu Leu Thr
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Gly Tyr Ala Leu Asp Ala Arg Gly Asn Asn Val Glu Lys Pro Leu Glu
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Leu Arg Ile Lys Val Leu Asp Ile Asn Asp Asn Glu Pro Val Phe Thr
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Gln Asp Val Phe Val Gly Ser Val Glu Glu Leu Ser Ala Ala His Thr
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Leu Val Met Lys Ile Asn Ala Thr Asp Ala Asp Glu Pro Asn Thr Leu
            180                 185                 190

Asn Ser Lys Ile Ser Tyr Arg Ile Val Ser Leu Glu Pro Ala Tyr Pro
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Pro Val Phe Tyr Leu Asn Lys Asp Thr Gly Glu Ile Tyr Thr Thr Ser
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Val Thr Leu Asp Arg Glu Glu His Ser Ser Tyr Thr Leu Thr Val Glu
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Ala Arg Asp Gly Asn Gly Glu Val Thr Asp Lys Pro Val Lys Gln Ala
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Gln Val Gln Ile Arg Ile Leu Asp Val Asn Asp Asn Ile Pro Val Val
            260                 265                 270

Glu Asn Lys Val Leu Glu Gly Met Val Glu Glu Asn Gln Val Asn Val
        275                 280                 285

Glu Val Thr Arg Ile Lys Val Phe Asp Ala Asp Glu Ile Gly Ser Asp
    290                 295                 300

Asn Trp Leu Ala Asn Phe Thr Phe Ala Ser Gly Asn Glu Gly Gly Tyr
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Phe His Ile Glu Thr Asp Ala Gln Thr Asn Glu Gly Ile Val Thr Leu
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Ile Val Ala Asn Lys Ala Ala Phe His Lys Ser Ile Arg Ser Lys Tyr
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Lys Pro Thr Pro Ile Pro Ile Lys Val Lys Val Lys Asn Val Lys Glu
    370                 375                 380

Gly Ile His Phe Lys Ser Ser Val Ile Ser Ile Tyr Val Ser Glu Ser
385                 390                 395                 400

Met Asp Arg Ser Ser Lys Gly Gln Ile Ile Gly Asn Phe Gln Ala Phe
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Asp Glu Asp Thr Gly Leu Pro Ala His Ala Arg Tyr Val Lys Leu Glu
            420                 425                 430

Asp Arg Asp Asn Trp Ile Ser Val Asp Ser Val Thr Ser Glu Ile Lys
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Leu Ala Lys Leu Pro Asp Phe Glu Ser Arg Tyr Val Gln Asn Gly Thr
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Tyr Thr Val Lys Ile Val Ala Ile Ser Glu Asp Tyr Pro Arg Lys Thr
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Ile Thr Gly Thr Val Leu Ile Asn Val Glu Asp Ile Asn Asp Asn Cys
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Pro Thr Leu Ile Glu Pro Val Gln Thr Ile Cys His Asp Ala Glu Tyr
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Val Asn Val Thr Ala Glu Asp Leu Asp Gly His Pro Asn Ser Gly Pro
        515                 520                 525

Phe Ser Phe Ser Val Ile Asp Lys Pro Pro Gly Met Ala Glu Lys Trp
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Lys Ile Ala Arg Gln Glu Ser Thr Ser Val Leu Leu Gln Gln Ser Glu
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Lys Lys Leu Gly Arg Ser Glu Ile Gln Phe Leu Ile Ser Asp Asn Gln
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Gly Phe Ser Cys Pro Glu Lys Gln Val Leu Thr Leu Thr Val Cys Glu
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Cys Leu His Gly Ser Gly Cys Arg Glu Ala Gln His Asp Ser Tyr Val
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Leu Leu Leu Val Pro Leu Leu Leu Leu Met Cys His Cys Gly Lys Gly
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Ala Lys Gly Phe Thr Pro Ile Pro Gly Thr Ile Glu Met Leu His Pro
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Trp Asn Asn Glu Gly Ala Pro Pro Glu Asp Lys Val Val Pro Ser Phe
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Leu Pro Val Asp Gln Gly Gly Ser Leu Val Gly Arg Asn Gly Val Gly
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Gly Met Ala Lys Glu Ala Thr Met Lys Gly Ser Ser Ser Ala Ser Ile
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Val Lys Gly Gln His Glu Met Ser Glu Met Asp Gly Arg Trp Glu Glu
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His Arg Ser Leu Leu Ser Gly Arg Ala Thr Gln Phe Thr Gly Ala Thr
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Gly Ala Ile Met Thr Thr Glu Thr Thr Lys Thr Ala Arg Ala Thr Gly
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Glu Glu Phe Leu Arg Asn Tyr Phe Thr Asp Lys Ala Ala Ser Tyr Thr
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Glu Glu Asp Glu Asn His Thr Ala Lys Asp Cys Leu Leu Val Tyr Ser
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Ile Glu Gly Glu Leu Asp Asp Arg Phe Leu Asp Asp Leu Gly Leu Lys
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Phe Lys Thr Leu Ala Glu Val Cys Leu Gly Gln Lys Ile Asp Ile Asn
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Ala Asn Ala Glu Lys Val Thr Gln Glu Ile Val Thr Glu Arg Ser Val
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Ser Ser Arg Gln Ala Gln Lys Val Ala Thr Pro Leu Pro Asp Pro Met
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Ala Ser Arg Asn Val Ile Ala Thr Glu Thr Ser Tyr Val Thr Gly Ser
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Thr Met Pro Pro Thr Thr Val Ile Leu Gly Pro Ser Gln Pro Gln Ser
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Leu Ile Val Thr Glu Arg Val Tyr Ala Pro Ala Ser Thr Leu Val Asp
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Gln Pro His Gly Gly Gly Ser Asn  Pro Leu Glu Gly Thr  Gln His Leu
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Gln Asp  Val Pro Tyr Val Met  Val Arg Glu Arg Glu  Ser Phe Leu
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Pro Leu  Pro Asp Phe Gly Leu  Glu Glu Ser Gly His  Ser Asn Ser
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Cys Pro Gln Asp Ser Ser Cys Val Asn Ala Thr Ala Cys Arg Cys Asn
        35                  40                  45

Pro Gly Phe Ser Ser Phe Ser Glu Ile Ile Thr Thr Pro Met Glu Thr
    50                  55                  60

Cys Asp Asp Ile Asn Glu Cys Ala Thr Leu Ser Lys Val Ser Cys Gly
65                  70                  75                  80

Lys Phe Ser Asp Cys Trp Asn Thr Glu Gly Ser Tyr Asp Cys Val Cys
                85                  90                  95

Ser Pro Gly Tyr Glu Pro Val Ser Gly Ala Lys Thr Phe Lys Asn Glu
            100                 105                 110

Ser Glu Asn Thr Cys Gln Asp Val Asp Glu Cys Gln Gln Asn Pro Arg
        115                 120                 125

Leu Cys Lys Ser Tyr Gly Thr Cys Val Asn Thr Leu Gly Ser Tyr Thr
    130                 135                 140

Cys Gln Cys Leu Pro Gly Phe Lys Leu Lys Pro Glu Asp Pro Lys Leu
145                 150                 155                 160

Cys Thr Asp Val Asn Glu Cys Thr Ser Gly Gln Asn Pro Cys His Ser
                165                 170                 175

Ser Thr His Cys Leu Asn Asn Val Gly Ser Tyr Gln Cys Arg Cys Arg
            180                 185                 190

Pro Gly Trp Gln Pro Ile Pro Gly Ser Pro Asn Gly Pro Asn Asn Thr
        195                 200                 205

Val Cys Glu Asp Val Asp Glu Cys Ser Ser Gly Gln His Gln Cys Asp
    210                 215                 220

Ser Ser Thr Val Cys Phe Asn Thr Val Gly Ser Tyr Ser Cys Arg Cys
225                 230                 235                 240

Arg Pro Gly Trp Lys Pro Arg His Gly Ile Pro Asn Asn Gln Lys Asp
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Thr Val Cys Glu Asp Met Thr Phe Ser Thr Trp Thr Pro Pro Pro Gly
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Val His Ser Gln Thr Leu Ser Arg Phe Phe Asp Lys Val Gln Asp Leu
        275                 280                 285

Gly Arg Asp Tyr Lys Pro Gly Leu Ala Asn Asn Thr Ile Gln Ser Ile
    290                 295                 300

Leu Gln Ala Leu Asp Glu Leu Leu Glu Ala Pro Gly Asp Leu Glu Thr
305                 310                 315                 320

Leu Pro Arg Leu Gln Gln His Cys Val Ala Ser His Leu Leu Asp Gly
                325                 330                 335

Leu Glu Asp Val Leu Arg Gly Leu Ser Lys Asn Leu Ser Asn Gly Leu
            340                 345                 350

Leu Asn Phe Ser Tyr Pro Ala Gly Thr Glu Leu Ser Leu Glu Val Gln
        355                 360                 365

Lys Gln Val Asp Arg Ser Val Thr Leu Arg Gln Asn Gln Ala Val Met
    370                 375                 380

Gln Leu Asp Trp Asn Gln Ala Gln Lys Ser Gly Asp Pro Gly Pro Ser
385                 390                 395                 400

Val Val Gly Leu Val Ser Ile Pro Gly Met Gly Lys Leu Leu Ala Glu
                405                 410                 415

Ala Pro Leu Val Leu Glu Pro Glu Lys Gln Met Leu Leu His Glu Thr
            420                 425                 430

His Gln Gly Leu Leu Gln Asp Gly Ser Pro Ile Leu Leu Ser Asp Val
        435                 440                 445

Ile Ser Ala Phe Leu Ser Asn Asn Asp Thr Gln Asn Leu Ser Ser Pro
    450                 455                 460

Val Thr Phe Thr Phe Ser His Arg Ser Val Ile Pro Arg Gln Lys Val
465                 470                 475                 480

Leu Cys Val Phe Trp Glu His Gly Gln Asn Gly Cys Gly His Trp Ala
                485                 490                 495

Thr Thr Gly Cys Ser Thr Ile Gly Thr Arg Asp Thr Ser Thr Ile Cys
            500                 505                 510
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Arg Cys Thr His Leu Ser Ser Phe Ala Val Leu Met Ala His Tyr Asp
        515                 520                 525

Val Gln Glu Glu Asp Pro Val Leu Thr Val Ile Thr Tyr Met Gly Leu
    530                 535                 540

Ser Val Ser Leu Leu Cys Leu Leu Leu Ala Ala Leu Thr Phe Leu Leu
545                 550                 555                 560

Cys Lys Ala Ile Gln Asn Thr Ser Thr Ser Leu His Leu Gln Leu Ser
                565                 570                 575

Leu Cys Leu Phe Leu Ala His Leu Leu Phe Leu Val Ala Ile Asp Gln
            580                 585                 590

Thr Gly His Lys Val Leu Cys Ser Ile Ile Ala Gly Thr Leu His Tyr
        595                 600                 605

Leu Tyr Leu Ala Thr Leu Thr Trp Met Leu Leu Glu Ala Leu Tyr Leu
    610                 615                 620

Phe Leu Thr Ala Arg Asn Leu Thr Val Val Asn Tyr Ser Ser Ile Asn
625                 630                 635                 640

Arg Phe Met Lys Lys Leu Met Phe Pro Val Gly Tyr Gly Val Pro Ala
                645                 650                 655

Val Thr Val Ala Ile Ser Ala Ala Ser Arg Pro His Leu Tyr Gly Thr
            660                 665                 670

Pro Ser Arg Cys Trp Leu Gln Pro Glu Lys Gly Phe Ile Trp Gly Phe
        675                 680                 685

Leu Gly Pro Val Cys Ala Ile Phe Ser Val Asn Leu Val Leu Phe Leu
    690                 695                 700

Val Thr Leu Trp Ile Leu Lys Asn Arg Leu Ser Ser Leu Asn Ser Glu
705                 710                 715                 720

Val Ser Thr Leu Arg Asn Thr Arg Met Leu Ala Phe Lys Ala Thr Ala
                725                 730                 735

Gln Leu Phe Ile Leu Gly Cys Thr Trp Cys Leu Gly Ile Leu Gln Val
            740                 745                 750

Gly Pro Ala Ala Arg Val Met Ala Tyr Leu Phe Thr Ile Ile Asn Ser
        755                 760                 765
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Leu Gln Gly Val Phe Ile Phe Leu Val Tyr Cys Leu Leu Ser Gln Gln
    770                 775                 780

Val Arg Glu Gln Tyr Gly Lys Trp Ser Lys Gly Ile Arg Lys Leu Lys
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<210> 19
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<400> 19

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aaggaaactc ttttttcacc tgtctccatt gaagaggtac cacctcgacc acctagccct      240

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Pro Ser Pro Thr Ile Cys Gly Ser Asn Tyr Pro Leu Ser Ile Ala Phe
35 40 45

Ile Val Val Asn Glu Phe Cys Glu Arg Phe Ser Tyr Tyr Gly Met Lys
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Ala Val Leu Ile Leu Tyr Phe Leu Tyr Phe Leu His Trp Asn Glu Asp
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Thr Ser Thr Ser Ile Tyr His Ala Phe Ser Ser Leu Cys Tyr Phe Thr
85 90 95

Pro Ile Leu Gly Ala Ala Ile Ala Asp Ser Trp Leu Gly Lys Phe Lys
100 105 110

Thr Ile Ile Tyr Leu Ser Leu Val Tyr Val Leu Gly His Val Ile Lys
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Ser Leu Gly Ala Leu Pro Ile Leu Gly Gly Gln Val Val His Thr Val
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Lys Pro Cys Val Ala Ala Phe Gly Gly Asp Gln Phe Glu Glu Lys His
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Ala Glu Glu Arg Thr Arg Tyr Phe Ser Val Phe Tyr Leu Ser Ile Asn
            180                 185                 190

Ala Gly Ser Leu Ile Ser Thr Phe Ile Thr Pro Met Leu Arg Gly Asp
        195                 200                 205

Val Gln Cys Phe Gly Glu Asp Cys Tyr Ala Leu Ala Phe Gly Val Pro
    210                 215                 220

Gly Leu Leu Met Val Ile Ala Leu Val Val Phe Ala Met Gly Ser Lys
225                 230                 235                 240

Ile Tyr Asn Lys Pro Pro Pro Glu Gly Asn Ile Val Ala Gln Val Phe
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Lys Cys Ile Trp Phe Ala Ile Ser Asn Arg Phe Lys Asn Arg Ser Gly
            260                 265                 270

Asp Ile Pro Lys Arg Gln His Trp Leu Asp Trp Ala Ala Glu Lys Tyr
        275                 280                 285

Pro Lys Gln Leu Ile Met Asp Val Lys Ala Leu Thr Arg Val Leu Phe
    290                 295                 300

Leu Tyr Ile Pro Leu Pro Met Phe Trp Ala Leu Leu Asp Gln Gln Gly
305                 310                 315                 320

Ser Arg Trp Thr Leu Gln Ala Ile Arg Met Asn Arg Asn Leu Gly Phe
                325                 330                 335

Phe Val Leu Gln Pro Asp Gln Met Gln Val Leu Asn Pro Leu Leu Val
            340                 345                 350

Leu Ile Phe Ile Pro Leu Phe Asp Phe Val Ile Tyr Arg Leu Val Ser
        355                 360                 365

Lys Cys Gly Ile Asn Phe Ser Ser Leu Arg Lys Met Ala Val Gly Met
    370                 375                 380

Ile Leu Ala Cys Leu Ala Phe Ala Val Ala Ala Ala Val Glu Ile Lys
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Ile Asn Glu Met Ala Pro Ala Gln Pro Gly Pro Gln Glu Val Phe Leu
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Gln Val Leu Asn Leu Ala Asp Asp Glu Val Lys Val Thr Val Val Gly
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Thr Pro His Tyr Ser Lys Leu His Leu Lys Thr Lys Ser Gln Asp Phe
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His Phe His Leu Lys Tyr His Asn Leu Ser Leu Tyr Thr Glu His Ser
465 470 475 480

Val Gln Glu Lys Asn Trp Tyr Ser Leu Val Ile Arg Glu Asp Gly Asn
485 490 495

Ser Ile Ser Ser Met Met Val Lys Asp Thr Glu Ser Arg Thr Thr Asn
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Gly Met Thr Thr Val Arg Phe Val Asn Thr Leu His Lys Asp Val Asn
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Val Ser Ala Tyr Arg Thr Val Gln Arg Gly Glu Tyr Pro Ala Val His
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Cys Arg Thr Glu Asp Lys Asn Phe Ser Leu Asn Leu Gly Leu Leu Asp
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Phe Gly Ala Ala Tyr Leu Phe Val Ile Thr Asn Asn Thr Asn Gln Gly
580 585 590

Leu Gln Ala Trp Lys Ile Glu Asp Ile Pro Ala Asn Lys Met Ser Ile
595 600 605

Ala Trp Gln Leu Pro Gln Tyr Ala Leu Val Thr Ala Gly Glu Val Met
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Phe Ser Val Thr Gly Leu Glu Phe Ser Tyr Ser Gln Ala Pro Ser Ser
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Met Lys Ser Val Leu Gln Ala Ala Trp Leu Leu Thr Ile Ala Val Gly
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Asn Ile Ile Val Leu Val Val Ala Gln Phe Ser Gly Leu Val Gln Trp
            660                 665                 670

Ala Glu Phe Ile Leu Phe Ser Cys Leu Leu Leu Val Ile Cys Leu Ile
        675                 680                 685

Phe Ser Ile Met Gly Tyr Tyr Tyr Val Pro Val Lys Thr Glu Asp Met
    690                 695                 700

Arg Gly Pro Ala Asp Lys His Ile Pro His Ile Gln Gly Asn Met Ile
705                 710                 715                 720

Lys Leu Glu Thr Lys Lys Thr Lys Leu
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<212> DNA
<213> Homo sapiens

<400> 21

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cccctcgcca cagtcctgag caatcgtttc ggacaccgtc tggtagtgat gttgggggg       480

ctacttgtca gcaccgggat ggtggccgcc tccttctcac aagaggtttc tcatatgtac      540

gtcgccatcg gcatcatctc tggtctggga tactgcttta gttttctccc aactgtaacc      600

atcctatcac aatattttgg caaaagacgt tccatagtca ctgcagttgc ttccacagga      660

gaatgtttcg ctgtgtttgc tttcgcacca gcaatcatgg ctctgaagga gcgcattggc      720

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cggaaagaag cgcagtatat gcttgaaaat gagaaaacac gaacctcaat agactccatt      900

gactcaggag tagaactaac tacctcacct aaaaatgtgc ctactcacac taacctggaa      960

ctggagccga aggccgacat gcagcaggtc ctggtgaaga ccagccccag gccaagcgaa     1020
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aaccaagcac tcttccatat ataaatctgg ctgtattcag tagcaataca agagatatgt 2040

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<210> 22
<211> 523
<212> PRT
<213> Homo sapiens

<400> 22

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20 25 30

Phe Val Glu Val Phe Thr Tyr Gly Ile Ile Lys Thr Phe Gly Val Phe
35 40 45

Phe Asn Asp Leu Met Asp Ser Phe Asn Glu Ser Asn Ser Arg Ile Ser
50 55 60

Trp Ile Ile Ser Ile Cys Val Phe Val Leu Thr Phe Ser Ala Pro Leu
65 70 75 80

Ala Thr Val Leu Ser Asn Arg Phe Gly His Arg Leu Val Val Met Leu
85 90 95

```
Gly Gly Leu Leu Val Ser Thr Gly Met Val Ala Ala Ser Phe Ser Gln
            100                 105                 110

Glu Val Ser His Met Tyr Val Ala Ile Gly Ile Ile Ser Gly Leu Gly
        115                 120                 125

Tyr Cys Phe Ser Phe Leu Pro Thr Val Thr Ile Leu Ser Gln Tyr Phe
    130                 135                 140

Gly Lys Arg Arg Ser Ile Val Thr Ala Val Ala Ser Thr Gly Glu Cys
145                 150                 155                 160

Phe Ala Val Phe Ala Phe Ala Pro Ala Ile Met Ala Leu Lys Glu Arg
                165                 170                 175

Ile Gly Trp Arg Tyr Ser Leu Leu Phe Val Gly Leu Leu Gln Leu Asn
            180                 185                 190

Ile Val Ile Phe Gly Ala Leu Leu Arg Pro Ile Phe Ile Arg Gly Pro
        195                 200                 205

Ala Ser Pro Lys Ile Val Ile Gln Glu Asn Arg Lys Glu Ala Gln Tyr
    210                 215                 220

Met Leu Glu Asn Glu Lys Thr Arg Thr Ser Ile Asp Ser Ile Asp Ser
225                 230                 235                 240

Gly Val Glu Leu Thr Thr Ser Pro Lys Asn Val Pro Thr His Thr Asn
                245                 250                 255

Leu Glu Leu Glu Pro Lys Ala Asp Met Gln Gln Val Leu Val Lys Thr
            260                 265                 270

Ser Pro Arg Pro Ser Glu Lys Lys Ala Pro Leu Leu Asp Phe Ser Ile
        275                 280                 285

Leu Lys Glu Lys Ser Phe Ile Cys Tyr Ala Leu Phe Gly Leu Phe Ala
    290                 295                 300

Thr Leu Gly Phe Phe Ala Pro Ser Leu Tyr Ile Ile Pro Leu Gly Ile
305                 310                 315                 320

Ser Leu Gly Ile Asp Gln Asp Arg Ala Ala Phe Leu Leu Ser Thr Met
                325                 330                 335

Ala Ile Ala Glu Val Phe Gly Arg Ile Gly Ala Gly Phe Val Leu Asn
            340                 345                 350
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Arg Glu Pro Ile Arg Lys Ile Tyr Ile Glu Leu Ile Cys Val Ile Leu
        355                 360                 365

Leu Thr Val Ser Leu Phe Ala Phe Thr Phe Ala Thr Glu Phe Trp Gly
    370                 375                 380

Leu Met Ser Cys Ser Ile Phe Phe Gly Phe Met Val Gly Thr Ile Gly
385                 390                 395                 400

Gly Thr His Ile Pro Leu Leu Ala Glu Asp Asp Val Val Gly Ile Glu
                405                 410                 415

Lys Met Ser Ser Ala Ala Gly Val Tyr Ile Phe Ile Gln Ser Ile Ala
            420                 425                 430

Gly Leu Ala Gly Pro Pro Leu Ala Gly Leu Leu Val Asp Gln Ser Lys
        435                 440                 445

Ile Tyr Ser Arg Ala Phe Tyr Ser Cys Ala Ala Gly Met Ala Leu Ala
    450                 455                 460

Ala Val Cys Leu Ala Leu Val Arg Pro Cys Lys Met Gly Leu Cys Gln
465                 470                 475                 480

His His His Ser Gly Glu Thr Lys Val Val Ser His Arg Gly Lys Thr
                485                 490                 495

Leu Gln Asp Ile Pro Glu Asp Phe Leu Glu Met Asp Leu Ala Lys Asn
            500                 505                 510

Glu His Arg Val His Val Gln Met Glu Pro Val
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<210> 23
<211> 3400
<212> DNA
<213> Homo sapiens

<400> 23

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cttccgcctt cggcttcccc ttctgccaag agccctgagc cactcacagc acgaccagag      180

aacaggcctg tctcaggcag gccctgcgcc tcctatgcgg agatgctact gccactgctg      240

ctgtcctcgc tgctgggcgg gtcccaggct atggatggga gattctggat acgagtgcag      300

gagtcagtga tggtgccgga gggcctgtgc atctctgtgc cctgctcttt ctcctacccc      360
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acaaccaagg gtgctcctgt ggccacaaac caccagagtc gagaggtgga aatgagcacc 480

cggggccgat tccagctcac tggggatccc gccaagggga actgctcctt ggtgatcaga 540

gacgcgcaga tgcaggatga gtcacagtac ttctttcggg tggagagagg aagctatgtg 600

agatataatt tcatgaacga tgggttcttt ctaaaagtaa cagccctgac tcagaagcct 660

gatgtctaca tccccgagac cctggagccc gggcagccgg tgacggtcat ctgtgtgttt 720

aactgggcct ttgaggaatg tccaccccct tctttctcct ggacgggggc tgccctctcc 780

tcccaaggaa ccaaaccaac gacctcccac ttctcagtgc tcagcttcac gcccagaccc 840

caggaccaca acaccgacct cacctgccat gtggacttct ccagaaaggg tgtgagcgca 900

cagaggaccg tccgactccg tgtggcctat gcccccagag accttgttat cagcatttca 960

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<210> 24
<211> 697
<212> PRT
<213> Homo sapiens

<400> 24

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Met Asp Gly Arg Phe Trp Ile Arg Val Gln Glu Ser Val Met Val Pro
20 25 30

Glu Gly Leu Cys Ile Ser Val Pro Cys Ser Phe Ser Tyr Pro Arg Gln
35 40 45

Asp Trp Thr Gly Ser Thr Pro Ala Tyr Gly Tyr Trp Phe Lys Ala Val
50 55 60

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Thr Glu Thr Thr Lys Gly Ala Pro Val Ala Thr Asn His Gln Ser Arg
65                  70                  75                  80

Glu Val Glu Met Ser Thr Arg Gly Arg Phe Gln Leu Thr Gly Asp Pro
                85                  90                  95

Ala Lys Gly Asn Cys Ser Leu Val Ile Arg Asp Ala Gln Met Gln Asp
            100                 105                 110

Glu Ser Gln Tyr Phe Phe Arg Val Glu Arg Gly Ser Tyr Val Arg Tyr
        115                 120                 125

Asn Phe Met Asn Asp Gly Phe Phe Leu Lys Val Thr Ala Leu Thr Gln
    130                 135                 140

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

Thr Val Ile Cys Val Phe Asn Trp Ala Phe Glu Glu Cys Pro Pro Pro
                165                 170                 175

Ser Phe Ser Trp Thr Gly Ala Ala Leu Ser Ser Gln Gly Thr Lys Pro
            180                 185                 190

Thr Thr Ser His Phe Ser Val Leu Ser Phe Thr Pro Arg Pro Gln Asp
        195                 200                 205

His Asn Thr Asp Leu Thr Cys His Val Asp Phe Ser Arg Lys Gly Val
    210                 215                 220

Ser Ala Gln Arg Thr Val Arg Leu Arg Val Ala Tyr Ala Pro Arg Asp
225                 230                 235                 240

Leu Val Ile Ser Ile Ser Arg Asp Asn Thr Pro Ala Leu Glu Pro Gln
                245                 250                 255

Pro Gln Gly Asn Val Pro Tyr Leu Glu Ala Gln Lys Gly Gln Phe Leu
            260                 265                 270

Arg Leu Leu Cys Ala Ala Asp Ser Gln Pro Pro Ala Thr Leu Ser Trp
        275                 280                 285

Val Leu Gln Asn Arg Val Leu Ser Ser Ser His Pro Trp Gly Pro Arg
    290                 295                 300

Pro Leu Gly Leu Glu Leu Pro Gly Val Lys Ala Gly Asp Ser Gly Arg
305                 310                 315                 320
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Tyr Thr Cys Arg Ala Glu Asn Arg Leu Gly Ser Gln Gln Arg Ala Leu
                325                 330                 335

Asp Leu Ser Val Gln Tyr Pro Pro Glu Asn Leu Arg Val Met Val Ser
            340                 345                 350

Gln Ala Asn Arg Thr Val Leu Glu Asn Leu Gly Asn Gly Thr Ser Leu
        355                 360                 365

Pro Val Leu Glu Gly Gln Ser Leu Cys Leu Val Cys Val Thr His Ser
    370                 375                 380

Ser Pro Pro Ala Arg Leu Ser Trp Thr Gln Arg Gly Gln Val Leu Ser
385                 390                 395                 400

Pro Ser Gln Pro Ser Asp Pro Gly Val Leu Glu Leu Pro Arg Val Gln
                405                 410                 415

Val Glu His Glu Gly Glu Phe Thr Cys His Ala Arg His Pro Leu Gly
            420                 425                 430

Ser Gln His Val Ser Leu Ser Leu Ser Val His Tyr Ser Pro Lys Leu
        435                 440                 445

Leu Gly Pro Ser Cys Ser Trp Glu Ala Glu Gly Leu His Cys Ser Cys
    450                 455                 460

Ser Ser Gln Ala Ser Pro Ala Pro Ser Leu Arg Trp Trp Leu Gly Glu
465                 470                 475                 480

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

Ser Ser Ala Gly Pro Trp Ala Asn Ser Ser Leu Ser Leu His Gly Gly
            500                 505                 510

Leu Ser Ser Gly Leu Arg Leu Arg Cys Glu Ala Trp Asn Val His Gly
        515                 520                 525

Ala Gln Ser Gly Ser Ile Leu Gln Leu Pro Asp Lys Lys Gly Leu Ile
    530                 535                 540

Ser Thr Ala Phe Ser Asn Gly Ala Phe Leu Gly Ile Gly Ile Thr Ala
545                 550                 555                 560

Leu Leu Phe Leu Cys Leu Ala Leu Ile Ile Met Lys Ile Leu Pro Lys
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565 570 575

Arg Arg Thr Gln Thr Glu Thr Pro Arg Pro Arg Phe Ser Arg His Ser
580 585 590

Thr Ile Leu Asp Tyr Ile Asn Val Val Pro Thr Ala Gly Pro Leu Ala
595 600 605

Gln Lys Arg Asn Gln Lys Ala Thr Pro Asn Ser Pro Arg Thr Pro Leu
610 615 620

Pro Pro Gly Ala Pro Ser Pro Glu Ser Lys Lys Asn Gln Lys Lys Gln
625 630 635 640

Tyr Gln Leu Pro Ser Phe Pro Glu Pro Lys Ser Ser Thr Gln Ala Pro
645 650 655

Glu Ser Gln Glu Ser Gln Glu Glu Leu His Tyr Ala Thr Leu Asn Phe
660 665 670

Pro Gly Val Arg Pro Arg Pro Glu Ala Arg Met Pro Lys Gly Thr Gln
675 680 685

Ala Asp Tyr Ala Glu Val Lys Phe Gln
690 695

<210> 25
<211> 2122
<212> DNA
<213> Homo sapiens

<400> 25
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acacaagtga ggaattgtcc aaagccataa ccttgattgg agagaacatg gtacctctca 1620

gtgtattggt tactagggct gccacagcaa tgtaccacaa accgagtgac ataaacacag 1680

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catattggat tagggcctcc ccatgaccta atttaaataa attaactatt taaagaccct 1920

ccaaatacag taaccttctg agatattgag atttaggact tccaacatat gaattttaga 1980

agggaacaat ttagcccata acactgtgtc caattctttt aaaattaatg tttttgttgt 2040

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<210> 26
<211> 453
<212> PRT
<213> Homo sapiens

<400> 26

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Leu Pro Leu Leu Trp Ala Gly Ala Leu Ala Gln Glu Arg Arg Phe Gln

```
            20                  25                  30

Leu Glu Gly Pro Glu Ser Leu Thr Val Gln Glu Gly Leu Cys Val Leu
        35                  40                  45

Val Pro Cys Arg Leu Pro Thr Thr Leu Pro Ala Ser Tyr Tyr Gly Tyr
    50                  55                  60

Gly Tyr Trp Phe Leu Glu Gly Ala Asp Val Pro Val Ala Thr Asn Asp
65                  70                  75                  80

Pro Asp Glu Glu Val Gln Glu Glu Thr Arg Gly Arg Phe His Leu Leu
                85                  90                  95

Trp Asp Pro Arg Arg Lys Asn Cys Ser Leu Ser Ile Arg Asp Ala Arg
            100                 105                 110

Arg Arg Asp Asn Ala Ala Tyr Phe Phe Arg Leu Lys Ser Lys Trp Met
        115                 120                 125

Lys Tyr Gly Tyr Thr Ser Ser Lys Leu Ser Val Arg Val Met Ala Leu
    130                 135                 140

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

Pro Ser Asn Leu Thr Cys Ser Val Pro Trp Val Cys Glu Gln Gly Thr
                165                 170                 175

Pro Pro Ile Phe Ser Trp Met Ser Ala Ala Pro Thr Ser Leu Gly Pro
            180                 185                 190

Arg Thr Thr Gln Ser Ser Val Leu Thr Ile Thr Pro Arg Pro Gln Asp
        195                 200                 205

His Ser Thr Asn Leu Thr Cys Gln Val Thr Phe Pro Gly Ala Gly Val
    210                 215                 220

Thr Met Glu Arg Thr Ile Gln Leu Asn Val Ser Tyr Ala Pro Gln Lys
225                 230                 235                 240

Val Ala Ile Ser Ile Phe Gln Gly Asn Ser Ala Ala Phe Lys Ile Leu
                245                 250                 255

Gln Asn Thr Ser Ser Leu Pro Val Leu Glu Gly Gln Ala Leu Arg Leu
            260                 265                 270
```

```
Leu Cys Asp Ala Asp Gly Asn Pro Pro Ala His Leu Ser Trp Phe Gln
        275                 280                 285

Gly Phe Pro Ala Leu Asn Ala Thr Pro Ile Ser Asn Thr Gly Val Leu
    290                 295                 300

Glu Leu Pro Gln Val Gly Ser Ala Glu Glu Gly Asp Phe Thr Cys Arg
305                 310                 315                 320

Ala Gln His Pro Leu Gly Ser Leu Gln Ile Ser Leu Ser Leu Phe Val
                325                 330                 335

His Trp Lys Pro Glu Gly Arg Ala Gly Gly Val Leu Gly Ala Val Trp
            340                 345                 350

Gly Ala Ser Ile Thr Thr Leu Val Phe Leu Cys Val Cys Phe Ile Phe
        355                 360                 365

Arg Val Lys Thr Arg Arg Lys Lys Ala Ala Gln Pro Val Gln Asn Thr
    370                 375                 380

Asp Asp Val Asn Pro Val Met Val Ser Gly Ser Arg Gly His Gln His
385                 390                 395                 400

Gln Phe Gln Thr Gly Ile Val Ser Asp His Pro Ala Glu Ala Gly Pro
                405                 410                 415

Ile Ser Glu Asp Glu Gln Glu Leu His Tyr Ala Val Leu His Phe His
            420                 425                 430

Lys Val Gln Pro Gln Glu Pro Lys Val Thr Asp Thr Glu Tyr Ser Glu
        435                 440                 445

Ile Lys Ile His Lys
    450
```

<210> 27
<211> 1270
<212> DNA
<213> Homo sapiens

<400> 27

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agacgttcgc acacctgggt gccagcgccc cagaggtccc gggacagccc gaggcgccgc       60

gcccgccgcc ccgagctccc caagccttcg agagcggcgc acactcccgg tctccactcg      120

ctcttccaac acccgctcgt tttggcggca gctcgtgtcc cagagaccga gttgccccag      180

agaccgagac gccgccgctg cgaaggacca atgagagccc cgctgctacc gccggcgccg      240

gtggtgctgt cgctcttgat actcggctca ggccattatg ctgctggatt ggacctcaat      300
```

gacacctact ctgggaagcg tgaaccattt tctggggacc acagtgctga tggatttgag 360

gttacctcaa gaagtgagat gtcttcaggg agtgagattt cccctgtgag tgaaatgcct 420

tctagtagtg aaccgtcctc gggagccgac tatgactact cagaagagta tgataacgaa 480

ccacaaatac ctggctatat tgtcgatgat tcagtcagag ttgaacaggt agttaagccc 540

ccccaaaaca agacggaaag tgaaaatact tcagataaac ccaaaagaaa gaaaaaggga 600

ggcaaaaatg gaaaaaatag aagaaacaga aagaagaaaa atccatgtaa tgcagaattt 660

caaaatttct gcattcacgg agaatgcaaa tatatagagc acctggaagc agtaacatgc 720

aaatgtcagc aagaatattt cggtgaacgg tgtggggaaa agtccatgaa aactcacagc 780

atgattgaca gtagtttatc aaaaattgca ttagcagcca tagctgcctt tatgtctgct 840

gtgatcctca cagctgttgc tgttattaca gtccagctta gaagacaata cgtcaggaaa 900

tatgaaggag aagctgagga acgaaagaaa cttcgacaag agaatggaaa tgtacatgct 960

atagcataac tgaagataaa attacaggat atcacattgg agtcactgcc aagtcatagc 1020

cataaatgat gagtcggtcc tctttccagt ggatcataag acaatggacc ctttttgtta 1080

tgatggtttt aaactttcaa ttgtcacttt ttatgctatt tctgtatata aaggtgcacg 1140

aaggtaaaaa gtatttttc aagttgtaaa taatttattt aatatttaat ggaagtgtat 1200

ttattttaca gctcattaaa ctttttaac caaacagaaa aaaaaaaaaa aaaaaaaaaa 1260

aaaaaaaaaa 1270

<210> 28
<211> 252
<212> PRT
<213> Homo sapiens

<400> 28

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

Ile Leu Gly Ser Gly His Tyr Ala Ala Gly Leu Asp Leu Asn Asp Thr
20 25 30

Tyr Ser Gly Lys Arg Glu Pro Phe Ser Gly Asp His Ser Ala Asp Gly
35 40 45

Phe Glu Val Thr Ser Arg Ser Glu Met Ser Ser Gly Ser Glu Ile Ser
50 55 60

Pro Val Ser Glu Met Pro Ser Ser Ser Glu Pro Ser Ser Gly Ala Asp
65 70 75 80

```
Tyr Asp Tyr Ser Glu Glu Tyr Asp Asn Glu Pro Gln Ile Pro Gly Tyr
                85                  90                  95

Ile Val Asp Asp Ser Val Arg Val Glu Gln Val Val Lys Pro Pro Gln
            100                 105                 110

Asn Lys Thr Glu Ser Glu Asn Thr Ser Asp Lys Pro Lys Arg Lys Lys
        115                 120                 125

Lys Gly Gly Lys Asn Gly Lys Asn Arg Arg Asn Arg Lys Lys Lys Asn
    130                 135                 140

Pro Cys Asn Ala Glu Phe Gln Asn Phe Cys Ile His Gly Glu Cys Lys
145                 150                 155                 160

Tyr Ile Glu His Leu Glu Ala Val Thr Cys Lys Cys Gln Gln Glu Tyr
                165                 170                 175

Phe Gly Glu Arg Cys Gly Glu Lys Ser Met Lys Thr His Ser Met Ile
            180                 185                 190

Asp Ser Ser Leu Ser Lys Ile Ala Leu Ala Ala Ile Ala Ala Phe Met
        195                 200                 205

Ser Ala Val Ile Leu Thr Ala Val Ala Val Ile Thr Val Gln Leu Arg
    210                 215                 220

Arg Gln Tyr Val Arg Lys Tyr Glu Gly Glu Ala Glu Glu Arg Lys Lys
225                 230                 235                 240

Leu Arg Gln Glu Asn Gly Asn Val His Ala Ile Ala
                245                 250
```

<210> 29
<211> 1851
<212> DNA
<213> Homo sapiens

<400> 29

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gtgcaggtga ggcacgttta gcctgagccg gccacggact ccacttcccc tgctcttccc       60

ccagtggcaa atccgcgcca cctcgcaaac ccccaactca ggcacttggg ccccttttgg      120

gccccctctc gctcctccct ttaggcacct ccctgggccc gcccacggtc tccccccagt      180

ttgggactgc gtcataagta tcccagacct cggcttgcag tagtgttaga ctgaagataa      240

agtaagtgct gtttgggcta acaggatctc ctcttgcagt ctgcagccca ggacgctgat      300

tccagcagcg ccttaccgcg cagcccgaag attcactatg gtgaaaatcg ccttcaatac      360

ccctaccgcc gtgcaaaagg aggaggcgcg gcaagacgtg gaggccctcc tgagccgcac      420
```

ggtcagaact cagatactga ccggcaagga gctccgagtt gccacccagg aaaaagaggg 480

ctcctctggg agatgtatgc ttactctctt aggcctttca ttcatcttgg caggacttat 540

tgttggtgga gcctgcattt acaagtactt catgcccaag agcaccattt accgtggaga 600

gatgtgcttt tttgattctg aggatcctgc aaattccctt cgtggaggag agcctaactt 660

cctgcctgtg actgaggagg ctgacattcg tgaggatgac aacattgcaa tcattgatgt 720

gcctgtcccc agtttctctg atagtgaccc tgcagcaatt attcatgact ttgaaaaggg 780

aatgactgct tacctggact tgttgctggg gaactgctat ctgatgcccc tcaatacttc 840

tattgttatg cctccaaaaa atctggtaga gctctttggc aaactggcga gtggcagata 900

tctgcctcaa acttatgtgg ttcgagaaga cctagttgct gtggaggaaa ttcgtgatgt 960

tagtaacctt ggcatcttta tttaccaact ttgcaataac agaaagtcct tccgccttcg 1020

tcgcagagac ctcttgctgg gtttcaacaa acgtgccatt gataaatgct ggaagattag 1080

acacttcccc aacgaattta ttgttgagac caagatctgt caagagtaag aggcaacaga 1140

tagagtgtcc ttggtaataa gaagtcagag atttacaata tgactttaac attaaggttt 1200

atgggatact caagatattt actcatgcat ttactctatt gcttatgctt taaaaaaagg 1260

aaaaaaaaaa actactaacc actgcaagct cttgtcaaat tttagtttaa ttggcattgc 1320

ttgtttttg aaactgaaat tacatgagtt tcatttttc tttgaattta tagggtttag 1380

atttctgaaa gcagcatgaa tatatcacct aacatcctga caataaattc catccgttgt 1440

ttttttgtt tgtttgtttt ttcttttcct ttaagtaagc tctttattca tcttatggtg 1500

gagcaatttt aaaatttgaa atattttaaa ttgtttttga acttttgtg taaaatatat 1560

cagatctcaa cattgttggt ttcttttgtt tttcattttg tacaactttc ttgaatttag 1620

aaattacatc tttgcagttc tgttaggtgc tctgtaatta acctgactta tatgtgaaca 1680

attttcatga gacagtcatt tttaactaat gcagtgattc tttctcacta ctatctgtat 1740

tgtggaatgc acaaaattgt gtaggtgctg aatgctgtaa ggagtttagg ttgtatgaat 1800

tctacaaccc tataataaat tttactctat acaaaaaaaa aaaaaaaaaa a 1851

<210> 30
<211> 263
<212> PRT
<213> Homo sapiens

<400> 30

Met Val Lys Ile Ala Phe Asn Thr Pro Thr Ala Val Gln Lys Glu Glu
1 5 10 15

Ala Arg Gln Asp Val Glu Ala Leu Leu Ser Arg Thr Val Arg Thr Gln
20 25 30

```
Ile Leu Thr Gly Lys Glu Leu Arg Val Ala Thr Gln Glu Lys Glu Gly
        35                  40                  45

Ser Ser Gly Arg Cys Met Leu Thr Leu Leu Gly Leu Ser Phe Ile Leu
    50                  55                  60

Ala Gly Leu Ile Val Gly Gly Ala Cys Ile Tyr Lys Tyr Phe Met Pro
65                  70                  75                  80

Lys Ser Thr Ile Tyr Arg Gly Glu Met Cys Phe Phe Asp Ser Glu Asp
                85                  90                  95

Pro Ala Asn Ser Leu Arg Gly Gly Glu Pro Asn Phe Leu Pro Val Thr
            100                 105                 110

Glu Glu Ala Asp Ile Arg Glu Asp Asp Asn Ile Ala Ile Ile Asp Val
        115                 120                 125

Pro Val Pro Ser Phe Ser Asp Ser Asp Pro Ala Ala Ile Ile His Asp
    130                 135                 140

Phe Glu Lys Gly Met Thr Ala Tyr Leu Asp Leu Leu Leu Gly Asn Cys
145                 150                 155                 160

Tyr Leu Met Pro Leu Asn Thr Ser Ile Val Met Pro Pro Lys Asn Leu
                165                 170                 175

Val Glu Leu Phe Gly Lys Leu Ala Ser Gly Arg Tyr Leu Pro Gln Thr
            180                 185                 190

Tyr Val Val Arg Glu Asp Leu Val Ala Val Glu Glu Ile Arg Asp Val
        195                 200                 205

Ser Asn Leu Gly Ile Phe Ile Tyr Gln Leu Cys Asn Asn Arg Lys Ser
    210                 215                 220

Phe Arg Leu Arg Arg Arg Asp Leu Leu Leu Gly Phe Asn Lys Arg Ala
225                 230                 235                 240

Ile Asp Lys Cys Trp Lys Ile Arg His Phe Pro Asn Glu Phe Ile Val
                245                 250                 255

Glu Thr Lys Ile Cys Gln Glu
            260
```

<210> 31

<211> 3219
<212> DNA
<213> Homo sapiens

<400> 31
actgtaggca ccaccgggcg ccgaatggct gttttctaac tgggatcctc ggtgacgtat 60

ggctgcctgc cccttggcag ctgtctttat ggaccagtag gcagagcgaa attgacgctg 120

acaagacttt tgcatcttgg aagggactgt aatctactgt agtgaagaac agagcctctc 180

aatcagacgg gtgtaaataa gagacggagg ggagtccaaa agaaaaggaa gaggaggaaa 240

aacaagtgtg tgttgggggg aacaggggga aaagcatttt tggtggatgg tatgaagcca 300

gccatggaaa ctgcagccga ggaaaatact gaacaaagcc aagagagaaa agtgaacagc 360

agagctgaaa tggaaattgg caggtaccac tggatgtacc caggctcaaa gaaccaccag 420

taccatcccg tgccaaccct gggggacagg gctagcccct tgagcagtcc aggctgcttt 480

gaatgctgca tcaagtgtct gggaggagtc ccctacgcct ccctggtggc caccatcctc 540

tgcttctccg gggtggcctt attctgcggc tgtgggcatg tggctctcgc aggcaccgtg 600

gcgattcttg agcaacactt ctccaccaac gccagtgacc atgccttgct gagcgaggtg 660

atacaactga tgcagtatgt catctatgga attgcgtcct ttttcttctt gtatgggatc 720

attctgttgg cagaaggctt ttacaccaca agtgcagtga aagaactgca cggtgagttt 780

aaaacaaccg cttgtggccg atgcatcagt ggaatgttcg ttttcctcac ctatgtgctt 840

ggagtggcct ggctgggtgt gtttggtttc tcagcggtgc ccgtgtttat gttctacaac 900

atatggtcaa cttgtgaagt catcaagtca ccgcagacca acgggaccac gggtgtggag 960

cagatctgtg tggatatccg acaatacggt atcattcctt ggaatgcttt ccccggaaaa 1020

atatgtggct ctgccctgga gaacatctgc aacacaaacg agttctacat gtcctatcac 1080

ctgttcattg tggcctgtgc aggagctggt gccaccgtca ttgccctgat ccacttcctc 1140

atgatactgt cttctaactg ggcttactta aaggatgcga gcaaaatgca ggcttaccag 1200

gatatcaaag caaaggaaga acaggaactg caagatatcc agtctcggtc aaaagaacaa 1260

ctcaattctt acacataaat gtttgccaga gtgtttcggc cgacgtattt acagctctga 1320

caaatcatca gacagctgct ctgcagtaca gatgtgtatc ccaccaaact aatgtagatg 1380

tacaaacact tcactgtctg tctcaagctg ctgggatgta tctctaggaa aaccttccag 1440

tgggtaaatc tttttcttta gaacaaatat tggaggtttc atgttagcca ttttaaaagg 1500

caacactttg acaaaatgat cgttcatact ttgggaattt gtggcatgtt cacatttatt 1560

gctagggcaa ttctaccaag acactcaatg gaatatgtca cactccttaa tagggacctg 1620

tgactcctta ataaggacct gtgacatgcc cagcatcaag ggataagacc gtaaattcac 1680

atatatgcca tctgtcctca agtgttatct acataggaaa taaaatggaa ttgatgtaaa 1740

gttccatttc tgacagctga catttattaa actttggatc aaagataatg tgattcttat 1800

gattgatttc tcaaactagc ttttccctcc caagtccagg acccattaat ttcctgagcc 1860

aatcagaaat atatttttca ataatgctaa aattagctac aattctgctg accctactat 1920

taaagaatct ggatgctgga ctcactgaca agctttccag aagcaatttt ataacagatt 1980

tcattttaac aaaatactga tccaattttc attattcttg agaaatgtca gctttgcctt 2040

aatgagtatt tgctttaaat ttctaagaat ttatatcata actagagacc caaatatctt 2100

tcacagaatt ttgttccata aatgtttttc ttaattatta agaagtgtta ccttattaaa 2160

atgaccacca ttctaaacca tttttcagtg gtctggatac gaagtttaca gtttcatacc 2220

aactatctaa aacctaattg caaattgacc acagacctct aacctcctac ttttatagac 2280

ttgaatactt aagtaattta aattagggtt ggtatttcat ttttttctta tctaaatctt 2340

agtttcctgg aataataaag tttgatgttc agcaagagaa ctgcttgagt ttaagccatt 2400

ttcaaaagaa acttgccttt tacattattg tgttccagaa cattaagtga ctgtaggtac 2460

tgggtattag tgatggtaaa ctttgtgttg ctctttatga aatgatccat ataactgttg 2520

ggtgcatcag tgcttttcaa aggggctgct tactataggg ttaactatgt atattcattg 2580

ttaagagtta acttgtggtt tggctgtttc ctggatttta taacatacat gtgcagaaat 2640

gtattcaaat gaaaggaagc atacctttat caagatgcta ttaaaattga acatcaagta 2700

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taatagtcaa tacttgtgta tgcttatttt aaagatctat ttaggtggaa atagttgtgg 3180

atgtactaag agtaatgaaa taaaattata gcttcaaaa 3219

<210> 32
<211> 328
<212> PRT
<213> Homo sapiens

<400> 32

Met Lys Pro Ala Met Glu Thr Ala Ala Glu Glu Asn Thr Glu Gln Ser
1 5 10 15

Gln Glu Arg Lys Val Asn Ser Arg Ala Glu Met Glu Ile Gly Arg Tyr

```
            20                  25                  30

His Trp Met Tyr Pro Gly Ser Lys Asn His Gln Tyr His Pro Val Pro
        35                  40                  45

Thr Leu Gly Asp Arg Ala Ser Pro Leu Ser Ser Pro Gly Cys Phe Glu
    50                  55                  60

Cys Cys Ile Lys Cys Leu Gly Gly Val Pro Tyr Ala Ser Leu Val Ala
65                  70                  75                  80

Thr Ile Leu Cys Phe Ser Gly Val Ala Leu Phe Cys Gly Cys Gly His
                85                  90                  95

Val Ala Leu Ala Gly Thr Val Ala Ile Leu Glu Gln His Phe Ser Thr
            100                 105                 110

Asn Ala Ser Asp His Ala Leu Leu Ser Glu Val Ile Gln Leu Met Gln
        115                 120                 125

Tyr Val Ile Tyr Gly Ile Ala Ser Phe Phe Phe Leu Tyr Gly Ile Ile
    130                 135                 140

Leu Leu Ala Glu Gly Phe Tyr Thr Thr Ser Ala Val Lys Glu Leu His
145                 150                 155                 160

Gly Glu Phe Lys Thr Thr Ala Cys Gly Arg Cys Ile Ser Gly Met Phe
                165                 170                 175

Val Phe Leu Thr Tyr Val Leu Gly Val Ala Trp Leu Gly Val Phe Gly
            180                 185                 190

Phe Ser Ala Val Pro Val Phe Met Phe Tyr Asn Ile Trp Ser Thr Cys
        195                 200                 205

Glu Val Ile Lys Ser Pro Gln Thr Asn Gly Thr Thr Gly Val Glu Gln
    210                 215                 220

Ile Cys Val Asp Ile Arg Gln Tyr Gly Ile Ile Pro Trp Asn Ala Phe
225                 230                 235                 240

Pro Gly Lys Ile Cys Gly Ser Ala Leu Glu Asn Ile Cys Asn Thr Asn
                245                 250                 255

Glu Phe Tyr Met Ser Tyr His Leu Phe Ile Val Ala Cys Ala Gly Ala
            260                 265                 270
```

```
Gly Ala Thr Val Ile Ala Leu Ile His Phe Leu Met Ile Leu Ser Ser
        275                 280                 285


Asn Trp Ala Tyr Leu Lys Asp Ala Ser Lys Met Gln Ala Tyr Gln Asp
    290                 295                 300


Ile Lys Ala Lys Glu Glu Gln Glu Leu Gln Asp Ile Gln Ser Arg Ser
305                 310                 315                 320


Lys Glu Gln Leu Asn Ser Tyr Thr
                325
```

<210> 33
<211> 1789
<212> DNA
<213> Homo sapiens

<400> 33

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caggtcctgg gagaggacag aaaacaactg ggactcctca gcccccggca gctcccagtg       60

cccagccacc cacaacacaa cccaaagcct tctagacaag ctcagtggaa tctgaagggc      120

ccaccccatg gaggaatgct gggtgacaga gatagccaat ggctccaagg atggcttgga      180

ttccaaccct atgaaggatt acatgatcct gagtggtccc cagaagacag ctgttgctgt      240

gttgtgcact cttctgggcc tgctaagtgc cctggagaac gtggctgtgc tctatctgat      300

cctgtcctcc caccaactcc gccggaagcc ctcatacctg ttcattggca gcttggctgg      360

ggctgacttc ctggccagtg tggtctttgc atgcagcttt gtgaatttcc atgttttcca      420

tggtgtggat tccaaggctg tcttcctgct gaagattggc agcgtgacta tgaccttcac      480

agcctctgtg ggtagcctcc tgctgaccgc cattgaccga tacctctgcc tgcgctatcc      540

accttcctac aaagctctgc tcacccgtgg aagggcactg gtgaccctgg gcatcatgtg      600

ggtcctctca gcactagtct cctacctgcc cctcatggga tggacttgct gtcccaggcc      660

ctgctctgag cttttcccac tgatccccaa tgactacctg ctgagctggc tcctgttcat      720

cgccttcctc ttttccggaa tcatctacac ctatgggcat gttctctgga aggcccatca      780

gcatgtggcc agcttgtctg gccaccagga caggcaggtg ccaggaatgg cccgaatgag      840

gctggatgtg aggttggcca agaccctagg gctagtgttg gctgtgctcc tcatctgttg      900

gttcccagtg ctggccctca tggcccacag cctggccact acgctcagtg accaggtcaa      960

gaaggccttt gctttctgct ccatgctgtg cctcatcaac tccatggtca accctgtcat     1020

ctatgctcta cggagtggag agatccgctc ctctgcccat cactgcctgg ctcactggaa     1080

gaagtgtgtg aggggccttg ggtcagaggc aaaagaagaa gccccgagat cctcagtcac     1140

cgagacagag gctgatggga aaatcactcc gtggccagat tccagagatc tagacctctc     1200

tgattgctga tgaggcctct tcccaattta aacaactcaa gtcagaaatc agttcactcc     1260
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ctggaagaga gagaggggtc ttggcactct cttcttactt aaaccagtcc cagacaccta 1320

gacacggacc ccttttgct gatgagtgtt gggactgact cctggaagac agcctggcct 1380

tgcccacctg cacacagtct gttggatagg tagggccacg aggagtagcc aggtaggcga 1440

gacacaaaag gcctgggaca gggtcagtac aagtcaggtc aggcttcatg cctgcatcct 1500

ccagagacca caggagccaa agcgagcctc caggcccagc aatgagggac ttgggagaaa 1560

tctgagaaga atgggttgtt ctcttgggaa gtcagggtat cagatgggat ggacatccag 1620

gtcttctctc tgcctaattg tcaaggcctc cttggctctg gagctatgaa aggccccact 1680

ttcaagtcac ccttgccact gaggaccgag gactatgcta tgatgaggat taaggtgttg 1740

acttgcctct ttcagagata aatgacaagc cttcaaaaaa aaaaaaaaa 1789

<210> 34
<211> 360
<212> PRT
<213> Homo sapiens

<400> 34

Met Glu Glu Cys Trp Val Thr Glu Ile Ala Asn Gly Ser Lys Asp Gly
1 5 10 15

Leu Asp Ser Asn Pro Met Lys Asp Tyr Met Ile Leu Ser Gly Pro Gln
20 25 30

Lys Thr Ala Val Ala Val Leu Cys Thr Leu Leu Gly Leu Leu Ser Ala
35 40 45

Leu Glu Asn Val Ala Val Leu Tyr Leu Ile Leu Ser Ser His Gln Leu
50 55 60

Arg Arg Lys Pro Ser Tyr Leu Phe Ile Gly Ser Leu Ala Gly Ala Asp
65 70 75 80

Phe Leu Ala Ser Val Val Phe Ala Cys Ser Phe Val Asn Phe His Val
85 90 95

Phe His Gly Val Asp Ser Lys Ala Val Phe Leu Leu Lys Ile Gly Ser
100 105 110

Val Thr Met Thr Phe Thr Ala Ser Val Gly Ser Leu Leu Leu Thr Ala
115 120 125

Ile Asp Arg Tyr Leu Cys Leu Arg Tyr Pro Pro Ser Tyr Lys Ala Leu
130 135 140

```
Leu Thr Arg Gly Arg Ala Leu Val Thr Leu Gly Ile Met Trp Val Leu
145                 150                 155                 160

Ser Ala Leu Val Ser Tyr Leu Pro Leu Met Gly Trp Thr Cys Cys Pro
                165                 170                 175

Arg Pro Cys Ser Glu Leu Phe Pro Leu Ile Pro Asn Asp Tyr Leu Leu
            180                 185                 190

Ser Trp Leu Leu Phe Ile Ala Phe Leu Phe Ser Gly Ile Ile Tyr Thr
        195                 200                 205

Tyr Gly His Val Leu Trp Lys Ala His Gln His Val Ala Ser Leu Ser
    210                 215                 220

Gly His Gln Asp Arg Gln Val Pro Gly Met Ala Arg Met Arg Leu Asp
225                 230                 235                 240

Val Arg Leu Ala Lys Thr Leu Gly Leu Val Leu Ala Val Leu Leu Ile
                245                 250                 255

Cys Trp Phe Pro Val Leu Ala Leu Met Ala His Ser Leu Ala Thr Thr
            260                 265                 270

Leu Ser Asp Gln Val Lys Lys Ala Phe Ala Phe Cys Ser Met Leu Cys
        275                 280                 285

Leu Ile Asn Ser Met Val Asn Pro Val Ile Tyr Ala Leu Arg Ser Gly
    290                 295                 300

Glu Ile Arg Ser Ser Ala His His Cys Leu Ala His Trp Lys Lys Cys
305                 310                 315                 320

Val Arg Gly Leu Gly Ser Glu Ala Lys Glu Glu Ala Pro Arg Ser Ser
                325                 330                 335

Val Thr Glu Thr Glu Ala Asp Gly Lys Ile Thr Pro Trp Pro Asp Ser
            340                 345                 350

Arg Asp Leu Asp Leu Ser Asp Cys
        355                 360
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<210> 35
<211> 1165
<212> DNA
<213> Homo sapiens

<400> 35
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ggcgctgctg ctggcgctgc tgctggctcg ggctggactc aggaagccgg agtcgcagga 180

ggcggcgccg ttatcaggac catgcggccg acgggtcatc acgtcgcgca tcgtgggtgg 240

agaggacgcc gaactcgggc gttggccgtg gcaggggagc ctgcgcctgt gggattccca 300

cgtatgcgga gtgagcctgc tcagccaccg ctgggcactc acggcggcgc actgctttga 360

aacctatagt gaccttagtg atccctccgg gtggatggtc cagtttggcc agctgacttc 420

catgccatcc ttctggagcc tgcaggccta ctacacccgt tacttcgtat cgaatatcta 480

tctgagccct cgctacctgg ggaattcacc ctatgacatt gccttggtga agctgtctgc 540

acctgtcacc tacactaaac acatccagcc catctgtctc caggcctcca catttgagtt 600

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gccatctccc cacaccctcc aggaagttca ggtcgccatc ataaacaact ctatgtgcaa 720

ccacctcttc ctcaagtaca gtttccgcaa ggacatcttt ggagacatgg tttgtgctgg 780

caatgcccaa ggcgggaagg atgcctgctt cggtgactca ggtggaccct tggcctgtaa 840

caagaatgga ctgtggtatc agattggagt cgtgagctgg ggagtgggct gtggtcggcc 900

caatcggccc ggtgtctaca ccaatatcag ccaccacttt gagtggatcc agaagctgat 960

ggcccagagt ggcatgtccc agccagaccc ctcctggccg ctactctttt tccctcttct 1020

ctgggctctc ccactcctgg ggccggtctg agcctacctg agcccatgca gcctggggcc 1080

actgccaagt caggccctgg ttctcttctg tcttgtttgg taataaacac attccagttg 1140

atgccttgca gggcattctt caaaa 1165

<210> 36
<211> 314
<212> PRT
<213> Homo sapiens

<400> 36

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

Gly Leu Arg Lys Pro Glu Ser Gln Glu Ala Ala Pro Leu Ser Gly Pro
20 25 30

Cys Gly Arg Arg Val Ile Thr Ser Arg Ile Val Gly Gly Glu Asp Ala
35 40 45

Glu Leu Gly Arg Trp Pro Trp Gln Gly Ser Leu Arg Leu Trp Asp Ser
50 55 60

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His Val Cys Gly Val Ser Leu Leu Ser His Arg Trp Ala Leu Thr Ala
65                  70                  75                  80

Ala His Cys Phe Glu Thr Tyr Ser Asp Leu Ser Asp Pro Ser Gly Trp
                85                  90                  95

Met Val Gln Phe Gly Gln Leu Thr Ser Met Pro Ser Phe Trp Ser Leu
            100                 105                 110

Gln Ala Tyr Tyr Thr Arg Tyr Phe Val Ser Asn Ile Tyr Leu Ser Pro
        115                 120                 125

Arg Tyr Leu Gly Asn Ser Pro Tyr Asp Ile Ala Leu Val Lys Leu Ser
    130                 135                 140

Ala Pro Val Thr Tyr Thr Lys His Ile Gln Pro Ile Cys Leu Gln Ala
145                 150                 155                 160

Ser Thr Phe Glu Phe Glu Asn Arg Thr Asp Cys Trp Val Thr Gly Trp
                165                 170                 175

Gly Tyr Ile Lys Glu Asp Glu Ala Leu Pro Ser Pro His Thr Leu Gln
            180                 185                 190

Glu Val Gln Val Ala Ile Ile Asn Asn Ser Met Cys Asn His Leu Phe
        195                 200                 205

Leu Lys Tyr Ser Phe Arg Lys Asp Ile Phe Gly Asp Met Val Cys Ala
    210                 215                 220

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

Pro Leu Ala Cys Asn Lys Asn Gly Leu Trp Tyr Gln Ile Gly Val Val
                245                 250                 255

Ser Trp Gly Val Gly Cys Gly Arg Pro Asn Arg Pro Gly Val Tyr Thr
            260                 265                 270

Asn Ile Ser His His Phe Glu Trp Ile Gln Lys Leu Met Ala Gln Ser
        275                 280                 285

Gly Met Ser Gln Pro Asp Pro Ser Trp Pro Leu Leu Phe Phe Pro Leu
    290                 295                 300

Leu Trp Ala Leu Pro Leu Leu Gly Pro Val
305                 310
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<210> 37
<211> 2195
<212> DNA
<213> Homo sapiens

<400> 37
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ttgtctgcgg tattcaaaaa cttttgaaac actgcatgtc caacaaaatt tatttttgt 120

gtgaatgtac tgtttttcaa ccctactctc ttgaccaaga atgaaactat ttacaaatta 180

agatgccaac agatcacgaa gagccctgtg gtcccagtca caagtcgttt tgcctgaatg 240

gggggctttg ttatgtgata cctactattc ccagcccatt ttgtaggtgc gttgaaaact 300

atacaggagc tcgttgtgaa gaggtttttc tcccaggctc cagcatccaa actaaaagta 360

acctgtttga agcttttgtg gcattggcgg tcctagtaac acttatcatt ggagccttct 420

acttcctttg caggaaaggc cactttcaga gagccagttc agtccagtat gatatcaacc 480

tggtagagac gagcagtacc agtgcccacc acagtcatga acaacactga agaaacgtca 540

aagtgaacca aatcattgtt tttattttac aaaggcagaa aatgaaacac cactaggtaa 600

aagaattaaa aatctaatcc tttatttctt aaataaaacg cttgtgtaac tcgtatcatg 660

aaccataatc cattctgctg caaggtgtgt gtgcttctgt aatgtgcatc agtccatcgg 720

caactgctaa gtagggggtg ataccagtat aattcgaagt cacattggtt caacatgact 780

ctccccagaa agctgatgtg ctgaagcaac cagaggcaaa tgttcacaca cctagagaga 840

aaccctaagg gatatatgaa gatcttatga aaaaggatga aaacccttta aatgcaagga 900

gtagctggct tagtggcttc aaaaccacct cattcctgct gttatctgag aagctgcaag 960

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aataaagtct tggagcagtg gaaaggtctg gggctggtaa atggcttagg cagaagggca 1440

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cccacccccc gccctttta aaaaaaaaaa aaaaa 2195

<210> 38
<211> 115
<212> PRT
<213> Homo sapiens

<400> 38

Met Pro Thr Asp His Glu Glu Pro Cys Gly Pro Ser His Lys Ser Phe
1 5 10 15

Cys Leu Asn Gly Gly Leu Cys Tyr Val Ile Pro Thr Ile Pro Ser Pro
20 25 30

Phe Cys Arg Cys Val Glu Asn Tyr Thr Gly Ala Arg Cys Glu Glu Val
35 40 45

Phe Leu Pro Gly Ser Ser Ile Gln Thr Lys Ser Asn Leu Phe Glu Ala
50 55 60

Phe Val Ala Leu Ala Val Leu Val Thr Leu Ile Ile Gly Ala Phe Tyr
65 70 75 80

Phe Leu Cys Arg Lys Gly His Phe Gln Arg Ala Ser Ser Val Gln Tyr
85 90 95

Asp Ile Asn Leu Val Glu Thr Ser Ser Thr Ser Ala His His Ser His
100 105 110

Glu Gln His
115

<210> 39
<211> 847
<212> DNA
<213> Homo sapiens

<400> 39
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ttccaatatc agtctatctt ttattcaacg caatgacagc actgaccgaa gaggcagccg 120

tgactgtaac acctccaatc acagcccagc aagctgacaa catagaagga cccatagcct 180

tgaagttctc acacctttgc ctggaagatc ataacagtta ctgcatcaac ggtgcttgtg 240

cattccacca tgagctagag aaagccatct gcaggtgttt tactggttat actggagaaa 300

ggtgtgagca cttgacttta acttcatatg ctgtggattc ttatgaaaaa tacattgcaa 360

ttgggattgg tgttggatta ctattaagtg gttttcttgt tatttttac tgctatataa 420

gaaagaggta tgaaaaagac aaaatatgaa gtcacttcat atgcaatcgt ttgacaaata 480

gttattcagg ccctataatg tgtcaggcac tgacatgtaa aatttttta attaaaaaag 540

agctgtaatc tggcaaaaag tttctatgta atatttttca tgcctttct cataaaccca 600

gacgagtggt aaaaatttgc cttcagttgt aataggagag ttcaaacgta cagtctccct 660

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<210> 40
<211> 133
<212> PRT
<213> Homo sapiens

<400> 40

Met Ala Leu Gly Val Pro Ile Ser Val Tyr Leu Leu Phe Asn Ala Met
1 5 10 15

Thr Ala Leu Thr Glu Glu Ala Ala Val Thr Val Thr Pro Pro Ile Thr
20 25 30

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

His Leu Cys Leu Glu Asp His Asn Ser Tyr Cys Ile Asn Gly Ala Cys
50 55 60

Ala Phe His His Glu Leu Glu Lys Ala Ile Cys Arg Cys Phe Thr Gly
65 70 75 80

Tyr Thr Gly Glu Arg Cys Glu His Leu Thr Leu Thr Ser Tyr Ala Val
85 90 95

Asp Ser Tyr Glu Lys Tyr Ile Ala Ile Gly Ile Gly Val Gly Leu Leu
100 105 110

Leu Ser Gly Phe Leu Val Ile Phe Tyr Cys Tyr Ile Arg Lys Arg Tyr
115 120 125

Glu Lys Asp Lys Ile
130

<210> 41
<211> 4868
<212> DNA
<213> Homo sapiens

<400> 41
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ggtcgtagag agcgttcagc cgtctgtata tctccccaga tacctgaaac tgaccacctg 180

agtacgtttt cccattgctg agctgtttcc ctgatatctg gccatgcaac ggagatcaag 240

agggataaat actggactta ttctactcct ttctcaaatc ttccatgttg ggatcaacaa 300

tattccacct gtcaccctag caactttggc cctcaacatc tggttcttct tgaaccctca 360

gaagccactg tatagctcct gccttagtgt ggagaagtgt taccagcaaa aagactggca 420

gcgtttactg ctctctcccc ttcaccatgc tgatgattgg catttgtatt tcaatatggc 480

atccatgctc tggaaaggaa taaatctaga aagaagactg ggaagtagat ggtttgccta 540

tgttatcacc gcattttctg tacttactgg agtggtatac ctgctcttgc aatttgctgt 600

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gggctttcct gtaccgaaca gatttgcttg ttgggtcgaa cttgtggcta ttcatttatt 780

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caaagtagca gcagatgcca catacagagt agagcgaagg catttggtgg atcggtcact 1980

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aaaaaaaa 4868

<210> 42
<211> 315
<212> PRT
<213> Homo sapiens

<400> 42

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Met Gln Arg Arg Ser Arg Gly Ile Asn Thr Gly Leu Ile Leu Leu Leu
1               5                  10                  15

Ser Gln Ile Phe His Val Gly Ile Asn Asn Ile Pro Pro Val Thr Leu
            20                  25                  30

Ala Thr Leu Ala Leu Asn Ile Trp Phe Phe Leu Asn Pro Gln Lys Pro
        35                  40                  45

Leu Tyr Ser Ser Cys Leu Ser Val Glu Lys Cys Tyr Gln Gln Lys Asp
    50                  55                  60

Trp Gln Arg Leu Leu Leu Ser Pro Leu His His Ala Asp Asp Trp His
65                  70                  75                  80

Leu Tyr Phe Asn Met Ala Ser Met Leu Trp Lys Gly Ile Asn Leu Glu
                85                  90                  95

Arg Arg Leu Gly Ser Arg Trp Phe Ala Tyr Val Ile Thr Ala Phe Ser
            100                 105                 110

Val Leu Thr Gly Val Val Tyr Leu Leu Leu Gln Phe Ala Val Ala Glu
        115                 120                 125

Phe Met Asp Glu Pro Asp Phe Lys Arg Ser Cys Ala Val Gly Phe Ser
    130                 135                 140

Gly Val Leu Phe Ala Leu Lys Val Leu Asn Asn His Tyr Cys Pro Gly
145                 150                 155                 160

Gly Phe Val Asn Ile Leu Gly Phe Pro Val Pro Asn Arg Phe Ala Cys
                165                 170                 175

Trp Val Glu Leu Val Ala Ile His Leu Phe Ser Pro Gly Thr Ser Phe
            180                 185                 190

Ala Gly His Leu Ala Gly Ile Leu Val Gly Leu Met Tyr Thr Gln Gly
        195                 200                 205

Pro Leu Lys Lys Ile Met Glu Ala Cys Ala Gly Gly Phe Ser Ser Ser
    210                 215                 220

Val Gly Tyr Pro Gly Arg Gln Tyr Tyr Phe Asn Ser Ser Gly Ser Ser
225                 230                 235                 240

Gly Tyr Gln Asp Tyr Tyr Pro His Gly Arg Pro Asp His Tyr Glu Glu
                245                 250                 255
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Ala Pro Arg Asn Tyr Asp Thr Tyr Thr Ala Gly Leu Ser Glu Glu Glu
260 265 270

Gln Leu Glu Arg Ala Leu Gln Ala Ser Leu Trp Asp Arg Gly Asn Thr
275 280 285

Arg Asn Ser Pro Pro Pro Tyr Gly Phe His Leu Ser Pro Glu Glu Met
290 295 300

Arg Arg Gln Arg Leu His Arg Phe Asp Ser Gln
305 310 315

<210> 43
<211> 5843
<212> DNA
<213> Homo sapiens

<400> 43
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tgctgcccgt gtaccaggag gtgaagccca acccgctgca ggacgcgaac ctctgctcac 180

gcgtgttctt ctggtggctc aatcccttgt ttaaaattgg ccataaacgg agattagagg 240

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aagggttctg ggataaagaa gttttaagag ctgagaatga cgcacagaag ccttctttaa 360

caagagcaat cataaagtgt tactggaaat cttatttagt tttgggaatt tttacgttaa 420

ttgaggaaag tgccaaagta atccagccca tatttttggg aaaaattatt aattattttg 480

aaaattatga tcccatggat tctgtggctt tgaacacagc gtacgcctat gccacggtgc 540

tgacttttg cacgctcatt ttggctatac tgcatcactt atatttttat cacgttcagt 600

gtgctgggat gaggttacga gtagccatgt gccatatgat ttatcggaag gcacttcgtc 660

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tgaggagtaa aactgcaact ttcacggatg ccaggatcag gaccatgaat gaagttataa 960

ctggtataag gataataaaa atgtacgcct gggaaaagtc attttcaaat cttattacca 1020

atttgagaaa gaaggagatt tccaagattc tgagaagttc ctgcctcaga gggatgaatt 1080

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tgcggctgac ggttaccctc ttcttcccct cagccattga gagggtgtca gaggcaatcg 1260

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Ile Gly His Lys Arg Arg Leu Glu Glu Asp Asp Met Tyr Ser Val Leu
35 40 45

Pro Glu Asp Arg Ser Gln His Leu Gly Glu Glu Leu Gln Gly Phe Trp
50 55 60

Asp Lys Glu Val Leu Arg Ala Glu Asn Asp Ala Gln Lys Pro Ser Leu
65 70 75 80

Thr Arg Ala Ile Ile Lys Cys Tyr Trp Lys Ser Tyr Leu Val Leu Gly
85 90 95

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

Thr Leu Ile Leu Ala Ile Leu His His Leu Tyr Phe Tyr His Val Gln
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Cys Ala Gly Met Arg Leu Arg Val Ala Met Cys His Met Ile Tyr Arg
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Lys Ala Leu Arg Leu Ser Asn Met Ala Met Gly Lys Thr Thr Thr Gly
            180                 185                 190

Gln Ile Val Asn Leu Leu Ser Asn Asp Val Asn Lys Phe Asp Gln Val
        195                 200                 205

Thr Val Phe Leu His Phe Leu Trp Ala Gly Pro Leu Gln Ala Ile Ala
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Val Thr Ala Leu Leu Trp Met Glu Ile Gly Ile Ser Cys Leu Ala Gly
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Met Ala Val Leu Ile Ile Leu Leu Pro Leu Gln Ser Cys Phe Gly Lys
                245                 250                 255

Leu Phe Ser Ser Leu Arg Ser Lys Thr Ala Thr Phe Thr Asp Ala Arg
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Ile Arg Thr Met Asn Glu Val Ile Thr Gly Ile Arg Ile Ile Lys Met
        275                 280                 285

Tyr Ala Trp Glu Lys Ser Phe Ser Asn Leu Ile Thr Asn Leu Arg Lys
    290                 295                 300

Lys Glu Ile Ser Lys Ile Leu Arg Ser Ser Cys Leu Arg Gly Met Asn
305                 310                 315                 320

Leu Ala Ser Phe Phe Ser Ala Ser Lys Ile Ile Val Phe Val Thr Phe
                325                 330                 335

Thr Thr Tyr Val Leu Leu Gly Ser Val Ile Thr Ala Ser Arg Val Phe
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Val Ala Val Thr Leu Tyr Gly Ala Val Arg Leu Thr Val Thr Leu Phe
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Phe Pro Ser Ala Ile Glu Arg Val Ser Glu Ala Ile Val Ser Ile Arg
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Arg Ile Gln Thr Phe Leu Leu Leu Asp Glu Ile Ser Gln Arg Asn Arg
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Gln Leu Pro Ser Asp Gly Lys Lys Met Val His Val Gln Asp Phe Thr
                405                 410                 415

Ala Phe Trp Asp Lys Ala Ser Glu Thr Pro Thr Leu Gln Gly Leu Ser
            420                 425                 430

Phe Thr Val Arg Pro Gly Glu Leu Leu Ala Val Val Gly Pro Val Gly
        435                 440                 445

Ala Gly Lys Ser Ser Leu Leu Ser Ala Val Leu Gly Glu Leu Ala Pro
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Ser His Gly Leu Val Ser Val His Gly Arg Ile Ala Tyr Val Ser Gln
465                 470                 475                 480

Gln Pro Trp Val Phe Ser Gly Thr Leu Arg Ser Asn Ile Leu Phe Gly
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Lys Lys Tyr Glu Lys Glu Arg Tyr Glu Lys Val Ile Lys Ala Cys Ala
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Leu Lys Lys Asp Leu Gln Leu Leu Glu Asp Gly Asp Leu Thr Val Ile
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Gly Asp Arg Gly Thr Thr Leu Ser Gly Gly Gln Lys Ala Arg Val Asn
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Leu Ala Arg Ala Val Tyr Gln Asp Ala Asp Ile Tyr Leu Leu Asp Asp
545                 550                 555                 560

Pro Leu Ser Ala Val Asp Ala Glu Val Ser Arg His Leu Phe Glu Leu
                565                 570                 575

Cys Ile Cys Gln Ile Leu His Glu Lys Ile Thr Ile Leu Val Thr His
            580                 585                 590

Gln Leu Gln Tyr Leu Lys Ala Ala Ser Gln Ile Leu Ile Leu Lys Asp
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Gly Lys Met Val Gln Lys Gly Thr Tyr Thr Glu Phe Leu Lys Ser Gly
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Ile Asp Phe Gly Ser Leu Leu Lys Lys Asp Asn Glu Glu Ser Glu Gln
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Pro Pro Val Pro Gly Thr Pro Thr Leu Arg Asn Arg Thr Phe Ser Glu
                645                 650                 655

Ser Ser Val Trp Ser Gln Gln Ser Ser Arg Pro Ser Leu Lys Asp Gly
            660                 665                 670

Ala Leu Glu Ser Gln Asp Thr Glu Asn Val Pro Val Thr Leu Ser Glu
        675                 680                 685

Glu Asn Arg Ser Glu Gly Lys Val Gly Phe Gln Ala Tyr Lys Asn Tyr
    690                 695                 700

Phe Arg Ala Gly Ala His Trp Ile Val Phe Ile Phe Leu Ile Leu Leu
705                 710                 715                 720

Asn Thr Ala Ala Gln Val Ala Tyr Val Leu Gln Asp Trp Trp Leu Ser
                725                 730                 735

Tyr Trp Ala Asn Lys Gln Ser Met Leu Asn Val Thr Val Asn Gly Gly
            740                 745                 750

Gly Asn Val Thr Glu Lys Leu Asp Leu Asn Trp Tyr Leu Gly Ile Tyr
        755                 760                 765

Ser Gly Leu Thr Val Ala Thr Val Leu Phe Gly Ile Ala Arg Ser Leu
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Leu Val Phe Tyr Val Leu Val Asn Ser Ser Gln Thr Leu His Asn Lys
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Met Phe Glu Ser Ile Leu Lys Ala Pro Val Leu Phe Phe Asp Arg Asn
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Pro Ile Gly Arg Ile Leu Asn Arg Phe Ser Lys Asp Ile Gly His Leu
            820                 825                 830

Asp Asp Leu Leu Pro Leu Thr Phe Leu Asp Phe Ile Gln Thr Leu Leu
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Gln Val Val Gly Val Val Ser Val Ala Val Ala Val Ile Pro Trp Ile
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Ala Ile Pro Leu Val Pro Leu Gly Ile Ile Phe Ile Phe Leu Arg Arg
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Tyr Phe Leu Glu Thr Ser Arg Asp Val Lys Arg Leu Glu Ser Thr Thr
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Arg Ser Pro Val Phe Ser His Leu Ser Ser Ser Leu Gln Gly Leu Trp
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Thr Ile Arg Ala Tyr Lys Ala Glu Glu Arg Cys Gln Glu Leu Phe Asp
        915                 920                 925

Ala His Gln Asp Leu His Ser Glu Ala Trp Phe Leu Phe Leu Thr Thr
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Ser Arg Trp Phe Ala Val Arg Leu Asp Ala Ile Cys Ala Met Phe Val
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Ile Ile Val Ala Phe Gly Ser Leu Ile Leu Ala Lys Thr Leu Asp Ala
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Gly Gln Val Gly Leu Ala Leu Ser Tyr Ala Leu Thr Leu Met Gly Met
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Phe Gln Trp Cys Val Arg Gln Ser  Ala Glu Val Glu Asn  Met Met Ile
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Ser Val  Glu Arg Val Ile Glu  Tyr Thr Asp Leu Glu  Lys Glu Ala
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Pro Trp  Glu Tyr Gln Lys Arg  Pro Pro Pro Ala Trp  Pro His Glu
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Gly Val  Ile Ile Phe Asp Asn  Val Asn Phe Met Tyr  Ser Pro Gly
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Gly Pro  Leu Val Leu Lys His  Leu Thr Ala Leu Ile  Lys Ser Gln
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Glu Lys  Val Gly Ile Val Gly  Arg Thr Gly Ala Gly  Lys Ser Ser
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Leu Ile  Ser Ala Leu Phe Arg  Leu Ser Glu Pro Glu  Gly Lys Ile
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Gly Thr  Met Arg Lys Asn Leu  Asp Pro Phe Asn Glu  His Thr Asp
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Glu Glu  Leu Trp Asn Ala Leu  Gln Glu Val Gln Leu  Lys Glu Thr
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Ile Glu  Asp Leu Pro Gly Lys  Met Asp Thr Glu Leu  Ala Glu Ser
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Gly Ser  Asn Phe Ser Val Gly  Gln Arg Gln Leu Val  Cys Leu Ala
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Arg Ala  Ile Leu Arg Lys Asn  Gln Ile Leu Ile Ile  Asp Glu Ala
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Thr Ala  Asn Val Asp Pro Arg  Thr Asp Glu Leu Ile  Gln Lys Lys
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Ile Arg  Glu Lys Phe Ala His  Cys Thr Val Leu Thr  Ile Ala His
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Arg Leu  Asn Thr Ile Ile Asp  Ser Asp Lys Ile Met  Val Leu Asp
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Asn Lys  Glu Ser Leu Phe Tyr  Lys Met Val Gln Gln  Leu Gly Lys
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Lys Arg  Asn Tyr Pro His Ile  Gly His Thr Asp His  Met Val Thr
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<400> 46

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Leu Val Val Gln Gly Asp Pro Arg Glu Leu Arg Leu Trp Ala Arg Gly
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Asp Ala Arg Gly Ala Ser Arg Ala Asp Glu Lys Pro Leu Arg Arg Lys
65 70 75 80

Arg Ser Ala Ala Leu Gln Pro Glu Pro Ile Lys Val Tyr Gly Gln Val
85 90 95

Ser Leu Asn Asp Ser His Asn Gln Met Val Val His Trp Ala Gly Glu
100 105 110

Lys Ser Asn Val Ile Val Ala Leu Ala Arg Asp Ser Leu Ala Leu Ala
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Arg Pro Lys Ser Ser Asp Val Tyr Val Ser Tyr Asp Tyr Gly Lys Ser
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Phe Lys Lys Ile Ser Asp Lys Leu Asn Phe Gly Leu Gly Asn Arg Ser
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Glu Ala Val Ile Ala Gln Phe Tyr His Ser Pro Ala Asp Asn Lys Arg
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Tyr Ile Phe Ala Asp Ala Tyr Ala Gln Tyr Leu Trp Ile Thr Phe Asp
180 185 190

Phe Cys Asn Thr Leu Gln Gly Phe Ser Ile Pro Phe Arg Ala Ala Asp
195 200 205

Leu Leu Leu His Ser Lys Ala Ser Asn Leu Leu Leu Gly Phe Asp Arg
210 215 220

Ser His Pro Asn Lys Gln Leu Trp Lys Ser Asp Asp Phe Gly Gln Thr
225 230 235 240

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

Gly Tyr Ser Thr Val Phe Arg Ser Thr Asp Phe Phe Gln Ser Arg Glu
        275                 280                 285

Asn Gln Glu Val Ile Leu Glu Glu Val Arg Asp Phe Gln Leu Arg Asp
    290                 295                 300

Lys Tyr Met Phe Ala Thr Lys Val Val His Leu Leu Gly Ser Glu Gln
305                 310                 315                 320

Gln Ser Ser Val Gln Leu Trp Val Ser Phe Gly Arg Lys Pro Met Arg
                325                 330                 335

Ala Ala Gln Phe Val Thr Arg His Pro Ile Asn Glu Tyr Tyr Ile Ala
            340                 345                 350

Asp Ala Ser Glu Asp Gln Val Phe Val Cys Val Ser His Ser Asn Asn
        355                 360                 365

Arg Thr Asn Leu Tyr Ile Ser Glu Ala Glu Gly Leu Lys Phe Ser Leu
    370                 375                 380

Ser Leu Glu Asn Val Leu Tyr Tyr Ser Pro Gly Gly Ala Gly Ser Asp
385                 390                 395                 400

Thr Leu Val Arg Tyr Phe Ala Asn Glu Pro Phe Ala Asp Phe His Arg
                405                 410                 415

Val Glu Gly Leu Gln Gly Val Tyr Ile Ala Thr Leu Ile Asn Gly Ser
            420                 425                 430

Met Asn Glu Glu Asn Met Arg Ser Val Ile Thr Phe Asp Lys Gly Gly
        435                 440                 445

Thr Trp Glu Phe Leu Gln Ala Pro Ala Phe Thr Gly Tyr Gly Glu Lys
    450                 455                 460

Ile Asn Cys Glu Leu Ser Gln Gly Cys Ser Leu His Leu Ala Gln Arg
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Leu Ser Gln Leu Leu Asn Leu Gln Leu Arg Arg Met Pro Ile Leu Ser
                485                 490                 495
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Lys Glu Ser Ala Pro Gly Leu Ile Ile Ala Thr Gly Ser Val Gly Lys
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Asn Leu Ala Ser Lys Thr Asn Val Tyr Ile Ser Ser Ser Ala Gly Ala
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Arg Trp Arg Glu Ala Leu Pro Gly Pro His Tyr Tyr Thr Trp Gly Asp
    530                 535                 540

His Gly Gly Ile Ile Thr Ala Ile Ala Gln Gly Met Glu Thr Asn Glu
545                 550                 555                 560

Leu Lys Tyr Ser Thr Asn Glu Gly Glu Thr Trp Lys Thr Phe Ile Phe
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Ser Glu Lys Pro Val Phe Val Tyr Gly Leu Leu Thr Glu Pro Gly Glu
            580                 585                 590

Lys Ser Thr Val Phe Thr Ile Phe Gly Ser Asn Lys Glu Asn Val His
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Ser Trp Leu Ile Leu Gln Val Asn Ala Thr Asp Ala Leu Gly Val Pro
    610                 615                 620

Cys Thr Glu Asn Asp Tyr Lys Leu Trp Ser Pro Ser Asp Glu Arg Gly
625                 630                 635                 640

Asn Glu Cys Leu Leu Gly His Lys Thr Val Phe Lys Arg Arg Thr Pro
                645                 650                 655

His Ala Thr Cys Phe Asn Gly Glu Asp Phe Asp Arg Pro Val Val Val
            660                 665                 670

Ser Asn Cys Ser Cys Thr Arg Glu Asp Tyr Glu Cys Asp Phe Gly Phe
        675                 680                 685

Lys Met Ser Glu Asp Leu Ser Leu Glu Val Cys Val Pro Asp Pro Glu
    690                 695                 700

Phe Ser Gly Lys Ser Tyr Ser Pro Pro Val Pro Cys Pro Val Gly Ser
705                 710                 715                 720

Thr Tyr Arg Arg Thr Arg Gly Tyr Arg Lys Ile Ser Gly Asp Thr Cys
                725                 730                 735

Ser Gly Gly Asp Val Glu Ala Arg Leu Glu Gly Glu Leu Val Pro Cys
            740                 745                 750
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Pro Leu Ala Glu Glu Asn Glu Phe Ile Leu Tyr Ala Val Arg Lys Ser
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Ile Tyr Arg Tyr Asp Leu Ala Ser Gly Ala Thr Glu Gln Leu Pro Leu
    770                 775                 780

Thr Gly Leu Arg Ala Ala Val Ala Leu Asp Phe Asp Tyr Glu His Asn
785                 790                 795                 800

Cys Leu Tyr Trp Ser Asp Leu Ala Leu Asp Val Ile Gln Arg Leu Cys
                805                 810                 815

Leu Asn Gly Ser Thr Gly Gln Glu Val Ile Ile Asn Ser Gly Leu Glu
            820                 825                 830

Thr Val Glu Ala Leu Ala Phe Glu Pro Leu Ser Gln Leu Leu Tyr Trp
        835                 840                 845

Val Asp Ala Gly Phe Lys Lys Ile Glu Val Ala Asn Pro Asp Gly Asp
    850                 855                 860

Phe Arg Leu Thr Ile Val Asn Ser Ser Val Leu Asp Arg Pro Arg Ala
865                 870                 875                 880

Leu Val Leu Val Pro Gln Glu Gly Val Met Phe Trp Thr Asp Trp Gly
                885                 890                 895

Asp Leu Lys Pro Gly Ile Tyr Arg Ser Asn Met Asp Gly Ser Ala Ala
            900                 905                 910

Tyr His Leu Val Ser Glu Asp Val Lys Trp Pro Asn Gly Ile Ser Val
        915                 920                 925

Asp Asp Gln Trp Ile Tyr Trp Thr Asp Ala Tyr Leu Glu Cys Ile Glu
    930                 935                 940

Arg Ile Thr Phe Ser Gly Gln Gln Arg Ser Val Ile Leu Asp Asn Leu
945                 950                 955                 960

Pro His Pro Tyr Ala Ile Ala Val Phe Lys Asn Glu Ile Tyr Trp Asp
                965                 970                 975

Asp Trp Ser Gln Leu Ser Ile Phe Arg Ala Ser Lys Tyr Ser Gly Ser
            980                 985                 990

Gln Met Glu Ile Leu Ala Asn Gln  Leu Thr Gly Leu Met  Asp Met Lys
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Arg Pro Cys Ser Leu Leu Cys Leu Pro Lys Ala Asn Asn Ser Arg
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Ser Cys Arg Cys Pro Glu Asp Val Ser Ser Ser Val Leu Pro Ser
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Gly Asp Leu Met Cys Asp Cys Pro Gln Gly Tyr Gln Leu Lys Asn
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Asn Thr Cys Val Lys Glu Glu Asn Thr Cys Leu Arg Asn Gln Tyr
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Arg Cys Ser Asn Gly Asn Cys Ile Asn Ser Ile Trp Trp Cys Asp
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Phe Asp Asn Asp Cys Gly Asp Met Ser Asp Glu Arg Asn Cys Pro
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Thr Thr Ile Cys Asp Leu Asp Thr Gln Phe Arg Cys Gln Glu Ser
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Gly Thr Cys Ile Pro Leu Ser Tyr Lys Cys Asp Leu Glu Asp Asp
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Cys Gly Asp Asn Ser Asp Glu Ser His Cys Glu Met His Gln Cys
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Arg Ser Asp Glu Tyr Asn Cys Ser Ser Gly Met Cys Ile Arg Ser
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Ser Trp Val Cys Asp Gly Asp Asn Asp Cys Arg Asp Trp Ser Asp
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Glu Ala Asn Cys Thr Ala Ile Tyr His Thr Cys Glu Ala Ser Asn
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Phe Gln Cys Arg Asn Gly His Cys Ile Pro Gln Arg Trp Ala Cys
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Asp Gly Asp Thr Asp Cys Gln Asp Gly Ser Asp Glu Asp Pro Val
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Asn Cys  Glu Lys Lys Cys Asn  Gly Phe Arg Cys Pro  Asn Gly Thr
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Cys Ile  Pro Ser Ser Lys His  Cys Asp Gly Leu Arg  Asp Cys Ser
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Asp Gly  Ser Asp Glu Gln His  Cys Glu Pro Leu Cys  Thr His Phe
    1265                 1270                 1275

Met Asp  Phe Val Cys Lys Asn  Arg Gln Gln Cys Leu  Phe His Ser
    1280                 1285                 1290

Met Val  Cys Asp Gly Ile Ile  Gln Cys Arg Asp Gly  Ser Asp Glu
    1295                 1300                 1305

Asp Ala  Ala Phe Ala Gly Cys  Ser Gln Asp Pro Glu  Phe His Lys
    1310                 1315                 1320

Val Cys  Asp Glu Phe Gly Phe  Gln Cys Gln Asn Gly  Val Cys Ile
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Ser Leu  Ile Trp Lys Cys Asp  Gly Met Asp Asp Cys  Gly Asp Tyr
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Ser Asp  Glu Ala Asn Cys Glu  Asn Pro Thr Glu Ala  Pro Asn Cys
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Ser Arg  Tyr Phe Gln Phe Arg  Cys Glu Asn Gly His  Cys Ile Pro
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Asn Arg  Trp Lys Cys Asp Arg  Glu Asn Asp Cys Gly  Asp Trp Ser
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Asp Glu  Lys Asp Cys Gly Asp  Ser His Ile Leu Pro  Phe Ser Thr
    1400                 1405                 1410

Pro Gly  Pro Ser Thr Cys Leu  Pro Asn Tyr Tyr Arg  Cys Ser Ser
    1415                 1420                 1425

Gly Thr  Cys Val Met Asp Thr  Trp Val Cys Asp Gly  Tyr Arg Asp
    1430                 1435                 1440

Cys Ala  Asp Gly Ser Asp Glu  Glu Ala Cys Pro Leu  Leu Ala Asn
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Val Thr  Ala Ala Ser Thr Pro  Thr Gln Leu Gly Arg  Cys Asp Arg
    1460                 1465                 1470
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Phe Glu  Phe Glu Cys His Gln  Pro Lys Thr Cys Ile  Pro Asn Trp
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Lys Arg  Cys Asp Gly His Gln  Asp Cys Gln Asp Gly  Arg Asp Glu
    1490                 1495                 1500

Ala Asn  Cys Pro Thr His Ser  Thr Leu Thr Cys Met  Ser Arg Glu
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Phe Gln  Cys Glu Asp Gly Glu  Ala Cys Ile Val Leu  Ser Glu Arg
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Cys Asp  Gly Phe Leu Asp Cys  Ser Asp Glu Ser Asp  Glu Lys Ala
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Cys Ser  Asp Glu Leu Thr Val  Tyr Lys Val Gln Asn  Leu Gln Trp
    1550                 1555                 1560

Thr Ala  Asp Phe Ser Gly Asp  Val Thr Leu Thr Trp  Met Arg Pro
    1565                 1570                 1575

Lys Lys  Met Pro Ser Ala Ser  Cys Val Tyr Asn Val  Tyr Tyr Arg
    1580                 1585                 1590

Val Val  Gly Glu Ser Ile Trp  Lys Thr Leu Glu Thr  His Ser Asn
    1595                 1600                 1605

Lys Thr  Asn Thr Val Leu Lys  Val Leu Lys Pro Asp  Thr Thr Tyr
    1610                 1615                 1620

Gln Val  Lys Val Gln Val Gln  Cys Leu Ser Lys Ala  His Asn Thr
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Asn Asp  Phe Val Thr Leu Arg  Thr Pro Glu Gly Leu  Pro Asp Ala
    1640                 1645                 1650

Pro Arg  Asn Leu Gln Leu Ser  Leu Pro Arg Glu Ala  Glu Gly Val
    1655                 1660                 1665

Ile Val  Gly His Trp Ala Pro  Pro Ile His Thr His  Gly Leu Ile
    1670                 1675                 1680

Arg Glu  Tyr Ile Val Glu Tyr  Ser Arg Ser Gly Ser  Lys Met Trp
    1685                 1690                 1695

Ala Ser  Gln Arg Ala Ala Ser  Asn Phe Thr Glu Ile  Lys Asn Leu
    1700                 1705                 1710
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Leu Val  Asn Thr Leu Tyr Thr  Val Arg Val Ala Ala  Val Thr Ser
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Lys Gly  Lys Val Ile Pro Pro  Pro Asp Ile His Ile  Asp Ser Tyr
    1745                 1750                 1755

Gly Glu  Asn Tyr Leu Ser Phe  Thr Leu Thr Met Glu  Ser Asp Ile
    1760                 1765                 1770

Lys Val  Asn Gly Tyr Val Val  Asn Leu Phe Trp Ala  Phe Asp Thr
    1775                 1780                 1785

His Lys  Gln Glu Arg Arg Thr  Leu Asn Phe Arg Gly  Ser Ile Leu
    1790                 1795                 1800

Ser His  Lys Val Gly Asn Leu  Thr Ala His Thr Ser  Tyr Glu Ile
    1805                 1810                 1815

Ser Ala  Trp Ala Lys Thr Asp  Leu Gly Asp Ser Pro  Leu Ala Phe
    1820                 1825                 1830

Glu His  Val Met Thr Arg Gly  Val Arg Pro Pro Ala  Pro Ser Leu
    1835                 1840                 1845

Lys Ala  Lys Ala Ile Asn Gln  Thr Ala Val Glu Cys  Thr Trp Thr
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Gly Pro  Arg Asn Val Val Tyr  Gly Ile Phe Tyr Ala  Thr Ser Phe
    1865                 1870                 1875

Leu Asp  Leu Tyr Arg Asn Pro  Lys Ser Leu Thr Thr  Ser Leu His
    1880                 1885                 1890

Asn Lys  Thr Val Ile Val Ser  Lys Asp Glu Gln Tyr  Leu Phe Leu
    1895                 1900                 1905

Val Arg  Val Val Val Pro Tyr  Gln Gly Pro Ser Ser  Asp Tyr Val
    1910                 1915                 1920

Val Val  Lys Met Ile Pro Asp  Ser Arg Leu Pro Pro  Arg His Leu
    1925                 1930                 1935

His Val  Val His Thr Gly Lys  Thr Ser Val Val Ile  Lys Trp Glu
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    1940                1945                1950

Ser Pro  Tyr Asp Ser Pro Asp  Gln Asp Leu Leu Tyr  Ala Ile Ala
    1955                1960                1965

Val Lys  Asp Leu Ile Arg Lys  Thr Asp Arg Ser Tyr  Lys Val Lys
    1970                1975                1980

Ser Arg  Asn Ser Thr Val Glu  Tyr Thr Leu Asn Lys  Leu Glu Pro
    1985                1990                1995

Gly Gly  Lys Tyr His Ile Ile  Val Gln Leu Gly Asn  Met Ser Lys
    2000                2005                2010

Asp Ser  Ser Ile Lys Ile Thr  Thr Val Ser Leu Ser  Ala Pro Asp
    2015                2020                2025

Ala Leu  Lys Ile Ile Thr Glu  Asn Asp His Val Leu  Leu Phe Trp
    2030                2035                2040

Lys Ser  Leu Ala Leu Lys Glu  Lys His Phe Asn Glu  Ser Arg Gly
    2045                2050                2055

Tyr Glu  Ile His Met Phe Asp  Ser Ala Met Asn Ile  Thr Ala Tyr
    2060                2065                2070

Leu Gly  Asn Thr Thr Asp Asn  Phe Phe Lys Ile Ser  Asn Leu Lys
    2075                2080                2085

Met Gly  His Asn Tyr Thr Phe  Thr Val Gln Ala Arg  Cys Leu Phe
    2090                2095                2100

Gly Asn  Gln Ile Cys Gly Glu  Pro Ala Ile Leu Leu  Tyr Asp Glu
    2105                2110                2115

Leu Gly  Ser Gly Ala Asp Ala  Ser Ala Thr Gln Ala  Ala Arg Ser
    2120                2125                2130

Thr Asp  Val Ala Ala Val Val  Val Pro Ile Leu Phe  Leu Ile Leu
    2135                2140                2145

Leu Ser  Leu Gly Val Gly Phe  Ala Ile Leu Tyr Thr  Lys His Arg
    2150                2155                2160

Arg Leu  Gln Ser Ser Phe Thr  Ala Phe Ala Asn Ser  His Tyr Ser
    2165                2170                2175
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Ser Arg Leu Gly Ser Ala Ile Phe Ser Ser Gly Asp Asp Leu Gly
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Glu Asp Asp Glu Asp Ala Pro Met Ile Thr Gly Phe Ser Asp Asp
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Val Pro Met Val Ile Ala
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<211> 6053
<212> DNA
<213> Homo sapiens

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ataaccataa agaaacccaa tggagagacc accaagacaa ctgtgaggat ctggaatgaa 420

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ggaagtgctg cattcaatat gttcatcatt attgcactct gtgtttatgt ggtgcctgac 600

ggagagacaa ggaagattaa gcatttgcgt gtcttctttg tgacagcagc ctggagcatc 660

tttgcctaca cctggcttta cattattttg tctgtcatat ctcctggtgt tgtggaggtc 720

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gggatgatta ttgaacatga aggagacagg ccatcttcta agactgaaat tgaaatggac 900

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gatgagaggg accaagatga tgaagaagct aggcgagaaa tggctaggat tctgaaggaa 1020

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<210> 48
<211> 973
<212> PRT
<213> Homo sapiens

<400> 48

Met Tyr Asn Met Arg Arg Leu Ser Leu Ser Pro Thr Phe Ser Met Gly
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Phe His Leu Leu Val Thr Val Ser Leu Leu Phe Ser His Val Asp His
20 25 30

Val Ile Ala Glu Thr Glu Met Glu Gly Glu Gly Asn Glu Thr Gly Glu
35 40 45

Cys Thr Gly Ser Tyr Tyr Cys Lys Lys Gly Val Ile Leu Pro Ile Trp
50 55 60

Glu Pro Gln Asp Pro Ser Phe Gly Asp Lys Ile Ala Arg Ala Thr Val
65 70 75 80

Tyr Phe Val Ala Met Val Tyr Met Phe Leu Gly Val Ser Ile Ile Ala
85 90 95

```
Asp Arg Phe Met Ser Ser Ile Glu Val Ile Thr Ser Gln Glu Lys Glu
            100                 105                 110

Ile Thr Ile Lys Lys Pro Asn Gly Glu Thr Thr Lys Thr Thr Val Arg
        115                 120                 125

Ile Trp Asn Glu Thr Val Ser Asn Leu Thr Leu Met Ala Leu Gly Ser
    130                 135                 140

Ser Ala Pro Glu Ile Leu Leu Ser Val Ile Glu Val Cys Gly His Asn
145                 150                 155                 160

Phe Thr Ala Gly Asp Leu Gly Pro Ser Thr Ile Val Gly Ser Ala Ala
                165                 170                 175

Phe Asn Met Phe Ile Ile Ile Ala Leu Cys Val Tyr Val Val Pro Asp
            180                 185                 190

Gly Glu Thr Arg Lys Ile Lys His Leu Arg Val Phe Phe Val Thr Ala
        195                 200                 205

Ala Trp Ser Ile Phe Ala Tyr Thr Trp Leu Tyr Ile Ile Leu Ser Val
    210                 215                 220

Ile Ser Pro Gly Val Val Glu Val Trp Glu Gly Leu Leu Thr Phe Phe
225                 230                 235                 240

Phe Phe Pro Ile Cys Val Val Phe Ala Trp Val Ala Asp Arg Arg Leu
                245                 250                 255

Leu Phe Tyr Lys Tyr Val Tyr Lys Arg Tyr Arg Ala Gly Lys Gln Arg
            260                 265                 270

Gly Met Ile Ile Glu His Glu Gly Asp Arg Pro Ser Ser Lys Thr Glu
        275                 280                 285

Ile Glu Met Asp Gly Lys Val Val Asn Ser His Val Glu Asn Phe Leu
    290                 295                 300

Asp Gly Ala Leu Val Leu Glu Val Asp Glu Arg Asp Gln Asp Asp Glu
305                 310                 315                 320

Glu Ala Arg Arg Glu Met Ala Arg Ile Leu Lys Glu Leu Lys Gln Lys
                325                 330                 335

His Pro Asp Lys Glu Ile Glu Gln Leu Ile Glu Leu Ala Asn Tyr Gln
            340                 345                 350
```

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Val Leu Ser Gln Gln Gln Lys Ser Arg Ala Phe Tyr Arg Ile Gln Ala
        355                 360                 365

Thr Arg Leu Met Thr Gly Ala Gly Asn Ile Leu Lys Arg His Ala Ala
    370                 375                 380

Asp Gln Ala Arg Lys Ala Val Ser Met His Glu Val Asn Thr Glu Val
385                 390                 395                 400

Thr Glu Asn Asp Pro Val Ser Lys Ile Phe Phe Glu Gln Gly Thr Tyr
                405                 410                 415

Gln Cys Leu Glu Asn Cys Gly Thr Val Ala Leu Thr Ile Ile Arg Arg
            420                 425                 430

Gly Gly Asp Leu Thr Asn Thr Val Phe Val Asp Phe Arg Thr Glu Asp
        435                 440                 445

Gly Thr Ala Asn Ala Gly Ser Asp Tyr Glu Phe Thr Glu Gly Thr Val
    450                 455                 460

Val Phe Lys Pro Gly Asp Thr Gln Lys Glu Ile Arg Val Gly Ile Ile
465                 470                 475                 480

Asp Asp Asp Ile Phe Glu Glu Asp Glu Asn Phe Leu Val His Leu Ser
                485                 490                 495

Asn Val Lys Val Ser Ser Glu Ala Ser Glu Asp Gly Ile Leu Glu Ala
            500                 505                 510

Asn His Val Ser Thr Leu Ala Cys Leu Gly Ser Pro Ser Thr Ala Thr
        515                 520                 525

Val Thr Ile Phe Asp Asp Asp His Ala Gly Ile Phe Thr Phe Glu Glu
    530                 535                 540

Pro Val Thr His Val Ser Glu Ser Ile Gly Ile Met Glu Val Lys Val
545                 550                 555                 560

Leu Arg Thr Ser Gly Ala Arg Gly Asn Val Ile Val Pro Tyr Lys Thr
                565                 570                 575

Ile Glu Gly Thr Ala Arg Gly Gly Gly Glu Asp Phe Glu Asp Thr Cys
            580                 585                 590

Gly Glu Leu Glu Phe Gln Asn Asp Glu Ile Val Lys Thr Ile Ser Val
        595                 600                 605
```

```
Lys Val Ile Asp Asp Glu Glu Tyr Glu Lys Asn Lys Thr Phe Phe Leu
    610                 615                 620

Glu Ile Gly Glu Pro Arg Leu Val Glu Met Ser Glu Lys Lys Ala Leu
625                 630                 635                 640

Leu Leu Asn Glu Leu Gly Gly Phe Thr Ile Thr Gly Lys Tyr Leu Phe
                645                 650                 655

Gly Gln Pro Val Phe Arg Lys Val His Ala Arg Glu His Pro Ile Leu
            660                 665                 670

Ser Thr Val Ile Thr Ile Ala Asp Glu Tyr Asp Asp Lys Gln Pro Leu
        675                 680                 685

Thr Ser Lys Glu Glu Glu Glu Arg Arg Ile Ala Glu Met Gly Arg Pro
    690                 695                 700

Ile Leu Gly Glu His Thr Lys Leu Glu Val Ile Ile Glu Glu Ser Tyr
705                 710                 715                 720

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

Leu Val Val Gly Thr Asn Ser Trp Arg Glu Gln Phe Ile Glu Ala Ile
            740                 745                 750

Thr Val Ser Ala Gly Glu Asp Asp Asp Asp Asp Glu Cys Gly Glu Glu
        755                 760                 765

Lys Leu Pro Ser Cys Phe Asp Tyr Val Met His Phe Leu Thr Val Phe
    770                 775                 780

Trp Lys Val Leu Phe Ala Phe Val Pro Pro Thr Glu Tyr Trp Asn Gly
785                 790                 795                 800

Trp Ala Cys Phe Ile Val Ser Ile Leu Met Ile Gly Leu Leu Thr Ala
                805                 810                 815

Phe Ile Gly Asp Leu Ala Ser His Phe Gly Cys Thr Ile Gly Leu Lys
            820                 825                 830

Asp Ser Val Thr Ala Val Val Phe Val Ala Leu Gly Thr Ser Val Pro
        835                 840                 845

Asp Thr Phe Ala Ser Lys Val Ala Ala Thr Gln Asp Gln Tyr Ala Asp
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    850                 855                 860

Ala Ser Ile Gly Asn Val Thr Gly Ser Asn Ala Val Asn Val Phe Leu
865                 870                 875                 880

Gly Ile Gly Val Ala Trp Ser Ile Ala Ala Ile Tyr His Ala Ala Asn
                885                 890                 895

Gly Glu Gln Phe Lys Val Ser Pro Gly Thr Leu Ala Phe Ser Val Thr
            900                 905                 910

Leu Phe Thr Ile Phe Ala Phe Ile Asn Val Gly Val Leu Leu Tyr Arg
        915                 920                 925

Arg Arg Pro Glu Ile Gly Gly Glu Leu Gly Gly Pro Arg Thr Ala Lys
    930                 935                 940

Leu Leu Thr Ser Cys Leu Phe Val Leu Leu Trp Leu Leu Tyr Ile Phe
945                 950                 955                 960

Phe Ser Ser Leu Glu Ala Tyr Cys His Ile Lys Gly Phe
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<210> 49
<211> 1983
<212> DNA
<213> Homo sapiens

<400> 49

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gagtcaggtt gttttccata atcactctaa ttggagtttg gaggacaccg gggccctgtt      300

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aaa 1983

<210> 50
<211> 577
<212> PRT
<213> Homo sapiens

<400> 50

Met Gly Ser Arg His Phe Glu Gly Ile Tyr Asp His Val Gly His Phe
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Gly Arg Phe Gln Arg Val Leu Tyr Phe Ile Cys Ala Phe Gln Asn Ile
20 25 30

Ser Cys Gly Ile His Tyr Leu Ala Ser Val Phe Met Gly Val Thr Pro
35 40 45

His His Val Cys Arg Pro Pro Gly Asn Val Ser Gln Val Val Phe His

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    50                  55                  60

Asn His Ser Asn Trp Ser Leu Glu Asp Thr Gly Ala Leu Leu Ser Ser
65                  70                  75                  80

Gly Gln Lys Asp Tyr Val Thr Val Gln Leu Gln Asn Gly Glu Ile Trp
                85                  90                  95

Glu Leu Ser Arg Cys Ser Arg Asn Lys Arg Glu Asn Thr Ser Ser Leu
            100                 105                 110

Gly Tyr Glu Tyr Thr Gly Ser Lys Lys Glu Phe Pro Cys Val Asp Gly
        115                 120                 125

Tyr Ile Tyr Asp Gln Asn Thr Trp Lys Ser Thr Ala Val Thr Gln Trp
    130                 135                 140

Asn Leu Val Cys Asp Arg Lys Trp Leu Ala Met Leu Ile Gln Pro Leu
145                 150                 155                 160

Phe Met Phe Gly Val Leu Leu Gly Ser Val Thr Phe Gly Tyr Phe Ser
                165                 170                 175

Asp Arg Leu Gly Arg Arg Val Val Leu Trp Ala Thr Ser Ser Ser Met
            180                 185                 190

Phe Leu Phe Gly Ile Ala Ala Ala Phe Ala Val Asp Tyr Tyr Thr Phe
        195                 200                 205

Met Ala Ala Arg Phe Phe Leu Ala Met Val Ala Ser Gly Tyr Leu Val
    210                 215                 220

Val Gly Phe Val Tyr Val Met Glu Phe Ile Gly Met Lys Ser Arg Thr
225                 230                 235                 240

Trp Ala Ser Val His Leu His Ser Phe Phe Ala Val Gly Thr Leu Leu
                245                 250                 255

Val Ala Leu Thr Gly Tyr Leu Val Arg Thr Trp Trp Leu Tyr Gln Met
            260                 265                 270

Ile Leu Ser Thr Val Thr Val Pro Phe Ile Leu Cys Cys Trp Val Leu
        275                 280                 285

Pro Glu Thr Pro Phe Trp Leu Leu Ser Glu Gly Arg Tyr Glu Glu Ala
    290                 295                 300
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Gln Lys Ile Val Asp Ile Met Ala Lys Trp Asn Arg Ala Ser Ser Cys
305                 310                 315                 320

Lys Leu Ser Glu Leu Leu Ser Leu Asp Leu Gln Gly Pro Val Ser Asn
                325                 330                 335

Ser Pro Thr Glu Val Gln Lys His Asn Leu Ser Tyr Leu Phe Tyr Asn
            340                 345                 350

Trp Ser Ile Thr Lys Arg Thr Leu Thr Val Trp Leu Ile Trp Phe Thr
        355                 360                 365

Gly Ser Leu Gly Phe Tyr Ser Phe Ser Leu Asn Ser Val Asn Leu Gly
    370                 375                 380

Gly Asn Glu Tyr Leu Asn Leu Phe Leu Leu Gly Val Val Glu Ile Pro
385                 390                 395                 400

Ala Tyr Thr Phe Val Cys Ile Ala Met Asp Lys Val Gly Arg Arg Thr
                405                 410                 415

Val Leu Ala Tyr Ser Leu Phe Cys Ser Ala Leu Ala Cys Gly Val Val
            420                 425                 430

Met Val Ile Pro Gln Lys His Tyr Ile Leu Gly Val Val Thr Ala Met
        435                 440                 445

Val Gly Lys Phe Ala Ile Gly Ala Ala Phe Gly Leu Ile Tyr Leu Tyr
    450                 455                 460

Thr Ala Glu Leu Tyr Pro Thr Ile Val Arg Ser Leu Ala Val Gly Ser
465                 470                 475                 480

Gly Ser Met Val Cys Arg Leu Ala Ser Ile Leu Ala Pro Phe Ser Val
                485                 490                 495

Asp Leu Ser Ser Ile Trp Ile Phe Ile Pro Gln Leu Phe Val Gly Thr
            500                 505                 510

Met Ala Leu Leu Ser Gly Val Leu Thr Leu Lys Leu Pro Glu Thr Leu
        515                 520                 525

Gly Lys Arg Leu Ala Thr Thr Trp Glu Glu Ala Ala Lys Leu Glu Ser
    530                 535                 540

Glu Asn Glu Ser Lys Ser Ser Lys Leu Leu Leu Thr Thr Asn Asn Ser
545                 550                 555                 560
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<211> 3905
<212> DNA
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<400> 51
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<211> 644
<212> PRT
<213> Homo sapiens

<400> 52

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Val Ala Leu Leu Leu Trp Ser Leu Ser Ser Leu Arg Glu Gln Lys Glu
35 40 45

Leu Asp Leu Met Asp Leu Val Gly Glu Asp Arg Lys Trp Met Met Ala
50 55 60

Arg Lys Leu Met Gln Val Asn Asp Thr Leu Thr Ser Glu Asp Ala Gly
65 70 75 80

Leu Arg Asn Ser Lys Asn Cys Thr Glu Pro Ala Leu His Glu Phe Pro
85 90 95

Asn Asp Ile Phe Thr Asn Glu Asp Arg Arg Gln Gly Ala Val Val Leu
100 105 110

His Val Leu Cys Ala Ile Tyr Met Phe Tyr Ala Leu Ala Ile Val Cys
115 120 125

Asp Asp Phe Phe Val Pro Ser Leu Glu Lys Ile Cys Glu Arg Leu His
130 135 140

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Leu Ser Glu Asp Val Ala Gly Ala Thr Phe Met Ala Ala Gly Ser Ser
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Ala Pro Glu Leu Phe Thr Ser Val Ile Gly Val Phe Ile Thr Lys Gly
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Asp Val Gly Val Gly Thr Ile Val Gly Ser Ala Val Phe Asn Ile Leu
            180                 185                 190

Cys Ile Ile Gly Val Cys Gly Leu Phe Ala Gly Gln Val Val Ala Leu
        195                 200                 205

Ser Ser Trp Cys Leu Leu Arg Asp Ser Ile Tyr Tyr Thr Leu Ser Val
    210                 215                 220

Ile Ala Leu Ile Val Phe Ile Tyr Asp Glu Lys Val Ser Trp Trp Glu
225                 230                 235                 240

Ser Leu Val Leu Val Leu Met Tyr Leu Ile Tyr Ile Val Ile Met Lys
                245                 250                 255

Tyr Asn Ala Cys Ile His Gln Cys Phe Glu Arg Arg Thr Lys Gly Ala
            260                 265                 270

Gly Asn Met Val Asn Gly Leu Ala Asn Asn Ala Glu Ile Asp Asp Ser
        275                 280                 285

Ser Asn Cys Asp Ala Thr Val Val Leu Leu Lys Lys Ala Asn Phe His
    290                 295                 300

Arg Lys Ala Ser Val Ile Met Val Asp Glu Leu Leu Ser Ala Tyr Pro
305                 310                 315                 320

His Gln Leu Ser Phe Ser Glu Ala Gly Leu Arg Ile Met Ile Thr Ser
                325                 330                 335

His Phe Pro Pro Lys Thr Arg Leu Ser Met Ala Ser Arg Met Leu Ile
            340                 345                 350

Asn Glu Arg Gln Arg Leu Ile Asn Ser Arg Ala Tyr Thr Asn Gly Glu
        355                 360                 365

Ser Glu Val Ala Ile Lys Ile Pro Ile Lys His Thr Val Glu Asn Gly
    370                 375                 380

Thr Gly Pro Ser Ser Ala Pro Asp Arg Gly Val Asn Gly Thr Arg Arg
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385 390 395 400

Asp Asp Val Val Ala Glu Ala Gly Asn Glu Thr Glu Asn Glu Asn Glu
405 410 415

Asp Asn Glu Asn Asp Glu Glu Glu Glu Glu Asp Glu Asp Asp Asp Glu
420 425 430

Gly Pro Tyr Thr Pro Phe Asp Thr Pro Ser Gly Lys Leu Glu Thr Val
435 440 445

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

Pro Asn Cys Asn Lys Pro Arg Trp Glu Lys Trp Phe Met Val Thr Phe
465 470 475 480

Ala Ser Ser Thr Leu Trp Ile Ala Ala Phe Ser Tyr Met Met Val Trp
485 490 495

Met Val Thr Ile Ile Gly Tyr Thr Leu Gly Ile Pro Asp Val Ile Met
500 505 510

Gly Ile Thr Phe Leu Ala Ala Gly Thr Ser Val Pro Asp Cys Met Ala
515 520 525

Ser Leu Ile Val Ala Arg Gln Gly Met Gly Asp Met Ala Val Ser Asn
530 535 540

Ser Ile Gly Ser Asn Val Phe Asp Ile Leu Ile Gly Leu Gly Leu Pro
545 550 555 560

Trp Ala Leu Gln Thr Leu Ala Val Asp Tyr Gly Ser Tyr Ile Arg Leu
565 570 575

Asn Ser Arg Gly Leu Ile Tyr Ser Val Gly Leu Leu Leu Ala Ser Val
580 585 590

Phe Val Thr Val Phe Gly Val His Leu Asn Lys Trp Gln Leu Asp Lys
595 600 605

Lys Leu Gly Cys Gly Cys Leu Leu Leu Tyr Gly Val Phe Leu Cys Phe
610 615 620

Ser Ile Met Thr Glu Phe Asn Val Phe Thr Phe Val Asn Leu Pro Met
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Cys Gly Asp His

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<211> 2454
<212> DNA
<213> Homo sapiens

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aggaagacca ggttcctgaa agggttattc tgacttaatc tggctataaa aatgctattg 180

gctgttattt ggcatggcca aagtgcaccc agaatgtctt ctctctccat tcagtgcacg 240

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<213> Homo sapiens

<400> 54

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Gly Tyr Asn Val Ala Ala Val Asn Ser Pro Ala Leu Leu Met Gln Gln
35 40 45

Phe Tyr Asn Glu Thr Tyr Tyr Gly Arg Thr Gly Glu Phe Met Glu Asp
50 55 60

Phe Pro Leu Thr Leu Leu Trp Ser Val Thr Val Ser Met Phe Pro Phe
65 70 75 80

Gly Gly Phe Ile Gly Ser Leu Leu Val Gly Pro Leu Val Asn Lys Phe
85 90 95

Gly Arg Lys Gly Ala Leu Leu Phe Asn Asn Ile Phe Ser Ile Val Pro
100 105 110

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Ala Ile Leu Met Gly Cys Ser Arg Val Ala Thr Ser Phe Glu Leu Ile
        115                 120                 125

Ile Ile Ser Arg Leu Leu Val Gly Ile Cys Ala Gly Val Ser Ser Asn
    130                 135                 140

Val Val Pro Met Tyr Leu Gly Glu Leu Ala Pro Lys Asn Leu Arg Gly
145                 150                 155                 160

Ala Leu Gly Val Val Pro Gln Leu Phe Ile Thr Val Gly Ile Leu Val
                165                 170                 175

Ala Gln Ile Phe Gly Leu Arg Asn Leu Leu Ala Asn Val Asp Gly Trp
            180                 185                 190

Pro Ile Leu Leu Gly Leu Thr Gly Val Pro Ala Ala Leu Gln Leu Leu
        195                 200                 205

Leu Leu Pro Phe Phe Pro Glu Ser Pro Arg Tyr Leu Leu Ile Gln Lys
    210                 215                 220

Lys Asp Glu Ala Ala Ala Lys Lys Ala Leu Gln Thr Leu Arg Gly Trp
225                 230                 235                 240

Asp Ser Val Asp Arg Glu Val Ala Glu Ile Arg Gln Glu Asp Glu Ala
                245                 250                 255

Glu Lys Ala Ala Gly Phe Ile Ser Val Leu Lys Leu Phe Arg Met Arg
            260                 265                 270

Ser Leu Arg Trp Gln Leu Leu Ser Ile Ile Val Leu Met Gly Gly Gln
        275                 280                 285

Gln Leu Ser Gly Val Asn Ala Ile Tyr Tyr Tyr Ala Asp Gln Ile Tyr
    290                 295                 300

Leu Ser Ala Gly Val Pro Glu Glu His Val Gln Tyr Val Thr Ala Gly
305                 310                 315                 320

Thr Gly Ala Val Asn Val Val Met Thr Phe Cys Ala Val Phe Val Val
                325                 330                 335

Glu Leu Leu Gly Arg Arg Leu Leu Leu Leu Leu Gly Phe Ser Ile Cys
            340                 345                 350

Leu Ile Ala Cys Cys Val Leu Thr Ala Ala Leu Ala Leu Gln Asp Thr
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        355                 360                 365

Val Ser Trp Met Pro Tyr Ile Ser Ile Val Cys Val Ile Ser Tyr Val
    370                 375                 380

Ile Gly His Ala Leu Gly Pro Ser Pro Ile Pro Ala Leu Leu Ile Thr
385                 390                 395                 400

Glu Ile Phe Leu Gln Ser Ser Arg Pro Ser Ala Phe Met Val Gly Gly
                405                 410                 415

Ser Val His Trp Leu Ser Asn Phe Thr Val Gly Leu Ile Phe Pro Phe
            420                 425                 430

Ile Gln Glu Gly Leu Gly Pro Tyr Ser Phe Ile Val Phe Ala Val Ile
        435                 440                 445

Cys Leu Leu Thr Thr Ile Tyr Ile Phe Leu Ile Val Pro Glu Thr Lys
    450                 455                 460

Ala Lys Thr Phe Ile Glu Ile Asn Gln Ile Phe Thr Lys Met Asn Lys
465                 470                 475                 480

Val Ser Glu Val Tyr Pro Glu Lys Glu Glu Leu Lys Glu Leu Pro Pro
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Val Thr Ser Glu Gln
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Lys Lys Thr Cys Ser Asp Pro Lys Ser Lys Pro Pro Phe Leu Leu Glu
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Lys Ser Met Glu Pro Ser Leu Lys Tyr Ile Asn Lys Lys Phe Pro Asn
    50                  55                  60

Ile Asp Val Arg Asn Ser Thr Gln His Leu Gly Pro Val His Arg Glu
65                  70                  75                  80

Lys Ala Glu Ile Ile Arg Phe Leu Thr Asn Tyr Tyr Gln Ser Phe Val
                85                  90                  95

Asp Val Met Glu Phe Arg Asp His Val Tyr Glu Leu Leu Asn Thr Ile
            100                 105                 110

Asp Ala Cys Gln Cys His Phe Asp Ile Asn Leu Asn Phe Asp Phe Thr
        115                 120                 125

Arg Ser Tyr Leu Asp Leu Ile Val Thr Tyr Thr Ser Val Ile Leu Leu
    130                 135                 140

Leu Ser Arg Ile Glu Asp Arg Arg Ile Leu Ile Gly Met Tyr Asn Cys
145                 150                 155                 160

Ala His Glu Met Leu His Gly His Gly Asp Pro Ser Phe Ala Arg Leu
                165                 170                 175

Gly Gln Met Val Leu Glu Tyr Asp His Pro Leu Lys Lys Leu Thr Glu
            180                 185                 190

Glu Phe Gly Pro His Thr Lys Ala Val Ser Gly Ala Leu Leu Ser Leu
        195                 200                 205

His Phe Leu Phe Val Arg Arg Asn Gln Gly Ala Glu Gln Trp Arg Ser
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Ala Gln Leu Leu Ser Leu Ile Ser Asn Pro Pro Ala Met Ile Asn Pro
225                 230                 235                 240

Ala Asn Ser Asp Thr Met Ala Cys Glu Tyr Leu Ser Val Glu Val Met
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Glu Arg Trp Ile Ile Ile Gly Phe Leu Leu Cys His Gly Cys Leu Asn
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Ser Asn Ser Gln Cys Gln Lys Leu Trp Lys Leu Cys Leu Gln Gly Ser
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Leu Tyr Ile Thr Leu Ile Arg Glu Asp Val Leu Gln Val His Lys Val
    290                 295                 300

Thr Glu Asp Leu Phe Ser Ser Leu Lys Gly Tyr Gly Lys Arg Val Ala
305                 310                 315                 320

Asp Ile Lys Glu Ser Lys Glu His Val Ile Ala Asn Ser Gly Gln Phe
                325                 330                 335

His Cys Gln Arg Arg Gln Phe Leu Arg Met Ala Val Lys Glu Leu Glu
            340                 345                 350

Thr Val Leu Ala Asp Glu Pro Gly Leu Leu Gly Pro Lys Ala Leu Phe
        355                 360                 365

Ala Phe Met Ala Leu Ser Phe Ile Arg Asp Glu Val Thr Trp Leu Val
    370                 375                 380

Arg His Thr Glu Asn Val Thr Lys Thr Lys Thr Pro Glu Asp Tyr Ala
385                 390                 395                 400

Asp Ser Ser Ile Ala Glu Leu Leu Phe Leu Leu Glu Gly Ile Arg Ser
                405                 410                 415

Leu Val Arg Arg His Ile Lys Val Ile Gln Gln Tyr His Leu Gln Tyr
            420                 425                 430

Leu Ala Arg Phe Asp Ala Leu Val Leu Ser Asp Ile Ile Gln Asn Leu
        435                 440                 445

Ser Val Cys Pro Glu Glu Glu Ser Ile Ile Met Ser Ser Phe Val Ser
    450                 455                 460

Ile Leu Ser Ser Leu Asn Leu Lys Gln Val Asp Asn Gly Glu Lys Phe
465                 470                 475                 480

Glu Phe Ser Gly Leu Arg Leu Asp Trp Phe Arg Leu Gln Ala Tyr Thr
                485                 490                 495

Ser Val Ala Lys Ala Pro Leu His Leu His Glu Asn Pro Asp Leu Ala
            500                 505                 510

Lys Val Met Asn Leu Ile Val Phe His Ser Arg Met Leu Asp Ser Val
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Glu Lys Leu Leu Val Glu Thr Ser Asp Leu Ser Thr Phe Cys Phe His
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Leu Arg Ile Phe Glu Lys Met Phe Ala Met Thr Leu Glu Glu Ser Ala
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Met Leu Arg Tyr Ala Ile Ala Phe Pro Leu Ile Cys Ala His Phe Val
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His Cys Thr His Glu Met Cys Pro Glu Glu Tyr Pro His Leu Lys Asn
            580                 585                 590

His Gly Leu His His Cys Asn Ser Phe Leu Glu Glu Leu Ala Lys Gln
        595                 600                 605

Thr Ser Asn Cys Val Leu Glu Ile Cys Ala Glu Gln Arg Asn Leu Ser
    610                 615                 620

Glu Gln Leu Leu Pro Lys His Cys Ala Thr Thr Ile Ser Lys Ala Lys
625                 630                 635                 640

Asn Lys Lys Thr Arg Lys Gln Arg Gln Thr Pro Arg Lys Gly Glu Pro
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Glu Arg Asp Lys Pro Gly Ala Glu Ser His Arg Lys Asn Arg Ser Ile
            660                 665                 670

Val Thr Asn Met Asp Lys Leu His Leu Asn Leu Thr Glu Leu Ala Leu
        675                 680                 685

Thr Met Asn His Val Tyr Ser Phe Ser Val Phe Glu His Thr Ile Phe
    690                 695                 700

Pro Ser Glu Tyr Leu Ser Ser His Leu Glu Ala Arg Leu Asn Arg Ala
705                 710                 715                 720

Ile Val Trp Leu Ala Gly Tyr Asn Ala Thr Thr Gln Glu Ile Val Arg
                725                 730                 735

Pro Ser Glu Leu Leu Ala Gly Val Lys Ala Tyr Ile Gly Phe Ile Gln
            740                 745                 750

Ser Leu Ala Gln Phe Leu Gly Ala Asp Ala Ser Arg Val Ile Arg Asn
        755                 760                 765

Ala Leu Leu Gln Gln Thr Gln Pro Leu Asp Ser Cys Gly Glu Gln Thr
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770 775 780

Ile Thr Thr Leu Tyr Thr Asn Trp Tyr Leu Glu Ser Leu Leu Arg Gln
785 790 795 800

Ala Ser Ser Gly Thr Ile Ile Leu Ser Pro Ala Met Gln Ala Phe Val
805 810 815

Ser Leu Pro Arg Glu Gly Glu Gln Asn Phe Ser Ala Glu Glu Phe Ser
820 825 830

Asp Ile Ser Glu Met Arg Ala Leu Ala Glu Leu Leu Gly Pro Tyr Gly
835 840 845

Met Lys Phe Leu Ser Glu Asn Leu Met Trp His Val Thr Ser Gln Ile
850 855 860

Val Glu Leu Lys Lys Leu Val Val Glu Asn Met Asp Ile Leu Val Gln
865 870 875 880

Ile Arg Ser Asn Phe Ser Lys Pro Asp Leu Met Ala Ser Leu Leu Pro
885 890 895

Gln Leu Thr Gly Ala Glu Asn Val Leu Lys Arg Met Thr Ile Ile Gly
900 905 910

Val Ile Leu Ser Phe Arg Ala Met Ala Gln Glu Gly Leu Arg Glu Val
915 920 925

Phe Ser Ser His Cys Pro Phe Leu Met Gly Pro Ile Glu Cys Leu Lys
930 935 940

Glu Phe Val Thr Pro Asp Thr Asp Ile Lys Val Thr Leu Ser Ile Phe
945 950 955 960

Glu Leu Ala Ser Ala Ala Gly Val Gly Cys Asp Ile Asp Pro Ala Leu
965 970 975

Val Ala Ala Ile Ala Asn Leu Lys Ala Asp Thr Ser Ser Pro Glu Glu
980 985 990

Glu Tyr Lys Val Ala Cys Leu Leu Leu Ile Phe Leu Ala Val Ser Leu
995 1000 1005

Pro Leu Leu Ala Thr Asp Pro Ser Ser Phe Tyr Ser Ile Glu Lys
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Asp Gly  Tyr Asn Asn Asn Ile  His Cys Leu Thr Lys  Ala Ile Ile
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Gln Val  Ser Ala Ala Leu Phe  Thr Leu Tyr Asn Lys  Asn Ile Glu
    1040                1045                1050

Thr His  Leu Lys Glu Phe Leu  Val Val Ala Ser Val  Ser Leu Leu
    1055                1060                1065

Gln Leu  Gly Gln Glu Thr Asp  Lys Leu Lys Thr Arg  Asn Arg Glu
    1070                1075                1080

Ser Ile  Ser Leu Leu Met Arg  Leu Val Val Glu Glu  Ser Ser Phe
    1085                1090                1095

Leu Thr  Leu Asp Met Leu Glu  Ser Cys Phe Pro Tyr  Val Leu Leu
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Arg Asn  Ala Tyr Arg Glu Val  Ser Arg Ala Phe His  Leu Asn
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35 40 45

Pro Gly Thr Lys Ala Asn Tyr Thr Arg Leu Trp Ala Asn Ser Thr Ser
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Ser Trp Asp Ser Val Ile Gln Asn Lys Thr Gly Arg Asn Gln Asn Glu
65 70 75 80

Asn Ile Asn Thr Asn Pro Ile Thr Pro Glu Val Asp Tyr Lys Gly Asn
85 90 95

Ser Thr Asn Met Pro Glu Thr Ser His Ile Val Ala Leu Thr Ser Lys
100 105 110

Ser Glu Gln Glu Leu Tyr Ile Pro Ser Val Val Ser Asn Ser Pro Ser
115 120 125

Thr Val Gln Ser Ile Glu Asn Thr Ser Lys Ser His Gly Glu Ile Phe
130 135 140

Lys Lys Asp Val Cys Ala Glu Asn Asn Asn Asn Met Ala Met Leu Ile
145 150 155 160

Cys Leu Ile Ile Ile Ala Val Leu Phe Leu Ile Cys Thr Phe Leu Phe
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180 185 190

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195 200 205

Ser Gly Leu Trp Pro Ala Glu Ser Asp Thr Trp Lys Arg Thr Lys Gln
210 215 220

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agatagcatt tcaattcaat taaaccctag ccacaggagg actcaagaaa ggaagttgtt 4740

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agttgtgatt ccccccttgca agaatgttgc atacacacac acacacacac acacacacac 5340

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<210> 60
<211> 932

<212> PRT
<213> Homo sapiens

<400> 60

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Trp Val Lys Ser Gly Ala Ala Ala Ala Ala Ala Gly Gly Gly Arg Leu
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Gly Ser Gly Met Lys Asp Val Glu Ser Gly Arg Gly Arg Val Leu Leu
35 40 45

Asn Ser Ala Ala Ala Arg Gly Asp Gly Leu Leu Leu Leu Gly Thr Arg
50 55 60

Ala Ala Thr Leu Gly Gly Gly Gly Gly Gly Leu Arg Glu Ser Arg Arg
65 70 75 80

Gly Lys Gln Gly Ala Arg Met Ser Leu Leu Gly Lys Pro Leu Ser Tyr
85 90 95

Thr Ser Ser Gln Ser Cys Arg Arg Asn Val Lys Tyr Arg Arg Val Gln
100 105 110

Asn Tyr Leu Tyr Asn Val Leu Glu Arg Pro Arg Gly Trp Ala Phe Ile
115 120 125

Tyr His Ala Phe Val Phe Leu Leu Val Phe Gly Cys Leu Ile Leu Ser
130 135 140

Val Phe Ser Thr Ile Pro Glu His Thr Lys Leu Ala Ser Ser Cys Leu
145 150 155 160

Leu Ile Leu Glu Phe Val Met Ile Val Val Phe Gly Leu Glu Phe Ile
165 170 175

Ile Arg Ile Trp Ser Ala Gly Cys Cys Cys Arg Tyr Arg Gly Trp Gln
180 185 190

Gly Arg Leu Arg Phe Ala Arg Lys Pro Phe Cys Val Ile Asp Thr Ile
195 200 205

Val Leu Ile Ala Ser Ile Ala Val Val Ser Ala Lys Thr Gln Gly Asn
210 215 220

Ile Phe Ala Thr Ser Ala Leu Arg Ser Leu Arg Phe Leu Gln Ile Leu
225 230 235 240

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Arg Met Val Arg Met Asp Arg Arg Gly Gly Thr Trp Lys Leu Leu Gly
                245                 250                 255

Ser Val Val Tyr Ala His Ser Lys Glu Leu Ile Thr Ala Trp Tyr Ile
            260                 265                 270

Gly Phe Leu Val Leu Ile Phe Ser Ser Phe Leu Val Tyr Leu Val Glu
        275                 280                 285

Lys Asp Ala Asn Lys Glu Phe Ser Thr Tyr Ala Asp Ala Leu Trp Trp
    290                 295                 300

Gly Thr Ile Thr Leu Thr Thr Ile Gly Tyr Gly Asp Lys Thr Pro Leu
305                 310                 315                 320

Thr Trp Leu Gly Arg Leu Leu Ser Ala Gly Phe Ala Leu Leu Gly Ile
                325                 330                 335

Ser Phe Phe Ala Leu Pro Ala Gly Ile Leu Gly Ser Gly Phe Ala Leu
            340                 345                 350

Lys Val Gln Glu Gln His Arg Gln Lys His Phe Glu Lys Arg Arg Asn
        355                 360                 365

Pro Ala Ala Asn Leu Ile Gln Cys Val Trp Arg Ser Tyr Ala Ala Asp
    370                 375                 380

Glu Lys Ser Val Ser Ile Ala Thr Trp Lys Pro His Leu Lys Ala Leu
385                 390                 395                 400

His Thr Cys Ser Pro Thr Lys Lys Glu Gln Gly Glu Ala Ser Ser Ser
                405                 410                 415

Gln Lys Leu Ser Phe Lys Glu Arg Val Arg Met Ala Ser Pro Arg Gly
            420                 425                 430

Gln Ser Ile Lys Ser Arg Gln Ala Ser Val Gly Asp Arg Arg Ser Pro
        435                 440                 445

Ser Thr Asp Ile Thr Ala Glu Gly Ser Pro Thr Lys Val Gln Lys Ser
    450                 455                 460

Trp Ser Phe Asn Asp Arg Thr Arg Phe Arg Pro Ser Leu Arg Leu Lys
465                 470                 475                 480

Ser Ser Gln Pro Lys Pro Val Ile Asp Ala Asp Thr Ala Leu Gly Thr
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                485                 490                 495

Asp Asp Val Tyr Asp Glu Lys Gly Cys Gln Cys Asp Val Ser Val Glu
            500                 505                 510

Asp Leu Thr Pro Pro Leu Lys Thr Val Ile Arg Ala Ile Arg Ile Met
        515                 520                 525

Lys Phe His Val Ala Lys Arg Lys Phe Lys Glu Thr Leu Arg Pro Tyr
    530                 535                 540

Asp Val Lys Asp Val Ile Glu Gln Tyr Ser Ala Gly His Leu Asp Met
545                 550                 555                 560

Leu Cys Arg Ile Lys Ser Leu Gln Thr Arg Val Asp Gln Ile Leu Gly
                565                 570                 575

Lys Gly Gln Ile Thr Ser Asp Lys Lys Ser Arg Glu Lys Ile Thr Ala
            580                 585                 590

Glu His Glu Thr Thr Asp Asp Leu Ser Met Leu Gly Arg Val Val Lys
        595                 600                 605

Val Glu Lys Gln Val Gln Ser Ile Glu Ser Lys Leu Asp Cys Leu Leu
    610                 615                 620

Asp Ile Tyr Gln Gln Val Leu Arg Lys Gly Ser Ala Ser Ala Leu Ala
625                 630                 635                 640

Leu Ala Ser Phe Gln Ile Pro Pro Phe Glu Cys Glu Gln Thr Ser Asp
                645                 650                 655

Tyr Gln Ser Pro Val Asp Ser Lys Asp Leu Ser Gly Ser Ala Gln Asn
            660                 665                 670

Ser Gly Cys Leu Ser Arg Ser Thr Ser Ala Asn Ile Ser Arg Gly Leu
        675                 680                 685

Gln Phe Ile Leu Thr Pro Asn Glu Phe Ser Ala Gln Thr Phe Tyr Ala
    690                 695                 700

Leu Ser Pro Thr Met His Ser Gln Ala Thr Gln Val Pro Ile Ser Gln
705                 710                 715                 720

Ser Asp Gly Ser Ala Val Ala Ala Thr Asn Thr Ile Ala Asn Gln Ile
                725                 730                 735
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Asn Thr Ala Pro Lys Pro Ala Ala Pro Thr Thr Leu Gln Ile Pro Pro
            740                 745                 750

Pro Leu Pro Ala Ile Lys His Leu Pro Arg Pro Glu Thr Leu His Pro
        755                 760                 765

Asn Pro Ala Gly Leu Gln Glu Ser Ile Ser Asp Val Thr Thr Cys Leu
    770                 775                 780

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

Asp Arg Ser Met Arg Lys Ser Phe Asp Met Gly Gly Glu Thr Leu Leu
                805                 810                 815

Ser Val Cys Pro Met Val Pro Lys Asp Leu Gly Lys Ser Leu Ser Val
            820                 825                 830

Gln Asn Leu Ile Arg Ser Thr Glu Glu Leu Asn Ile Gln Leu Ser Gly
        835                 840                 845

Ser Glu Ser Ser Gly Ser Arg Gly Ser Gln Asp Phe Tyr Pro Lys Trp
    850                 855                 860

Arg Glu Ser Lys Leu Phe Ile Thr Asp Glu Glu Val Gly Pro Glu Glu
865                 870                 875                 880

Thr Glu Thr Asp Thr Phe Asp Ala Ala Pro Gln Pro Ala Arg Glu Ala
                885                 890                 895

Ala Phe Ala Ser Asp Ser Leu Arg Thr Gly Arg Ser Arg Ser Ser Gln
            900                 905                 910

Ser Ile Cys Lys Ala Gly Glu Ser Thr Asp Ala Leu Ser Leu Pro His
        915                 920                 925

Val Lys Leu Lys
    930
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<210> 61
<211> 2504
<212> DNA
<213> Homo sapiens

<400> 61

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gcaagaactc tgtaacagtg ttaccttgga gcctacaatg agaggtattt caaaatgagt      120

gaagcatgac tctcacagat gaaggcctag acgcaggatc tttaatgaaa aaacacttgg      180
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gccacttcaa gacgacaaac gctcactggg caaaacacct tcactgaaaa gagacctcat 240

attatgcaaa aaaaatctta aaaggcctct gccttcagaa gttacaagat gatcaattca 300

acctccacac agcctccaga tgaatcctgc tctcagaacc tcctgatcac tcagcagatc 360

attcctgtgc tgtactgtat ggtcttcatt gcaggaatcc tactcaatgg agtgtcagga 420

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agggaggtta cacaaataaa atgtatagaa ctgaaaagtg aactgggacg gaagtggcac 840

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tggaaaacag acggatttta cttctggaga catggcatac ggttactgac ttatgagcta 2340

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<210> 62
<211> 338
<212> PRT
<213> Homo sapiens

<400> 62

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Asn Leu Leu Ile Thr Gln Gln Ile Ile Pro Val Leu Tyr Cys Met Val
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Phe Ile Ala Gly Ile Leu Leu Asn Gly Val Ser Gly Trp Ile Phe Phe
35 40 45

Tyr Val Pro Ser Ser Lys Ser Phe Ile Ile Tyr Leu Lys Asn Ile Val
50 55 60

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

Asp Ser Gly Leu Gly Pro Trp Gln Leu Asn Val Phe Val Cys Arg Val
85 90 95

Ser Ala Val Leu Phe Tyr Val Asn Met Tyr Val Ser Ile Val Phe Phe
100 105 110

Gly Leu Ile Ser Phe Asp Arg Tyr Tyr Lys Ile Val Lys Pro Leu Trp
115 120 125

Thr Ser Phe Ile Gln Ser Val Ser Tyr Ser Lys Leu Leu Ser Val Ile
130 135 140

Val Trp Met Leu Met Leu Leu Leu Ala Val Pro Asn Ile Ile Leu Thr
145 150 155 160

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Asn Gln Ser Val Arg Glu Val Thr Gln Ile Lys Cys Ile Glu Leu Lys
                165                 170                 175

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

Ala Ile Phe Trp Ile Val Phe Leu Leu Leu Ile Val Phe Tyr Thr Ala
        195                 200                 205

Ile Thr Lys Lys Ile Phe Lys Ser His Leu Lys Ser Ser Arg Asn Ser
    210                 215                 220

Thr Ser Val Lys Lys Lys Ser Ser Arg Asn Ile Phe Ser Ile Val Phe
225                 230                 235                 240

Val Phe Phe Val Cys Phe Val Pro Tyr His Ile Ala Arg Ile Pro Tyr
                245                 250                 255

Thr Lys Ser Gln Thr Glu Ala His Tyr Ser Cys Gln Ser Lys Glu Ile
            260                 265                 270

Leu Arg Tyr Met Lys Glu Phe Thr Leu Leu Leu Ser Ala Ala Asn Val
        275                 280                 285

Cys Leu Asp Pro Ile Ile Tyr Phe Phe Leu Cys Gln Pro Phe Arg Glu
    290                 295                 300

Ile Leu Cys Lys Lys Leu His Ile Pro Leu Lys Ala Gln Asn Asp Leu
305                 310                 315                 320

Asp Ile Ser Arg Ile Lys Arg Gly Asn Thr Thr Leu Glu Ser Thr Asp
                325                 330                 335

Thr Leu
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<211> 3178
<212> DNA
<213> Homo sapiens

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ccatttttca gctatattaa tcttttaaaa caaagaaaat ggatttctta aattcatctg 180

atcaaaactt gacctcagag gaactgttaa acagaatgcc atccaaaatt ctggtgtccc 240

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cttaccttag taacaataac tcaacaaagg ggcatgggtg acgttgttat aattgctctc 2040

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tgacaacatc aggatacaaa ctgcaccatg caagtatttg gtggggcatg ttcataaata 3060

gcaatgagtt tggcaactat ttagagcaat agaggaaaag gatattaaaa gaaaaattgg 3120

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<210> 64
<211> 366
<212> PRT
<213> Homo sapiens

<400> 64

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Leu Asn Arg Met Pro Ser Lys Ile Leu Val Ser Leu Thr Leu Ser Gly
20 25 30

Leu Ala Leu Met Thr Thr Thr Ile Asn Ser Leu Val Ile Ala Ala Ile
35 40 45

Ile Val Thr Arg Lys Leu His His Pro Ala Asn Tyr Leu Ile Cys Ser
50 55 60

Leu Ala Val Thr Asp Phe Leu Val Ala Val Leu Val Met Pro Phe Ser
65 70 75 80

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Ile Val Tyr Ile Val Arg Glu Ser Trp Ile Met Gly Gln Val Val Cys
                85                  90                  95

Asp Ile Trp Leu Ser Val Asp Ile Thr Cys Cys Thr Cys Ser Ile Leu
            100                 105                 110

His Leu Ser Ala Ile Ala Leu Asp Arg Tyr Arg Ala Ile Thr Asp Ala
        115                 120                 125

Val Glu Tyr Ala Arg Lys Arg Thr Pro Lys His Ala Gly Ile Met Ile
    130                 135                 140

Thr Ile Val Trp Ile Ile Ser Val Phe Ile Ser Met Pro Pro Leu Phe
145                 150                 155                 160

Trp Arg His Gln Gly Thr Ser Arg Asp Asp Glu Cys Ile Ile Lys His
                165                 170                 175

Asp His Ile Val Ser Thr Ile Tyr Ser Thr Phe Gly Ala Phe Tyr Ile
            180                 185                 190

Pro Leu Ala Leu Ile Leu Ile Leu Tyr Tyr Lys Ile Tyr Arg Ala Ala
        195                 200                 205

Lys Thr Leu Tyr His Lys Arg Gln Ala Ser Arg Ile Ala Lys Glu Glu
    210                 215                 220

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

Val Ser Thr Ser Tyr Val Leu Glu Lys Ser Leu Ser Asp Pro Ser Thr
                245                 250                 255

Asp Phe Asp Lys Ile His Ser Thr Val Arg Ser Leu Arg Ser Glu Phe
            260                 265                 270

Lys His Glu Lys Ser Trp Arg Arg Gln Lys Ile Ser Gly Thr Arg Glu
        275                 280                 285

Arg Lys Ala Ala Thr Thr Leu Gly Leu Ile Leu Gly Ala Phe Val Ile
    290                 295                 300

Cys Trp Leu Pro Phe Phe Val Lys Glu Leu Val Val Asn Val Cys Asp
305                 310                 315                 320

Lys Cys Lys Ile Ser Glu Glu Met Ser Asn Phe Leu Ala Trp Leu Gly
                325                 330                 335
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Tyr Leu Asn Ser Leu Ile Asn Pro Leu Ile Tyr Thr Ile Phe Asn Glu
340 345 350

Asp Phe Lys Lys Ala Phe Gln Lys Leu Val Arg Cys Arg Cys
355 360 365

<210> 65
<211> 1695
<212> DNA
<213> Homo sapiens

<400> 65
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aagatttctc tgaaaaaaag aagcatgtca ggaatctctg ggtgcccctt tttcctctgg 180

ggacttctag cattgttggg cttggctttg gttatatcac tgatcttcaa tatttcccac 240

tatgtggaaa agcaacgaca agataaaatg tacagctact ccagtgacca caccagggtt 300

gatgagtatt atattgaaga cacaccaatt tatggtaact tagatgatat gatttcagaa 360

ccaatggatg aaaattgcta tgaacaaatg aaagcccgac cagagaaatc tgtaaataag 420

atgcaggaag ccaccccatc tgcacaggca accaatgaaa cacagatgtg ctacgcctca 480

cttgatcaca gcgttaaggg gaagcgtaga aagcccagga aacagaatac tcatttctca 540

gacaaggatg gagatgagca actacatgca atagatgcca gcgtttctaa gaccacctta 600

gtagacagtt tctccccaga aagccaggca gtagaggaaa acattcatga tgatcccatc 660

agactgtttg gattgatccg tgctaagaga gaacctataa actagctgga ccatgatcta 720

gttcaatgat ttggctccta ttgaagatgg cttctaagaa aacaagatgc acagaggaca 780

cagaaggact tggcagcagg gtgatgacct gatcatttgt tgatgggatg gtggcttacc 840

tcttattcac agcttacact tatgcatgcc aaatgtaagg ccatgaaaat cagtatttca 900

aataacttaa aaaatgcttt actactaaaa tgtaaaaaat taatgtgctc acctcggcag 960

cacatatact aaaaattaat aagacccagc ttgaaaattg agcctgataa caagattaca 1020

aattcacaat acctaatact tagggaaata taaaaattta agcatgaatg cgttctggaa 1080

cacgttagaa gaaaaataaa agccaatgag ttttttttta attctccttt ctcaccaatg 1140

ggcaatagcc cataattgaa ataaatttct gattgaaagg tataggaaac attaaaatgc 1200

attactaaga gaagtaatat aattttctta caaagtattt ttcccaaaga tagctttact 1260

atttcaaaaa ttgtcaaatt aatgcatgct ccttacaaca aacaaatatc aaaaagagtt 1320

taggaattct actagccaga gatagtcact tggagaaact ttctatatat ccttctaaat 1380

atttttctgg gcatgcttat gtatgtacat cagttgtttc tttttatttt gaaccaaaaa 1440

tgtggtttct tttgtacaca ttacttaaac tttctttcca gtcaacaata tattgtggat 1500

ttattttcac tgttatattt aactatatat aaatacgcat atattgtaat tttaatgtct 1560

gcttagcacc ccactgataa ccaaatcaca gtttatttaa ataattttaa tgacttttca 1620

aaaacaattt attgatgcaa aaagcaaggt tgagatgaca atgtttcttt caataattaa 1680

aaaatactgc ttcac 1695

<210> 66
<211> 186
<212> PRT
<213> Homo sapiens

<400> 66

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

Leu Leu Gly Leu Ala Leu Val Ile Ser Leu Ile Phe Asn Ile Ser His
20 25 30

Tyr Val Glu Lys Gln Arg Gln Asp Lys Met Tyr Ser Tyr Ser Ser Asp
35 40 45

His Thr Arg Val Asp Glu Tyr Tyr Ile Glu Asp Thr Pro Ile Tyr Gly
50 55 60

Asn Leu Asp Asp Met Ile Ser Glu Pro Met Asp Glu Asn Cys Tyr Glu
65 70 75 80

Gln Met Lys Ala Arg Pro Glu Lys Ser Val Asn Lys Met Gln Glu Ala
85 90 95

Thr Pro Ser Ala Gln Ala Thr Asn Glu Thr Gln Met Cys Tyr Ala Ser
100 105 110

Leu Asp His Ser Val Lys Gly Lys Arg Arg Lys Pro Arg Lys Gln Asn
115 120 125

Thr His Phe Ser Asp Lys Asp Gly Asp Glu Gln Leu His Ala Ile Asp
130 135 140

Ala Ser Val Ser Lys Thr Thr Leu Val Asp Ser Phe Ser Pro Glu Ser
145 150 155 160

Gln Ala Val Glu Glu Asn Ile His Asp Asp Pro Ile Arg Leu Phe Gly
165 170 175

Leu Ile Arg Ala Lys Arg Glu Pro Ile Asn

180 185

<210> 67
<211> 1801
<212> DNA
<213> Homo sapiens

<400> 67
atgctcagtc acagggtgac agagaaaaaa aaagtcacca ccataaaagg aggtctgcac 60

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agctactaca cagagacccg aacgagtcac tgatatacac ctggaccacc accaatggat 180

atacaaatgg caaacaattt tactccgccc tctgcaactc ctcagggaaa tgactgtgac 240

ctctatgcac atcacagcac ggccaggata gtaatgcctc tgcattacag cctcgtcttc 300

atcattgggc tcgtgggaaa cttactagcc ttggtcgtca ttgttcaaaa caggaaaaaa 360

atcaactcta ccaccctcta ttcaacaaat ttggtgattt ctgatatact ttttaccacc 420

gctttgccta cacgaatagc ctactatgca atgggctttg actggagaat cggagatgcc 480

ttgtgtagga taactgcgct agtgttttac atcaacacat atgcaggtgt gaactttatg 540

acctgcctga gtattgaccg cttcattgct gtggtgcacc ctctacgcta caacaagata 600

aaaaggattg aacatgcaaa aggcgtgtgc atatttgtct ggattctagt atttgctcag 660

acactcccac tcctcatcaa ccctatgtca aagcaggagg ctgaaaggat tacatgcatg 720

gagtatccaa actttgaaga aactaaatct cttccctgga ttctgcttgg ggcatgtttc 780

ataggatatg tacttccact tataatcatt ctcatctgct attctcagat ctgctgcaaa 840

ctcttcagaa ctgccaaaca aaacccactc actgagaaat ctggtgtaaa caaaaaggct 900

ctcaacacaa ttattcttat tattgttgtg tttgttctct gtttcacacc ttaccatgtt 960

gcaattattc aacatatgat taagaagctt cgtttctcta atttcctgga atgtagccaa 1020

agacattcgt tccagatttc tctgcacttt acagtatgcc tgatgaactt caattgctgc 1080

atggaccctt ttatctactt ctttgcatgt aaagggtata agagaaaggt tatgaggatg 1140

ctgaaacggc aagtcagtgt atcgatttct agtgctgtga agtcagcccc tgaagaaaat 1200

tcacgtgaaa tgacagaaac gcagatgatg atacattcca agtcttcaaa tggaaagtga 1260

aatggattgt attttggttt atagtgacgt aaactgtatg acaaactttg caggacttcc 1320

cttataaagc aaaataattg ttcagcttcc aattagtatt cttttatatt tctttcattg 1380

ggcactttcc catctccaac tcggaagtaa gcccaagaga acaacataaa gcaaacaaca 1440

taaagcacaa taaaaatgca aataaatatt tcatttttat ttgtaaacga atacaccaaa 1500

aggaggcgct cttaataact cccaatgtaa aaagttttgt tttaataaaa aatttaatta 1560

ttatttcttg ccaacaaatg gctagaaagg actgaataga ttatatattg ccagatgtta 1620

atactgtaac atacttttta ataacatat ttcttaaatc caaatttctc tcaatgttag 1680

atttaattcc ctcaataaca ccaatgtttt gttttgtttc gttctgggtc ataaaacttt 1740

gttaaggaac tcttttggaa taaagagcag gatgctgcaa agttaaaaaa aaaaaaaaaa 1800

a 1801

<210> 68
<211> 361
<212> PRT
<213> Homo sapiens

<400> 68

Met Asp Ile Gln Met Ala Asn Asn Phe Thr Pro Pro Ser Ala Thr Pro
1 5 10 15

Gln Gly Asn Asp Cys Asp Leu Tyr Ala His His Ser Thr Ala Arg Ile
20 25 30

Val Met Pro Leu His Tyr Ser Leu Val Phe Ile Ile Gly Leu Val Gly
35 40 45

Asn Leu Leu Ala Leu Val Val Ile Val Gln Asn Arg Lys Lys Ile Asn
50 55 60

Ser Thr Thr Leu Tyr Ser Thr Asn Leu Val Ile Ser Asp Ile Leu Phe
65 70 75 80

Thr Thr Ala Leu Pro Thr Arg Ile Ala Tyr Tyr Ala Met Gly Phe Asp
85 90 95

Trp Arg Ile Gly Asp Ala Leu Cys Arg Ile Thr Ala Leu Val Phe Tyr
100 105 110

Ile Asn Thr Tyr Ala Gly Val Asn Phe Met Thr Cys Leu Ser Ile Asp
115 120 125

Arg Phe Ile Ala Val Val His Pro Leu Arg Tyr Asn Lys Ile Lys Arg
130 135 140

Ile Glu His Ala Lys Gly Val Cys Ile Phe Val Trp Ile Leu Val Phe
145 150 155 160

Ala Gln Thr Leu Pro Leu Leu Ile Asn Pro Met Ser Lys Gln Glu Ala
165 170 175

Glu Arg Ile Thr Cys Met Glu Tyr Pro Asn Phe Glu Glu Thr Lys Ser
180 185 190

```
Leu Pro Trp Ile Leu Leu Gly Ala Cys Phe Ile Gly Tyr Val Leu Pro
        195                 200                 205

Leu Ile Ile Ile Leu Ile Cys Tyr Ser Gln Ile Cys Cys Lys Leu Phe
    210                 215                 220

Arg Thr Ala Lys Gln Asn Pro Leu Thr Glu Lys Ser Gly Val Asn Lys
225                 230                 235                 240

Lys Ala Leu Asn Thr Ile Ile Leu Ile Ile Val Val Phe Val Leu Cys
                245                 250                 255

Phe Thr Pro Tyr His Val Ala Ile Ile Gln His Met Ile Lys Lys Leu
            260                 265                 270

Arg Phe Ser Asn Phe Leu Glu Cys Ser Gln Arg His Ser Phe Gln Ile
        275                 280                 285

Ser Leu His Phe Thr Val Cys Leu Met Asn Phe Asn Cys Cys Met Asp
    290                 295                 300

Pro Phe Ile Tyr Phe Phe Ala Cys Lys Gly Tyr Lys Arg Lys Val Met
305                 310                 315                 320

Arg Met Leu Lys Arg Gln Val Ser Val Ser Ile Ser Ser Ala Val Lys
                325                 330                 335

Ser Ala Pro Glu Glu Asn Ser Arg Glu Met Thr Glu Thr Gln Met Met
            340                 345                 350

Ile His Ser Lys Ser Ser Asn Gly Lys
        355                 360
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<210> 69
<211> 1041
<212> DNA
<213> Homo sapiens

<400> 69

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ttctatacta cccagcaggc aggtgaccta gaacacatgg agacaagaaa ttactctgcc      120

atgactgaat tctttctggt ggggctttcc caatatccag agctccagct ttttctgttc      180

ctgctctgcc tcatcatgta catgataatc ctcctgggaa atagcctcct cattatcatc      240

accatcttgg attctcgcct ccatactccc atgtatttct ttcttggaaa cctctcattc      300

ttggacatct gttacacatc ctcatccatt cctccaatgc ttattatatt tatgtctgag      360
```

agaaaatcca tctccttcat tggctgtgct ctgcagatgg ttgtgtccct tggcttgggc 420

tccactgagt gtgtcctcct ggctgtgatg gcctatgacc actatgtggc catctgcaac 480

ccactgaggt actccatcat catgaacgga gtgctgtatg tgcaaatggc tgcatggtcc 540

tggatcatag gctgtctgac ctccctattg caaacagttc tgacaatgat gttgcctttc 600

tgtgggaata atgtcattga tcatattacc tgtgaaattt tggcccttct aaaacttgtt 660

tgttcagata tcaccatcaa tgtgcttatc atgacagtga caaatattgt ttcactggtg 720

attcttctac tgttaatttt catctcctat gtgtttattc tctcttccat cctgagaatt 780

aattgtgctg agggaagaaa gaaagccttc tctacctgtt cagcgcactc gattgtggtc 840

atcttattct acggttcagc ccttttatg tacatgaaac ccaagtcaaa gaacactaat 900

acatctgatg agattattgg gctgtcttat ggagtggtaa gcccaatgtt aaatcccatc 960

atctatagcc tcaggaataa agaggtcaaa gaggctgtaa agaaagtcct gagcagacat 1020

ctgcatttat tgaaaatgtg a 1041

<210> 70
<211> 346
<212> PRT
<213> Homo sapiens

<400> 70

Met Tyr Arg Phe Thr Asp Phe Asp Val Ser Asn Ile Ser Ile Tyr Leu
1 5 10 15

Asn His Val Leu Phe Tyr Thr Thr Gln Gln Ala Gly Asp Leu Glu His
20 25 30

Met Glu Thr Arg Asn Tyr Ser Ala Met Thr Glu Phe Phe Leu Val Gly
35 40 45

Leu Ser Gln Tyr Pro Glu Leu Gln Leu Phe Leu Phe Leu Leu Cys Leu
50 55 60

Ile Met Tyr Met Ile Ile Leu Leu Gly Asn Ser Leu Leu Ile Ile Ile
65 70 75 80

Thr Ile Leu Asp Ser Arg Leu His Thr Pro Met Tyr Phe Phe Leu Gly
85 90 95

Asn Leu Ser Phe Leu Asp Ile Cys Tyr Thr Ser Ser Ser Ile Pro Pro
100 105 110

Met Leu Ile Ile Phe Met Ser Glu Arg Lys Ser Ile Ser Phe Ile Gly
115 120 125

```
Cys Ala Leu Gln Met Val Val Ser Leu Gly Leu Gly Ser Thr Glu Cys
    130                 135                 140

Val Leu Leu Ala Val Met Ala Tyr Asp His Tyr Val Ala Ile Cys Asn
145                 150                 155                 160

Pro Leu Arg Tyr Ser Ile Ile Met Asn Gly Val Leu Tyr Val Gln Met
                165                 170                 175

Ala Ala Trp Ser Trp Ile Ile Gly Cys Leu Thr Ser Leu Leu Gln Thr
            180                 185                 190

Val Leu Thr Met Met Leu Pro Phe Cys Gly Asn Asn Val Ile Asp His
        195                 200                 205

Ile Thr Cys Glu Ile Leu Ala Leu Leu Lys Leu Val Cys Ser Asp Ile
    210                 215                 220

Thr Ile Asn Val Leu Ile Met Thr Val Thr Asn Ile Val Ser Leu Val
225                 230                 235                 240

Ile Leu Leu Leu Leu Ile Phe Ile Ser Tyr Val Phe Ile Leu Ser Ser
                245                 250                 255

Ile Leu Arg Ile Asn Cys Ala Glu Gly Arg Lys Lys Ala Phe Ser Thr
            260                 265                 270

Cys Ser Ala His Ser Ile Val Val Ile Leu Phe Tyr Gly Ser Ala Leu
        275                 280                 285

Phe Met Tyr Met Lys Pro Lys Ser Lys Asn Thr Asn Thr Ser Asp Glu
    290                 295                 300

Ile Ile Gly Leu Ser Tyr Gly Val Val Ser Pro Met Leu Asn Pro Ile
305                 310                 315                 320

Ile Tyr Ser Leu Arg Asn Lys Glu Val Lys Glu Ala Val Lys Lys Val
                325                 330                 335

Leu Ser Arg His Leu His Leu Leu Lys Met
            340                 345


<210>  71
<211>  1869
<212>  DNA
<213>  Homo sapiens

<400>  71
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ggagtttgag tgagagatat agggaaggaa gggaagtaag cagtcacaga cgctggcggc 60

caccagaagt ttgagcctct ttggtagcag gaggctggaa gaaaggacag aagtagctct 120

ggctgtgatg gggatcttac tgggcctgct actcctgggg cacctaacag tggacactta 180

tggccgtccc atcctggaag tgccagagag tgtaacagga ccttggaaag gggatgtgaa 240

tcttccctgc acctatgacc ccctgcaagg ctacacccaa gtcttggtga agtggctggt 300

acaacgtggc tcagaccctg tcaccatctt tctacgtgac tcttctggag accatatcca 360

gcaggcaaag taccagggcc gcctgcatgt gagccacaag gttccaggag atgtatccct 420

ccaattgagc accctggaga tggatgaccg gagccactac acgtgtgaag tcacctggca 480

gactcctgat ggcaaccaag tcgtgagaga taagattact gagctccgtg tccagaaact 540

ctctgtctcc aagcccacag tgacaactgg cagcggttat ggcttcacgg tgccccaggg 600

aatgaggatt agccttcaat gccaggctcg gggttctcct cccatcagtt atatttggta 660

taagcaacag actaataacc aggaacccat caaagtagca accctaagta ccttactctt 720

caagcctgcg gtgatagccg actcaggctc ctatttctgc actgccaagg gccaggttgg 780

ctctgagcag cacagcgaca ttgtgaagtt tgtggtcaaa gactcctcaa agctactcaa 840

gaccaagact gaggcaccta caaccatgac ataccccttg aaagcaacat ctacagtgaa 900

gcagtcctgg gactggacca ctgacatgga tggctacctt ggagagacca gtgctgggcc 960

aggaaagagc ctgcctgtct ttgccatcat cctcatcatc tccttgtgct gtatggtggt 1020

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agcagccagg gcacatgcca gagaggccaa cgactctgga gaaaccatga gggtggccat 1140

cttcgcaagt ggctgctcca gtgatgagcc aacttcccag aatctgggca acaactactc 1200

tgatgagccc tgcataggac aggagtacca gatcatcgcc cagatcaatg gcaactacgc 1260

ccgcctgctg gacacagttc ctctggatta tgagtttctg gccactgagg gcaaaagtgt 1320

ctgttaaaaa tgccccatta ggccaggatc tgctgacata attgcctagt cagtccttgc 1380

cttctgcatg gccttcttcc ctgctacctc tcttcctgga tagcccaaag tgtccgccta 1440

ccaacactgg agccgctggg agtcactggc tttgccctgg aatttgccag atgcatctca 1500

agtaagccag ctgctggatt tggctctggg cccttctagt atctctgccg ggggcttctg 1560

gtactcctct ctaaatacca gagggaagat gcccatagca ctaggacttg gtcatcatgc 1620

ctacagacac tattcaactt tggcatcttg ccaccagaag acccgaggga ggctcagctc 1680

tgccagctca gaggaccagc tatatccagg atcatttctc tttcttcagg gccagacagc 1740

ttttaattga aattgttatt tcacaggcca gggttcagtt ctgctcctcc actataagtc 1800

taatgttctg actctctcct ggtgctcaat aaatatctaa tcataacagc aaaaaaaaaa 1860

aaaaaaaaa 1869

<210> 72
<211> 399
<212> PRT
<213> Homo sapiens

<400> 72

Met Gly Ile Leu Leu Gly Leu Leu Leu Leu Gly His Leu Thr Val Asp
1 5 10 15

Thr Tyr Gly Arg Pro Ile Leu Glu Val Pro Glu Ser Val Thr Gly Pro
20 25 30

Trp Lys Gly Asp Val Asn Leu Pro Cys Thr Tyr Asp Pro Leu Gln Gly
35 40 45

Tyr Thr Gln Val Leu Val Lys Trp Leu Val Gln Arg Gly Ser Asp Pro
50 55 60

Val Thr Ile Phe Leu Arg Asp Ser Ser Gly Asp His Ile Gln Gln Ala
65 70 75 80

Lys Tyr Gln Gly Arg Leu His Val Ser His Lys Val Pro Gly Asp Val
85 90 95

Ser Leu Gln Leu Ser Thr Leu Glu Met Asp Asp Arg Ser His Tyr Thr
100 105 110

Cys Glu Val Thr Trp Gln Thr Pro Asp Gly Asn Gln Val Val Arg Asp
115 120 125

Lys Ile Thr Glu Leu Arg Val Gln Lys Leu Ser Val Ser Lys Pro Thr
130 135 140

Val Thr Thr Gly Ser Gly Tyr Gly Phe Thr Val Pro Gln Gly Met Arg
145 150 155 160

Ile Ser Leu Gln Cys Gln Ala Arg Gly Ser Pro Pro Ile Ser Tyr Ile
165 170 175

Trp Tyr Lys Gln Gln Thr Asn Asn Gln Glu Pro Ile Lys Val Ala Thr
180 185 190

Leu Ser Thr Leu Leu Phe Lys Pro Ala Val Ile Ala Asp Ser Gly Ser
195 200 205

Tyr Phe Cys Thr Ala Lys Gly Gln Val Gly Ser Glu Gln His Ser Asp
210 215 220

```
Ile Val Lys Phe Val Val Lys Asp Ser Ser Lys Leu Leu Lys Thr Lys
225                 230                 235                 240

Thr Glu Ala Pro Thr Thr Met Thr Tyr Pro Leu Lys Ala Thr Ser Thr
                245                 250                 255

Val Lys Gln Ser Trp Asp Trp Thr Thr Asp Met Asp Gly Tyr Leu Gly
            260                 265                 270

Glu Thr Ser Ala Gly Pro Gly Lys Ser Leu Pro Val Phe Ala Ile Ile
        275                 280                 285

Leu Ile Ile Ser Leu Cys Cys Met Val Val Phe Thr Met Ala Tyr Ile
    290                 295                 300

Met Leu Cys Arg Lys Thr Ser Gln Gln Glu His Val Tyr Glu Ala Ala
305                 310                 315                 320

Arg Ala His Ala Arg Glu Ala Asn Asp Ser Gly Glu Thr Met Arg Val
                325                 330                 335

Ala Ile Phe Ala Ser Gly Cys Ser Ser Asp Glu Pro Thr Ser Gln Asn
            340                 345                 350

Leu Gly Asn Asn Tyr Ser Asp Glu Pro Cys Ile Gly Gln Glu Tyr Gln
        355                 360                 365

Ile Ile Ala Gln Ile Asn Gly Asn Tyr Ala Arg Leu Leu Asp Thr Val
    370                 375                 380

Pro Leu Asp Tyr Glu Phe Leu Ala Thr Glu Gly Lys Ser Val Cys
385                 390                 395
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<210> 73
<211> 900
<212> DNA
<213> Homo sapiens

<400> 73

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atcattatga atctgtttat tacagtggtc aattgcaaaa cttgggtcaa aagccataga      120

atctcctctt ctgataggat tctgttcagc ctgggcatca ccaggtttct tatgctggga      180

ctatttctgg tgaacaccat ctacttcgtc tcttcaaata cggaaaggtc agtctacctg      240

tctgcttttt ttgtgttgtg tttcatgttt ttggactcga gcagtgtctg gtttgtgacc      300

ttgctcaata tcttgtactg tgtgaagatt actaacttcc aacactcagt gtttctcctg      360
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ctgaagcgga atatctcccc aaagatcccc aggctgctgc tggcctgtgt gctgatttct 420

gctttcacca cttgcctgta catcacgctt agccaggcat caccttttcc tgaacttgtg 480

actacgagaa ataacacatc atttaatatc agtgagggca tcttgtcttt agtggtttct 540

ttggtcttga gctcatctct ccagttcatc attaatgtga cttctgcttc cttgctaata 600

cactccttga ggagacatat acagaagatg cagaaaaatg ccactggttt ctggaatccc 660

cagacggaag ctcatgtagg tgctatgaag ctgatggtct atttcctcat cctctacatt 720

ccatattcag ttgctaccct ggtccagtat ctccccttt atgcagggat ggatatgggg 780

accaaatcca tttgtctgat ttttgccacc ctttactctc caggacattc tgttctcatt 840

attatcacac atcctaaact gaaaacaaca gcaaagaaga ttctttgttt caaaaaatag 900

<210> 74
<211> 299
<212> PRT
<213> Homo sapiens

<400> 74

Met Leu Arg Leu Phe Tyr Phe Ser Ala Ile Ile Ala Ser Val Ile Leu
1 5 10 15

Asn Phe Val Gly Ile Ile Met Asn Leu Phe Ile Thr Val Val Asn Cys
20 25 30

Lys Thr Trp Val Lys Ser His Arg Ile Ser Ser Ser Asp Arg Ile Leu
35 40 45

Phe Ser Leu Gly Ile Thr Arg Phe Leu Met Leu Gly Leu Phe Leu Val
50 55 60

Asn Thr Ile Tyr Phe Val Ser Ser Asn Thr Glu Arg Ser Val Tyr Leu
65 70 75 80

Ser Ala Phe Phe Val Leu Cys Phe Met Phe Leu Asp Ser Ser Ser Val
85 90 95

Trp Phe Val Thr Leu Leu Asn Ile Leu Tyr Cys Val Lys Ile Thr Asn
100 105 110

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

Ile Pro Arg Leu Leu Leu Ala Cys Val Leu Ile Ser Ala Phe Thr Thr
130 135 140

```
Cys Leu Tyr Ile Thr Leu Ser Gln Ala Ser Pro Phe Pro Glu Leu Val
145                 150                 155                 160

Thr Thr Arg Asn Asn Thr Ser Phe Asn Ile Ser Glu Gly Ile Leu Ser
                165                 170                 175

Leu Val Val Ser Leu Val Leu Ser Ser Ser Leu Gln Phe Ile Ile Asn
            180                 185                 190

Val Thr Ser Ala Ser Leu Leu Ile His Ser Leu Arg Arg His Ile Gln
        195                 200                 205

Lys Met Gln Lys Asn Ala Thr Gly Phe Trp Asn Pro Gln Thr Glu Ala
    210                 215                 220

His Val Gly Ala Met Lys Leu Met Val Tyr Phe Leu Ile Leu Tyr Ile
225                 230                 235                 240

Pro Tyr Ser Val Ala Thr Leu Val Gln Tyr Leu Pro Phe Tyr Ala Gly
                245                 250                 255

Met Asp Met Gly Thr Lys Ser Ile Cys Leu Ile Phe Ala Thr Leu Tyr
            260                 265                 270

Ser Pro Gly His Ser Val Leu Ile Ile Ile Thr His Pro Lys Leu Lys
        275                 280                 285

Thr Thr Ala Lys Lys Ile Leu Cys Phe Lys Lys
    290                 295
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<210> 75
<211> 1676
<212> DNA
<213> Homo sapiens

<400> 75

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ttaaagtcag cccagcacca actccgacgc caagcgttac actggaaact acttttaaa      120

gcaacaaaag agtctaaaac aaaatacaac atttcttaaa tacactgttt ccagaaagag      180

ctattttaac agaagcaact caaagatatc ccttcgacag aagtggaagt gctgaaaaat      240

gctcatctct cacacagact tttgatggac aggaggtgct gctttctgtg aaccactgaa      300

gtagagcagc tgaaatcaca aaacctggaa gacttggctt tacgtactcc caattgtgca      360

ctagaaaaca gctcatctat tgctctaaca gtctagttct tgatctgctg accatgacac      420

aaaacattgc tgtttctcaa cctatgataa tttaaagaga acataagttt ctaagtatca      480

tgcctaccaa caagctgtaa aatgatcacc ctgaacaatc aagatcaacc tgtccctttt      540
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ataattggat tatttgttaa catcactgca ttatgggttt tcagttgtac caccaagaag 660

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actttaccct ttcgaatgtt ttattatgca aaagatgaat ggccatttgg agagtacttc 780

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tttattagtg ctgacagata catggccatt gtacagccga agtacgccaa agaacttaaa 900

aacacgtgca aagccgtgct ggcgtgtgtg ggagtctgga taatgaccct gaccacgacc 960

acccctctgc tactgctcta taaagaccca gataaagact ccactcccgc cacctgcctc 1020

aagatttctg acatcatcta tctaaaagct gtgaacgtgc tgaacctcac tcgactgaca 1080

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<211> 331
<212> PRT
<213> Homo sapiens

<400> 76

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Phe Ile Ile Gly Leu Phe Val Asn Ile Thr Ala Leu Trp Val Phe Ser
35 40 45

Cys Thr Thr Lys Lys Arg Thr Thr Val Thr Ile Tyr Met Met Asn Val
50 55 60

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Ala Leu Val Asp Leu Ile Phe Ile Met Thr Leu Pro Phe Arg Met Phe
65                  70                  75                  80

Tyr Tyr Ala Lys Asp Glu Trp Pro Phe Gly Glu Tyr Phe Cys Gln Ile
                85                  90                  95

Leu Gly Ala Leu Thr Val Phe Tyr Pro Ser Ile Ala Leu Trp Leu Leu
            100                 105                 110

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

Ala Lys Glu Leu Lys Asn Thr Cys Lys Ala Val Leu Ala Cys Val Gly
    130                 135                 140

Val Trp Ile Met Thr Leu Thr Thr Thr Thr Pro Leu Leu Leu Leu Tyr
145                 150                 155                 160

Lys Asp Pro Asp Lys Asp Ser Thr Pro Ala Thr Cys Leu Lys Ile Ser
                165                 170                 175

Asp Ile Ile Tyr Leu Lys Ala Val Asn Val Leu Asn Leu Thr Arg Leu
            180                 185                 190

Thr Phe Phe Phe Leu Ile Pro Leu Phe Ile Met Ile Gly Cys Tyr Leu
        195                 200                 205

Val Ile Ile His Asn Leu Leu His Gly Arg Thr Ser Lys Leu Lys Pro
    210                 215                 220

Lys Val Lys Glu Lys Ser Ile Arg Ile Ile Ile Thr Leu Leu Val Gln
225                 230                 235                 240

Val Leu Val Cys Phe Met Pro Phe His Ile Cys Phe Ala Phe Leu Met
                245                 250                 255

Leu Gly Thr Gly Glu Asn Ser Tyr Asn Pro Trp Gly Ala Phe Thr Thr
            260                 265                 270

Phe Leu Met Asn Leu Ser Thr Cys Leu Asp Val Ile Leu Tyr Tyr Ile
        275                 280                 285

Val Ser Lys Gln Phe Gln Ala Arg Val Ile Ser Val Met Leu Tyr Arg
    290                 295                 300

Asn Tyr Leu Arg Ser Met Arg Arg Lys Ser Phe Arg Ser Gly Ser Leu
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Arg Ser Leu Ser Asn Ile Asn Ser Glu Met Leu
325 330

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<211> 1101
<212> DNA
<213> Homo sapiens

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gaattctggt caattgtttc attgagttgg tcaatggtag cagctggttc aagaccaaga 180

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<210> 78
<211> 316
<212> PRT
<213> Homo sapiens

<400> 78

Met Met Gly Leu Thr Glu Gly Val Phe Leu Ile Leu Ser Gly Thr Gln
1 5 10 15

Phe Thr Leu Gly Ile Leu Val Asn Cys Phe Ile Glu Leu Val Asn Gly
20 25 30

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Ser Ser Trp Phe Lys Thr Lys Arg Met Ser Leu Ser Asp Phe Ile Ile
        35                  40                  45

Thr Thr Leu Ala Leu Leu Arg Ile Ile Leu Leu Cys Ile Ile Leu Thr
    50                  55                  60

Asp Ser Phe Leu Ile Glu Phe Ser Pro Asn Thr His Asp Ser Gly Ile
65                  70                  75                  80

Ile Met Gln Ile Ile Asp Val Ser Trp Thr Phe Thr Asn His Leu Ser
                85                  90                  95

Ile Trp Leu Ala Thr Cys Leu Gly Val Leu Tyr Cys Leu Lys Ile Ala
            100                 105                 110

Ser Phe Ser His Pro Thr Phe Leu Trp Leu Lys Trp Arg Val Ser Arg
        115                 120                 125

Val Met Val Trp Met Leu Leu Gly Ala Leu Leu Leu Ser Cys Gly Ser
    130                 135                 140

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

Ile Glu Ala Thr Arg Asn Val Thr Glu His Phe Arg Lys Lys Arg Ser
                165                 170                 175

Glu Tyr Tyr Leu Ile His Val Leu Gly Thr Leu Trp Tyr Leu Pro Pro
            180                 185                 190

Leu Ile Val Ser Leu Ala Ser Tyr Ser Leu Leu Ile Phe Ser Leu Gly
        195                 200                 205

Arg His Thr Arg Gln Met Leu Gln Asn Gly Thr Ser Ser Arg Asp Pro
    210                 215                 220

Thr Thr Glu Ala His Lys Arg Ala Ile Arg Ile Ile Leu Ser Phe Phe
225                 230                 235                 240

Phe Leu Phe Leu Leu Tyr Phe Leu Ala Phe Leu Ile Ala Ser Phe Gly
                245                 250                 255

Asn Phe Leu Pro Lys Thr Lys Met Ala Lys Met Ile Gly Glu Val Met
            260                 265                 270

Thr Met Phe Tyr Pro Ala Gly His Ser Phe Ile Leu Ile Leu Gly Asn
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275 280 285

Ser Lys Leu Lys Gln Thr Phe Val Val Met Leu Arg Cys Glu Ser Gly
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305 310 315

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<211> 7860
<212> DNA
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<400> 79
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<211> 341
<212> PRT
<213> Homo sapiens

<400> 80

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20 25 30

Gly Val Ser Asp Pro Ile His Gly Val Pro Glu Phe Ile Ser Val Gly
35 40 45

Tyr Val Asp Ser His Pro Ile Thr Thr Tyr Asp Ser Val Thr Arg Gln
50 55 60

Lys Glu Pro Arg Ala Pro Trp Met Ala Glu Asn Leu Ala Pro Asp His
65 70 75 80

Trp Glu Arg Tyr Thr Gln Leu Leu Arg Gly Trp Gln Gln Met Phe Lys
85 90 95

Val Glu Leu Lys Arg Leu Gln Arg His Tyr Asn His Ser Gly Ser His
100 105 110

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Thr Tyr Gln Arg Met Ile Gly Cys Glu Leu Leu Glu Asp Gly Ser Thr
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Thr Gly Phe Leu Gln Tyr Ala Tyr Asp Gly Gln Asp Phe Leu Ile Phe
    130                 135                 140

Asn Lys Asp Thr Leu Ser Trp Leu Ala Val Asp Asn Val Ala His Thr
145                 150                 155                 160

Ile Lys Gln Ala Trp Glu Ala Asn Gln His Glu Leu Leu Tyr Gln Lys
                165                 170                 175

Asn Trp Leu Glu Glu Glu Cys Ile Ala Trp Leu Lys Arg Phe Leu Glu
            180                 185                 190

Tyr Gly Lys Asp Thr Leu Gln Arg Thr Glu Pro Pro Leu Val Arg Val
        195                 200                 205

Asn Arg Lys Glu Thr Phe Pro Gly Val Thr Ala Leu Phe Cys Lys Ala
    210                 215                 220

His Gly Phe Tyr Pro Pro Glu Ile Tyr Met Thr Trp Met Lys Asn Gly
225                 230                 235                 240

Glu Glu Ile Val Gln Glu Ile Asp Tyr Gly Asp Ile Leu Pro Ser Gly
                245                 250                 255

Asp Gly Thr Tyr Gln Ala Trp Ala Ser Ile Glu Leu Asp Pro Gln Ser
            260                 265                 270

Ser Asn Leu Tyr Ser Cys His Val Glu His Cys Gly Val His Met Val
        275                 280                 285

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

Val Ser Gly Ser Ile Val Leu Val Ile Val Leu Ala Gly Val Gly Val
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<211> 1938
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<210> 82
<211> 381
<212> PRT
<213> Homo sapiens

<400> 82

Met Arg Ser His Thr Ile Thr Met Thr Thr Thr Ser Val Ser Ser Trp
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Pro Tyr Ser Ser His Arg Met Arg Phe Ile Thr Asn His Ser Asp Gln
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Pro Pro Gln Asn Phe Ser Ala Thr Pro Asn Val Thr Thr Cys Pro Met
35 40 45

Asp Glu Lys Leu Leu Ser Thr Val Leu Thr Thr Ser Tyr Ser Val Ile
50 55 60

Phe Ile Val Gly Leu Val Gly Asn Ile Ile Ala Leu Tyr Val Phe Leu
65 70 75 80

Gly Ile His Arg Lys Arg Asn Ser Ile Gln Ile Tyr Leu Leu Asn Val
85 90 95

Ala Ile Ala Asp Leu Leu Leu Ile Phe Cys Leu Pro Phe Arg Ile Met
100 105 110

Tyr His Ile Asn Gln Asn Lys Trp Thr Leu Gly Val Ile Leu Cys Lys
115 120 125

Val Val Gly Thr Leu Phe Tyr Met Asn Met Tyr Ile Ser Ile Ile Leu
130 135 140

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

Gln Gln Arg Lys Ala Ile Thr Thr Lys Gln Ser Ile Tyr Val Cys Cys
165 170 175

Ile Val Trp Met Leu Ala Leu Gly Gly Phe Leu Thr Met Ile Ile Leu
180 185 190

Thr Leu Lys Lys Gly Gly His Asn Ser Thr Met Cys Phe His Tyr Arg

195 200 205

Asp Lys His Asn Ala Lys Gly Glu Ala Ile Phe Asn Phe Ile Leu Val
210 215 220

Val Met Phe Trp Leu Ile Phe Leu Leu Ile Ile Leu Ser Tyr Ile Lys
225 230 235 240

Ile Gly Lys Asn Leu Leu Arg Ile Ser Lys Arg Arg Ser Lys Phe Pro
245 250 255

Asn Ser Gly Lys Tyr Ala Thr Thr Ala Arg Asn Ser Phe Ile Val Leu
260 265 270

Ile Ile Phe Thr Ile Cys Phe Val Pro Tyr His Ala Phe Arg Phe Ile
275 280 285

Tyr Ile Ser Ser Gln Leu Asn Val Ser Ser Cys Tyr Trp Lys Glu Ile
290 295 300

Val His Lys Thr Asn Glu Ile Met Leu Val Leu Ser Ser Phe Asn Ser
305 310 315 320

Cys Leu Asp Pro Val Met Tyr Phe Leu Met Ser Ser Asn Ile Arg Lys
325 330 335

Ile Met Cys Gln Leu Leu Phe Arg Arg Phe Gln Gly Glu Pro Ser Arg
340 345 350

Ser Glu Ser Thr Ser Glu Phe Lys Pro Gly Tyr Ser Leu His Asp Thr
355 360 365

Ser Val Ala Val Lys Ile Gln Ser Ser Ser Lys Ser Thr
370 375 380

<210> 83
<211> 3171
<212> DNA
<213> Homo sapiens

<400> 83
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<210> 84
<211> 367
<212> PRT
<213> Homo sapiens

<400> 84

Met Tyr Pro Glu Ser Thr Thr Gly Ser Pro Ala Arg Leu Ser Leu Arg
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Gln Thr Gly Ser Pro Gly Met Ile Tyr Ser Thr Arg Tyr Gly Ser Pro
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Lys Arg Gln Leu Gln Phe Tyr Arg Asn Leu Gly Lys Ser Gly Leu Arg
35 40 45

Val Ser Cys Leu Gly Leu Gly Thr Trp Val Thr Phe Gly Gly Gln Ile
50 55 60

Thr Asp Glu Met Ala Glu Gln Leu Met Thr Leu Ala Tyr Asp Asn Gly
65 70 75 80

Ile Asn Leu Phe Asp Thr Ala Glu Val Tyr Ala Ala Gly Lys Ala Glu
85 90 95

```
Val Val Leu Gly Asn Ile Ile Lys Lys Lys Gly Trp Arg Arg Ser Ser
            100                 105                 110

Leu Val Ile Thr Thr Lys Ile Phe Trp Gly Gly Lys Ala Glu Thr Glu
        115                 120                 125

Arg Gly Leu Ser Arg Lys His Ile Ile Glu Gly Leu Lys Ala Ser Leu
    130                 135                 140

Glu Arg Leu Gln Leu Glu Tyr Val Asp Val Val Phe Ala Asn Arg Pro
145                 150                 155                 160

Asp Pro Asn Thr Pro Met Glu Glu Thr Val Arg Ala Met Thr His Val
                165                 170                 175

Ile Asn Gln Gly Met Ala Met Tyr Trp Gly Thr Ser Arg Trp Ser Ser
            180                 185                 190

Met Glu Ile Met Glu Ala Tyr Ser Val Ala Arg Gln Phe Asn Leu Thr
        195                 200                 205

Pro Pro Ile Cys Glu Gln Ala Glu Tyr His Met Phe Gln Arg Glu Lys
    210                 215                 220

Val Glu Val Gln Leu Pro Glu Leu Phe His Lys Ile Gly Val Gly Ala
225                 230                 235                 240

Met Thr Trp Ser Pro Leu Ala Cys Gly Ile Val Ser Gly Lys Tyr Asp
                245                 250                 255

Ser Gly Ile Pro Pro Tyr Ser Arg Ala Ser Leu Lys Gly Tyr Gln Trp
            260                 265                 270

Leu Lys Asp Lys Ile Leu Ser Glu Glu Gly Arg Arg Gln Gln Ala Lys
        275                 280                 285

Leu Lys Glu Leu Gln Ala Ile Ala Glu Arg Leu Gly Cys Thr Leu Pro
    290                 295                 300

Gln Leu Ala Ile Ala Trp Cys Leu Arg Asn Glu Gly Val Ser Ser Val
305                 310                 315                 320

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

Ile Gln Val Leu Pro Lys Leu Ser Ser Ser Ile Ile His Glu Ile Asp
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Ser Ile Leu Gly Asn Lys Pro Tyr Ser Lys Lys Asp Tyr Arg Ser
355 360 365

<210> 85
<211> 3070
<212> DNA
<213> Homo sapiens

<400> 85
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cagtctgagc ttctaccgag tcttccccca cctcaatccc tgttgctatg gagactacca 360

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<210> 86
<211> 103
<212> PRT
<213> Homo sapiens

<400> 86

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Val Leu Lys Ala Leu Asn Ala Thr Leu His Ser Asn Leu Leu Cys Arg
            20                  25                  30

Pro Gly Pro Gly Leu Gly Pro Asp Asn Gln Thr Glu Glu Arg Arg Ala
        35                  40                  45

Ser Leu Pro Gly Arg Asp Asp Asn Ser Tyr Met Tyr Ile Leu Phe Val
    50                  55                  60

Met Phe Leu Phe Ala Val Thr Val Gly Ser Leu Ile Leu Gly Tyr Thr
65                  70                  75                  80

Arg Ser Arg Lys Val Asp Lys Arg Ser Asp Pro Tyr His Val Tyr Ile
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Lys Asn Arg Val Ser Met Ile
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<210> 87
<211> 2199
<212> DNA
<213> Homo sapiens

<400> 87

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<210> 88
<211> 243
<212> PRT
<213> Homo sapiens

<400> 88

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Leu Leu Gly Val Ala Ala Ser Leu Cys Val Arg Cys Ser Arg Pro Gly
20 25 30

Ala Lys Arg Ser Glu Lys Ile Tyr Gln Gln Arg Ser Leu Arg Glu Asp
35 40 45

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Gln Gln Ser Phe Thr Gly Ser Arg Thr Tyr Ser Leu Val Gly Gln Ala
    50                  55                  60

Trp Pro Gly Pro Leu Ala Asp Met Ala Pro Thr Arg Lys Asp Lys Leu
65                  70                  75                  80

Leu Gln Phe Tyr Pro Ser Leu Glu Asp Pro Ala Ser Ser Arg Tyr Gln
                85                  90                  95

Asn Phe Ser Lys Gly Ser Arg His Gly Ser Glu Glu Ala Tyr Ile Asp
            100                 105                 110

Pro Ile Ala Met Glu Tyr Tyr Asn Trp Gly Arg Phe Ser Lys Pro Pro
        115                 120                 125

Glu Asp Asp Asp Ala Asn Ser Tyr Glu Asn Val Leu Ile Cys Lys Gln
    130                 135                 140

Lys Thr Thr Glu Thr Gly Ala Gln Gln Glu Gly Ile Gly Gly Leu Cys
145                 150                 155                 160

Arg Gly Asp Leu Ser Leu Ser Leu Ala Leu Lys Thr Gly Pro Thr Ser
                165                 170                 175

Gly Leu Cys Pro Ser Ala Ser Pro Glu Glu Asp Glu Glu Ser Glu Asp
            180                 185                 190

Tyr Gln Asn Ser Ala Ser Ile His Gln Trp Arg Glu Ser Arg Lys Val
        195                 200                 205

Met Gly Gln Leu Gln Arg Glu Ala Ser Pro Gly Pro Val Gly Ser Pro
    210                 215                 220

Asp Glu Glu Asp Gly Glu Pro Asp Tyr Val Asn Gly Glu Val Ala Ala
225                 230                 235                 240

Thr Glu Ala
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<210> 89
<211> 3960
<212> DNA
<213> Homo sapiens

<400> 89
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<211> 377
<212> PRT
<213> Homo sapiens

<400> 90

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Thr Leu Glu Arg Gly Arg Gln Asp Pro Ala Ser Tyr Ala Pro Asp Ala
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Lys Pro Ser Asp Leu Gln Leu Ser Lys Arg Leu Pro Pro Cys Phe Ser
35 40 45

His Lys Thr Trp Val Phe Ser Val Leu Met Gly Ser Cys Leu Leu Val
50 55 60

Thr Ser Gly Phe Ser Leu Tyr Leu Gly Asn Val Phe Pro Ala Glu Met
65 70 75 80

Asp Tyr Leu Arg Cys Ala Ala Gly Ser Cys Ile Pro Ser Ala Ile Val
85 90 95

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

Ile Leu Phe Val Ser Thr Phe Ala Val Thr Thr Thr Cys Leu Ile Trp
115 120 125

Phe Gly Cys Lys Leu Val Leu Asn Pro Ser Ala Ile Asn Ile Asn Phe
130 135 140

Asn Leu Ile Leu Leu Leu Leu Leu Glu Leu Leu Met Ala Ala Thr Val
145 150 155 160

Ile Ile Ala Ala Arg Ser Ser Glu Glu Asp Cys Lys Lys Lys Lys Gly
165 170 175

Ser Met Ser Asp Ser Ala Asn Ile Leu Asp Glu Val Pro Phe Pro Ala
180 185 190

Arg Val Leu Lys Ser Tyr Ser Val Val Glu Val Ile Ala Gly Ile Ser
195 200 205

Ala Val Leu Gly Gly Ile Ile Ala Leu Asn Val Asp Asp Ser Val Ser

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Gly Pro His Leu Ser Val Thr Phe Phe Trp Ile Leu Val Ala Cys Phe
225                 230                 235                 240

Pro Ser Ala Ile Ala Ser His Val Ala Ala Glu Cys Pro Ser Lys Cys
                245                 250                 255

Leu Val Glu Val Leu Ile Ala Ile Ser Ser Leu Thr Ser Pro Leu Leu
            260                 265                 270

Phe Thr Ala Ser Gly Tyr Leu Ser Phe Ser Ile Met Arg Ile Val Glu
        275                 280                 285

Met Phe Lys Asp Tyr Pro Pro Ala Ile Lys Pro Ser Tyr Asp Val Leu
    290                 295                 300

Leu Leu Leu Leu Leu Leu Val Leu Leu Leu Gln Ala Gly Leu Asn Thr
305                 310                 315                 320

Gly Thr Ala Ile Gln Cys Val Arg Phe Lys Val Ser Ala Arg Leu Gln
                325                 330                 335

Gly Ala Ser Trp Asp Thr Gln Asn Gly Pro Gln Glu Arg Leu Ala Gly
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Glu Val Ala Arg Ser Pro Leu Lys Glu Phe Asp Lys Glu Lys Ala Trp
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Arg Ala Val Val Val Gln Met Ala Gln
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<212> DNA
<213> Homo sapiens

<400> 91

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tacactgaac tgatcaagta ctttgaaaat gacttcgaaa tttctcttgg tgtccttcat      240

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actagtttct tttgatggat tccgttggga ttacttatat aaagttccaa cgccccattt      360

tcattatatt atgaaatatg gtgttcacgt gaagcaagtt actaatgttt ttattacaaa      420
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<211> 477
<212> PRT
<213> Homo sapiens

<400> 92

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Val Ser Phe Asp Gly Phe Arg Trp Asp Tyr Leu Tyr Lys Val Pro Thr
35 40 45

Pro His Phe His Tyr Ile Met Lys Tyr Gly Val His Val Lys Gln Val
50 55 60

Thr Asn Val Phe Ile Thr Lys Thr Tyr Pro Asn His Tyr Thr Leu Val
65 70 75 80

Thr Gly Leu Phe Ala Glu Asn His Gly Ile Val Ala Asn Asp Met Phe
85 90 95

Asp Pro Ile Arg Asn Lys Ser Phe Ser Leu Asp His Met Asn Ile Tyr
100 105 110

Asp Ser Lys Phe Trp Glu Glu Ala Thr Pro Ile Trp Ile Thr Asn Gln
115 120 125

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Arg Ala Gly His Thr Ser Gly Ala Ala Met Trp Pro Gly Thr Asp Val
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Lys Ile His Lys Arg Phe Pro Thr His Tyr Met Pro Tyr Asn Glu Ser
145                 150                 155                 160

Val Ser Phe Glu Asp Arg Val Ala Lys Ile Ile Glu Trp Phe Thr Ser
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Lys Glu Pro Ile Asn Leu Gly Leu Leu Tyr Trp Glu Asp Pro Asp Asp
            180                 185                 190

Met Gly His His Leu Gly Pro Asp Ser Pro Leu Met Gly Pro Val Ile
        195                 200                 205

Ser Asp Ile Asp Lys Lys Leu Gly Tyr Leu Ile Gln Met Leu Lys Lys
    210                 215                 220

Ala Lys Leu Trp Asn Thr Leu Asn Leu Ile Ile Thr Ser Asp His Gly
225                 230                 235                 240

Met Thr Gln Cys Ser Glu Glu Arg Leu Ile Glu Leu Asp Gln Tyr Leu
                245                 250                 255

Asp Lys Asp His Tyr Thr Leu Ile Asp Gln Ser Pro Val Ala Ala Ile
            260                 265                 270

Leu Pro Lys Glu Gly Lys Phe Asp Glu Val Tyr Glu Ala Leu Thr His
        275                 280                 285

Ala His Pro Asn Leu Thr Val Tyr Lys Lys Glu Asp Val Pro Glu Arg
    290                 295                 300

Trp His Tyr Lys Tyr Asn Ser Arg Ile Gln Pro Ile Ile Ala Val Ala
305                 310                 315                 320

Asp Glu Gly Trp His Ile Leu Gln Asn Lys Ser Asp Asp Phe Leu Leu
                325                 330                 335

Gly Asn His Gly Tyr Asp Asn Ala Leu Ala Asp Met His Pro Ile Phe
            340                 345                 350

Leu Ala His Gly Pro Ala Phe Arg Lys Asn Phe Ser Lys Glu Ala Met
        355                 360                 365

Asn Ser Thr Asp Leu Tyr Pro Leu Leu Cys His Leu Leu Asn Ile Thr
    370                 375                 380
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Ala Met Pro His Asn Gly Ser Phe Trp Asn Val Gln Asp Leu Leu Asn
385                 390                 395                 400

Ser Ala Met Pro Arg Val Val Pro Tyr Thr Gln Ser Thr Ile Leu Leu
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Pro Gly Ser Val Lys Pro Ala Glu Tyr Asp Gln Glu Gly Ser Tyr Pro
            420                 425                 430

Tyr Phe Ile Gly Val Ser Leu Gly Ser Ile Ile Val Ile Val Phe Phe
        435                 440                 445

Val Ile Phe Ile Lys His Leu Ile His Ser Gln Ile Pro Ala Leu Gln
    450                 455                 460

Asp Met His Ala Glu Ile Ala Gln Pro Leu Leu Gln Ala
465                 470                 475
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<210> 93
<211> 3431
<212> DNA
<213> Homo sapiens

<400> 93

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<210> 94
<211> 555
<212> PRT
<213> Homo sapiens

<400> 94

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Pro Leu Ala Lys Gly Tyr Leu Pro Leu Pro Arg Gly Ala Pro Val Gly
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Lys Glu Ser Val Glu Leu Gln Asn Gly Pro Lys Ala Gly Thr Phe Pro
35 40 45

Val Asn Gly Ala Pro Arg Asp Ser Leu Ala Ala Ala Ser Gly Val Leu
50 55 60

Gly Gly Pro Gln Thr Pro Leu Ala Pro Glu Glu Glu Thr Gln Ala Arg
65 70 75 80

Leu Leu Pro Ala Gly Ala Gly Ala Glu Thr Pro Gly Ala Glu Ser Ser
85 90 95

Pro Leu Pro Leu Thr Ala Leu Ser Pro Arg Arg Phe Val Val Leu Leu
100 105 110

Ile Phe Ser Leu Tyr Ser Leu Val Asn Ala Phe Gln Trp Ile Gln Tyr
115 120 125

Ser Ile Ile Ser Asn Val Phe Glu Gly Phe Tyr Gly Val Thr Leu Leu
130 135 140

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His Ile Asp Trp Leu Ser Met Val Tyr Met Leu Ala Tyr Val Pro Leu
145                 150                 155                 160

Ile Phe Pro Ala Thr Trp Leu Leu Asp Thr Arg Gly Leu Arg Leu Thr
                165                 170                 175

Ala Leu Leu Gly Ser Gly Leu Asn Cys Leu Gly Ala Trp Ile Lys Cys
            180                 185                 190

Gly Ser Val Gln Gln His Leu Phe Trp Val Thr Met Leu Gly Gln Cys
        195                 200                 205

Leu Cys Ser Val Ala Gln Val Phe Ile Leu Gly Leu Pro Ser Arg Ile
    210                 215                 220

Ala Ser Val Trp Phe Gly Pro Lys Glu Val Ser Thr Ala Cys Ala Thr
225                 230                 235                 240

Ala Val Leu Gly Asn Gln Leu Gly Thr Ala Val Gly Phe Leu Leu Pro
                245                 250                 255

Pro Val Leu Val Pro Asn Thr Gln Asn Asp Thr Asn Leu Leu Ala Cys
            260                 265                 270

Asn Ile Ser Thr Met Phe Tyr Gly Thr Ser Ala Val Ala Thr Leu Leu
        275                 280                 285

Phe Ile Leu Thr Ala Ile Ala Phe Lys Glu Lys Pro Arg Tyr Pro Pro
    290                 295                 300

Ser Gln Ala Gln Ala Ala Leu Gln Asp Ser Pro Pro Glu Glu Tyr Ser
305                 310                 315                 320

Tyr Lys Lys Ser Ile Arg Asn Leu Phe Lys Asn Ile Pro Phe Val Leu
                325                 330                 335

Leu Leu Ile Thr Tyr Gly Ile Met Thr Gly Ala Phe Tyr Ser Val Ser
            340                 345                 350

Thr Leu Leu Asn Gln Met Ile Leu Thr Tyr Tyr Glu Gly Glu Glu Val
        355                 360                 365

Asn Ala Gly Arg Ile Gly Leu Thr Leu Val Val Ala Gly Met Val Gly
    370                 375                 380

Ser Ile Leu Cys Gly Leu Trp Leu Asp Tyr Thr Lys Thr Tyr Lys Gln
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385 390 395 400

Thr Thr Leu Ile Val Tyr Ile Leu Ser Phe Ile Gly Met Val Ile Phe
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Thr Phe Thr Leu Asp Leu Arg Tyr Ile Ile Ile Val Phe Val Thr Gly
420 425 430

Gly Val Leu Gly Phe Phe Met Thr Gly Tyr Leu Pro Leu Gly Phe Glu
435 440 445

Phe Ala Val Glu Ile Thr Tyr Pro Glu Ser Glu Gly Thr Ser Ser Gly
450 455 460

Leu Leu Asn Ala Ser Ala Gln Ile Phe Gly Ile Leu Phe Thr Leu Ala
465 470 475 480

Gln Gly Lys Leu Thr Ser Asp Tyr Gly Pro Lys Ala Gly Asn Ile Phe
485 490 495

Leu Cys Val Trp Met Phe Ile Gly Ile Ile Leu Thr Ala Leu Ile Lys
500 505 510

Ser Asp Leu Arg Arg His Asn Ile Asn Ile Gly Ile Thr Asn Val Asp
515 520 525

Val Lys Ala Ile Pro Ala Asp Ser Pro Thr Asp Gln Glu Pro Lys Thr
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Val Met Leu Ser Lys Gln Ser Glu Ser Ala Ile
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tgatatctgt gtaaaaattg atctacatcc acccttaaa agcattgatg aattaattag 420

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<211> 337
<212> PRT
<213> Homo sapiens

<400> 96

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20 25 30

Ile Gly Ser Leu Cys Val Ser Phe Leu Gln Ala Lys Lys Glu Ser Glu
35 40 45

Leu Gly Ile Tyr Leu Phe Ser Leu Ser Leu Ser Asp Leu Leu Tyr Ala
50 55 60

Leu Thr Leu Pro Leu Trp Ile Asp Tyr Thr Trp Asn Lys Asp Asn Trp
65 70 75 80

Thr Phe Ser Pro Ala Leu Cys Lys Gly Ser Ala Phe Leu Met Tyr Met
85 90 95

Asn Phe Tyr Ser Ser Thr Ala Phe Leu Thr Cys Ile Ala Val Asp Arg
100 105 110

Tyr Leu Ala Val Val Tyr Pro Leu Lys Phe Phe Phe Leu Arg Thr Arg
115 120 125

Arg Phe Ala Leu Met Val Ser Leu Ser Ile Trp Ile Leu Glu Thr Ile
130 135 140

Phe Asn Ala Val Met Leu Trp Glu Asp Glu Thr Val Val Glu Tyr Cys
145 150 155 160

Asp Ala Glu Lys Ser Asn Phe Thr Leu Cys Tyr Asp Lys Tyr Pro Leu
165 170 175

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Glu Lys Trp Gln Ile Asn Leu Asn Leu Phe Arg Thr Cys Thr Gly Tyr
            180                 185                 190

Ala Ile Pro Leu Val Thr Ile Leu Ile Cys Asn Arg Lys Val Tyr Gln
        195                 200                 205

Ala Val Arg His Asn Lys Ala Thr Glu Asn Lys Glu Lys Lys Arg Ile
    210                 215                 220

Ile Lys Leu Leu Val Ser Ile Thr Val Thr Phe Val Leu Cys Phe Thr
225                 230                 235                 240

Pro Phe His Val Met Leu Leu Ile Arg Cys Ile Leu Glu His Ala Val
                245                 250                 255

Asn Phe Glu Asp His Ser Asn Ser Gly Lys Arg Thr Tyr Thr Met Tyr
            260                 265                 270

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

Leu Tyr Cys Phe Val Thr Glu Thr Gly Arg Tyr Asp Met Trp Asn Ile
    290                 295                 300

Leu Lys Phe Cys Thr Gly Arg Cys Asn Thr Ser Gln Arg Gln Arg Lys
305                 310                 315                 320

Arg Ile Leu Ser Val Ser Thr Lys Asp Thr Met Glu Leu Glu Val Leu
                325                 330                 335

Glu
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<210> 97
<211> 2632
<212> DNA
<213> Homo sapiens

<400> 97

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cgcgcccctc ttcagccccg gcacctacga gcgcctggcg ctgctgctgg gctccattgg      300

gctgctgggc gtcggcaaca acctgctggt gctcgtcctc tactacaagt tccagcggct      360
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<210> 98
<211> 402
<212> PRT
<213> Homo sapiens

<400> 98

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Ala Pro Leu Phe Ser Pro Gly Thr Tyr Glu Arg Leu Ala Leu Leu Leu
35 40 45

Gly Ser Ile Gly Leu Leu Gly Val Gly Asn Asn Leu Leu Val Leu Val
50 55 60

Leu Tyr Tyr Lys Phe Gln Arg Leu Arg Thr Pro Thr His Leu Leu Leu
65 70 75 80

Val Asn Ile Ser Leu Ser Asp Leu Leu Val Ser Leu Phe Gly Val Thr
85 90 95

Phe Thr Phe Val Ser Cys Leu Arg Asn Gly Trp Val Trp Asp Thr Val
100 105 110

Gly Cys Val Trp Asp Gly Phe Ser Gly Ser Leu Phe Gly Ile Val Ser
115 120 125

Ile Ala Thr Leu Thr Val Leu Ala Tyr Glu Arg Tyr Ile Arg Val Val
130 135 140

His Ala Arg Val Ile Asn Phe Ser Trp Ala Trp Arg Ala Ile Thr Tyr
145 150 155 160

Ile Trp Leu Tyr Ser Leu Ala Trp Ala Gly Ala Pro Leu Leu Gly Trp
165 170 175

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Asn Arg Tyr Ile Leu Asp Val His Gly Leu Gly Cys Thr Val Asp Trp
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Lys Ser Lys Asp Ala Asn Asp Ser Ser Phe Val Leu Phe Leu Phe Leu
        195                 200                 205

Gly Cys Leu Val Val Pro Leu Gly Val Ile Ala His Cys Tyr Gly His
    210                 215                 220

Ile Leu Tyr Ser Ile Arg Met Leu Arg Cys Val Glu Asp Leu Gln Thr
225                 230                 235                 240

Ile Gln Val Ile Lys Ile Leu Lys Tyr Glu Lys Lys Leu Ala Lys Met
                245                 250                 255

Cys Phe Leu Met Ile Phe Thr Phe Leu Val Cys Trp Met Pro Tyr Ile
            260                 265                 270

Val Ile Cys Phe Leu Val Val Asn Gly His Gly His Leu Val Thr Pro
        275                 280                 285

Thr Ile Ser Ile Val Ser Tyr Leu Phe Ala Lys Ser Asn Thr Val Tyr
    290                 295                 300

Asn Pro Val Ile Tyr Val Phe Met Ile Arg Lys Phe Arg Arg Ser Leu
305                 310                 315                 320

Leu Gln Leu Leu Cys Leu Arg Leu Leu Arg Cys Gln Arg Pro Ala Lys
                325                 330                 335

Asp Leu Pro Ala Ala Gly Ser Glu Met Gln Ile Arg Pro Ile Val Met
            340                 345                 350

Ser Gln Lys Asp Gly Asp Arg Pro Lys Lys Lys Val Thr Phe Asn Ser
        355                 360                 365

Ser Ser Ile Ile Phe Ile Ile Thr Ser Asp Glu Ser Leu Ser Val Asp
    370                 375                 380

Asp Ser Asp Lys Thr Asn Gly Ser Lys Val Asp Val Ile Gln Val Arg
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Pro Leu
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<211> 1637
<212> DNA
<213> Homo sapiens

<400> 99
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tttgacgttg agccaacaat gaaagaagga gcagaaaaag gagaaggaag aagaactcca 180

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<210> 100

<211> 303
<212> PRT
<213> Homo sapiens

<400> 100

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Phe Ile Ile Gly Asn Leu Ser Asn Gly Phe Ile Val Leu Ile Asn Cys
            20                  25                  30

Ile Asp Trp Val Ser Lys Arg Glu Leu Ser Ser Val Asp Lys Leu Leu
        35                  40                  45

Ile Ile Leu Ala Ile Ser Arg Ile Gly Leu Ile Trp Glu Ile Leu Val
    50                  55                  60

Ser Trp Phe Leu Ala Leu His Tyr Leu Ala Ile Phe Val Ser Gly Thr
65                  70                  75                  80

Gly Leu Arg Ile Met Ile Phe Ser Trp Ile Val Ser Asn His Phe Asn
                85                  90                  95

Leu Trp Leu Ala Thr Ile Phe Ser Ile Phe Tyr Leu Leu Lys Ile Ala
            100                 105                 110

Ser Phe Ser Ser Pro Ala Phe Leu Tyr Leu Lys Trp Arg Val Asn Lys
        115                 120                 125

Val Ile Leu Met Ile Leu Leu Gly Thr Leu Val Phe Leu Phe Leu Asn
    130                 135                 140

Leu Ile Gln Ile Asn Met His Ile Lys Asp Trp Leu Asp Arg Tyr Glu
145                 150                 155                 160

Arg Asn Thr Thr Trp Asn Phe Ser Met Ser Asp Phe Glu Thr Phe Ser
                165                 170                 175

Val Ser Val Lys Phe Thr Met Thr Met Phe Ser Leu Thr Pro Phe Thr
            180                 185                 190

Val Ala Phe Ile Ser Phe Leu Leu Leu Ile Phe Ser Leu Gln Lys His
        195                 200                 205

Leu Gln Lys Met Gln Leu Asn Tyr Lys Gly His Arg Asp Pro Arg Thr
    210                 215                 220

Lys Val His Thr Asn Ala Leu Lys Ile Val Ile Ser Phe Leu Leu Phe
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Tyr Ala Ser Phe Phe Leu Cys Val Leu Ile Ser Trp Ile Ser Glu Leu
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Tyr Gln Asn Thr Val Ile Tyr Met Leu Cys Glu Thr Ile Gly Val Phe
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Ser Pro Ser Ser His Ser Phe Leu Leu Ile Leu Gly Asn Ala Lys Leu
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Arg Gln Ala Phe Leu Leu Val Ala Ala Lys Val Trp Ala Lys Arg
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Asn Val Asp Val Asp Ser Asn Ile Ile Thr Ala Ile Val Gln Leu His
35 40 45

Gly Leu Trp Met Asp Cys Thr Trp Tyr Ser Thr Gly Met Phe Ser Cys
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Ala Leu Lys His Ser Ile Leu Ser Leu Pro Ile His Val Gln Ala Ala
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Arg Ala Thr Met Val Leu Ala Cys Val Leu Ser Ala Leu Gly Ile Cys
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Thr Ser Thr Val Gly Met Lys Cys Thr Arg Leu Gly Gly Asp Arg Glu
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Thr Lys Ser His Ala Ser Phe Ala Gly Gly Val Cys Phe Met Ser Ala
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Gly Ile Ser Ser Leu Ile Ser Thr Val Trp Tyr Thr Lys Glu Ile Ile
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Ala Asn Phe Leu Asp Leu Thr Val Pro Glu Ser Asn Lys His Glu Pro
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Gly Gly Ala Ile Tyr Ile Gly Phe Ile Ser Ala Met Leu Leu Phe Ile
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Ser Gly Met Ile Phe Cys Thr Ser Cys Ile Lys Arg Asn Pro Glu Ala
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Asn Asn Ser Thr His Asn Leu Lys Asp Tyr Val
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<400> 104

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Val Gln Asn Ile Thr Lys Glu Asp Val Lys Ser Tyr Leu Phe Arg Asn
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Ala Phe Val Leu Leu Thr Val Thr Ala Val Ile Val Gly Thr Ile Leu
50 55 60

Gly Phe Thr Leu Arg Pro Tyr Arg Met Ser Tyr Arg Glu Val Lys Tyr
65 70 75 80

Phe Ser Phe Pro Gly Glu Leu Leu Met Arg Met Leu Gln Met Leu Val
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Leu Pro Leu Ile Ile Ser Ser Leu Val Thr Gly Met Ala Ala Leu Asp
100 105 110

Ser Lys Ala Ser Gly Lys Met Gly Met Arg Ala Val Val Tyr Tyr Met
115 120 125

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Thr Thr Thr Ile Ile Ala Val Val Ile Gly Ile Ile Ile Val Ile Ile
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Ile His Pro Gly Lys Gly Thr Lys Glu Asn Met His Arg Glu Gly Lys
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Ile Val Arg Val Thr Ala Ala Asp Ala Phe Leu Asp Leu Ile Arg Asn
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Met Phe Pro Pro Asn Leu Val Glu Ala Cys Phe Lys Gln Phe Lys Thr
            180                 185                 190

Asn Tyr Glu Lys Arg Ser Phe Lys Val Pro Ile Gln Ala Asn Glu Thr
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Leu Val Gly Ala Val Ile Asn Asn Val Ser Glu Ala Met Glu Thr Leu
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Thr Arg Ile Thr Glu Glu Leu Val Pro Val Pro Gly Ser Val Asn Gly
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Val Asn Ala Leu Gly Leu Val Val Phe Ser Met Cys Phe Gly Phe Val
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Ile Gly Asn Met Lys Glu Gln Gly Gln Ala Leu Arg Glu Phe Phe Asp
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Ser Leu Asn Glu Ala Ile Met Arg Leu Val Ala Val Ile Met Trp Tyr
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Ala Pro Val Gly Ile Leu Phe Leu Ile Ala Gly Lys Ile Val Glu Met
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Glu Asp Met Gly Val Ile Gly Gly Gln Leu Ala Met Tyr Thr Val Thr
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Val Ile Val Gly Leu Leu Ile His Ala Val Ile Val Leu Pro Leu Leu
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Tyr Phe Leu Val Thr Arg Lys Asn Pro Trp Val Phe Ile Gly Gly Leu
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Leu Gln Ala Leu Ile Thr Ala Leu Gly Thr Ser Ser Ser Ser Ala Thr
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Leu Pro Ile Thr Phe Lys Cys Leu Glu Glu Asn Asn Gly Val Asp Lys
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Asn Asn Phe Glu Leu Asn Phe Gly Gln Ile Ile Thr Ile Ser Ile Thr
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Ala Thr Ala Ala Ser Ile Gly Ala Ala Gly Ile Pro Gln Ala Gly Leu
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Val Thr Met Val Ile Val Leu Thr Ser Val Gly Leu Pro Thr Asp Asp
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Ile Thr Leu Ile Ile Ala Val Asp Trp Phe Leu Asp Arg Leu Arg Thr
465                 470                 475                 480

Thr Thr Asn Val Leu Gly Asp Ser Leu Gly Ala Gly Ile Val Glu His
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Leu Ser Arg His Glu Leu Lys Asn Arg Asp Val Glu Met Gly Asn Ser
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Asp Asn Glu Thr Glu Lys Pro Ile Asp Ser Glu Thr Lys Met
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<400> 106

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Arg Arg Cys Ala Gly Phe Leu Arg Arg Gln Ala Leu Val Leu Leu Thr
35 40 45

Val Ser Gly Val Leu Ala Gly Ala Gly Leu Gly Ala Ala Leu Arg Gly
50 55 60

Leu Ser Leu Ser Arg Thr Gln Val Thr Tyr Leu Ala Phe Pro Gly Glu
65 70 75 80

Met Leu Leu Arg Met Leu Arg Met Ile Ile Leu Pro Leu Val Val Cys
85 90 95

Ser Leu Val Ser Gly Ala Ala Ser Leu Asp Ala Ser Cys Leu Gly Arg
100 105 110

Leu Gly Gly Ile Ala Val Ala Tyr Phe Gly Leu Thr Thr Leu Ser Ala
115 120 125

Ser Ala Leu Ala Val Ala Leu Ala Phe Ile Ile Lys Pro Gly Ser Gly
130 135 140

Ala Gln Thr Leu Gln Ser Ser Asp Leu Gly Leu Glu Asp Ser Gly Pro
145 150 155 160

Pro Pro Val Pro Lys Glu Thr Val Asp Ser Phe Leu Asp Leu Ala Arg

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

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

Gly Leu Val Leu Phe Ala Leu Val Leu Gly Val Ala Leu Lys Lys Leu
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Gly Ser Glu Gly Glu Asp Leu Ile Arg Phe Phe Asn Ser Leu Asn Glu
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Ala Thr Met Val Leu Val Ser Trp Ile Met Trp Tyr Val Pro Val Gly
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Ile Met Phe Leu Val Gly Ser Lys Ile Val Glu Met Lys Asp Ile Ile
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Val Leu Val Thr Ser Leu Gly Lys Tyr Ile Phe Ala Ser Ile Leu Gly
    290                 295                 300

His Val Ile His Gly Gly Ile Val Leu Pro Leu Ile Tyr Phe Val Phe
305                 310                 315                 320

Thr Arg Lys Asn Pro Phe Arg Phe Leu Leu Gly Leu Leu Ala Pro Phe
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Ala Thr Ala Phe Ala Thr Cys Ser Ser Ser Ala Thr Leu Pro Ser Met
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Met Lys Cys Ile Glu Glu Asn Asn Gly Val Asp Lys Arg Ile Ser Arg
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Phe Ile Leu Pro Ile Gly Ala Thr Val Asn Met Asp Gly Ala Ala Ile
    370                 375                 380

Phe Gln Cys Val Ala Ala Val Phe Ile Ala Gln Leu Asn Asn Val Glu
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Leu Asn Ala Gly Gln Ile Phe Thr Ile Leu Val Thr Ala Thr Ala Ser
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Ser Val Gly Ala Ala Gly Val Pro Ala Gly Gly Val Leu Thr Ile Ala
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Ile Ile Leu Glu Ala Ile Gly Leu Pro Thr His Asp Leu Pro Leu Ile
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Leu Ala Val Asp Trp Ile Val Asp Arg Thr Thr Thr Val Val Asn Val
450 455 460

Glu Gly Asp Ala Leu Gly Ala Gly Ile Leu His His Leu Asn Gln Lys
465 470 475 480

Ala Thr Lys Lys Gly Glu Gln Glu Leu Ala Glu Val Lys Val Glu Ala
485 490 495

Ile Pro Asn Cys Lys Ser Glu Glu Glu Thr Ser Pro Leu Val Thr His
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Gln Asn Pro Ala Gly Pro Val Ala Ser Ala Pro Glu Leu Glu Ser Lys
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Glu Ser Val Leu
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Arg Ala Ser Ser Val Ile Thr Ala Thr Trp Val Tyr Gln Gly Leu Trp
35 40 45

Met Asn Cys Ala Gly Asn Ala Leu Gly Ser Phe His Cys Arg Pro His
50 55 60

Phe Thr Ile Phe Lys Val Ala Gly Tyr Ile Gln Ala Cys Arg Gly Leu
65 70 75 80

Met Ile Ala Ala Val Ser Leu Gly Phe Phe Gly Ser Ile Phe Ala Leu
85 90 95

Phe Gly Met Lys Cys Thr Lys Val Gly Gly Ser Asp Lys Ala Lys Ala
100 105 110

Lys Ile Ala Cys Leu Ala Gly Ile Val Phe Ile Leu Ser Gly Leu Cys
115 120 125

Ser Met Thr Gly Cys Ser Leu Tyr Ala Asn Lys Ile Thr Thr Glu Phe
130 135 140

Phe Asp Pro Leu Phe Val Glu Gln Lys Tyr Glu Leu Gly Ala Ala Leu
145 150 155 160

Phe Ile Gly Trp Ala Gly Ala Ser Leu Cys Ile Ile Gly Gly Val Ile
165 170 175

Phe Cys Phe Ser Ile Ser Asp Asn Asn Lys Thr Pro Arg Tyr Thr Tyr
180 185 190

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Tyr Val
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<400> 110

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Leu Leu Leu Leu Leu Leu Leu Pro Pro Pro Leu Leu Pro Pro Pro Pro

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Pro Pro Ala Asn Ala Arg Leu Ala Ala Ala Ala Asp Pro Pro Gly Gly
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Pro Leu Gly His Gly Ala Glu Arg Ile Leu Ala Val Pro Val Arg Thr
    50                  55                  60

Asp Ala Gln Gly Arg Leu Val Ser His Val Val Ser Ala Ala Thr Ser
65                  70                  75                  80

Arg Ala Gly Val Arg Ala Arg Arg Ala Ala Pro Val Arg Thr Pro Ser
                85                  90                  95

Phe Pro Gly Gly Asn Glu Glu Glu Pro Gly Ser His Leu Phe Tyr Asn
            100                 105                 110

Val Thr Val Phe Gly Arg Asp Leu His Leu Arg Leu Arg Pro Asn Ala
        115                 120                 125

Arg Leu Val Ala Pro Gly Ala Thr Met Glu Trp Gln Gly Glu Lys Gly
    130                 135                 140

Thr Thr Arg Val Glu Pro Leu Leu Gly Ser Cys Leu Tyr Val Gly Asp
145                 150                 155                 160

Val Ala Gly Leu Ala Glu Ala Ser Ser Val Ala Leu Ser Asn Cys Asp
                165                 170                 175

Gly Leu Ala Gly Leu Ile Arg Met Glu Glu Glu Glu Phe Phe Ile Glu
            180                 185                 190

Pro Leu Glu Lys Gly Leu Ala Ala Gln Glu Ala Glu Gln Gly Arg Val
        195                 200                 205

His Val Val Tyr Arg Arg Pro Pro Thr Ser Pro Pro Leu Gly Gly Pro
    210                 215                 220

Gln Ala Leu Asp Thr Gly Ala Ser Leu Asp Ser Leu Asp Ser Leu Ser
225                 230                 235                 240

Arg Ala Leu Gly Val Leu Glu Glu His Ala Asn Ser Ser Arg Arg Arg
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Ala Arg Arg His Ala Ala Asp Asp Asp Tyr Asn Ile Glu Val Leu Leu
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        275                 280                 285

Lys Tyr Leu Leu Thr Leu Met Asn Ile Val Asn Glu Ile Tyr His Asp
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Glu Ser Leu Gly Ala His Ile Asn Val Val Leu Val Arg Ile Ile Leu
305                 310                 315                 320

Leu Ser Tyr Gly Lys Ser Met Ser Leu Ile Glu Ile Gly Asn Pro Ser
                325                 330                 335

Gln Ser Leu Glu Asn Val Cys Arg Trp Ala Tyr Leu Gln Gln Lys Pro
            340                 345                 350

Asp Thr Gly His Asp Glu Tyr His Asp His Ala Ile Phe Leu Thr Arg
        355                 360                 365

Gln Asp Phe Gly Pro Ser Gly Met Gln Gly Tyr Ala Pro Val Thr Gly
    370                 375                 380

Met Cys His Pro Val Arg Ser Cys Thr Leu Asn His Glu Asp Gly Phe
385                 390                 395                 400

Ser Ser Ala Phe Val Val Ala His Glu Thr Gly His Val Leu Gly Met
                405                 410                 415

Glu His Asp Gly Gln Gly Asn Arg Cys Gly Asp Glu Val Arg Leu Gly
            420                 425                 430

Ser Ile Met Ala Pro Leu Val Gln Ala Ala Phe His Arg Phe His Trp
        435                 440                 445

Ser Arg Cys Ser Gln Gln Glu Leu Ser Arg Tyr Leu His Ser Tyr Asp
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Cys Leu Leu Asp Asp Pro Phe Ala His Asp Trp Pro Ala Leu Pro Gln
465                 470                 475                 480

Leu Pro Gly Leu His Tyr Ser Met Asn Glu Gln Cys Arg Phe Asp Phe
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Gly Leu Gly Tyr Met Met Cys Thr Ala Phe Arg Thr Phe Asp Pro Cys
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Lys Gln Leu Trp Cys Ser His Pro Asp Asn Pro Tyr Phe Cys Lys Thr
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Cys Phe Lys Gly His Cys Ile Trp Leu Thr Pro Asp Ile Leu Lys Arg
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Asp Gly Ser Trp Gly Ala Trp Ser Pro Phe Gly Ser Cys Ser Arg Thr
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Cys Gly Thr Gly Val Lys Phe Arg Thr Arg Gln Cys Asp Asn Pro His
            580                 585                 590

Pro Ala Asn Gly Gly Arg Thr Cys Ser Gly Leu Ala Tyr Asp Phe Gln
        595                 600                 605

Leu Cys Ser Arg Gln Asp Cys Pro Asp Ser Leu Ala Asp Phe Arg Glu
    610                 615                 620

Glu Gln Cys Arg Gln Trp Asp Leu Tyr Phe Glu His Gly Asp Ala Gln
625                 630                 635                 640

His His Trp Leu Pro His Glu His Arg Asp Ala Lys Glu Arg Cys His
                645                 650                 655

Leu Tyr Cys Glu Ser Arg Glu Thr Gly Glu Val Val Ser Met Lys Arg
            660                 665                 670

Met Val His Asp Gly Thr Arg Cys Ser Tyr Lys Asp Ala Phe Ser Leu
        675                 680                 685

Cys Val Arg Gly Asp Cys Arg Lys Val Gly Cys Asp Gly Val Ile Gly
    690                 695                 700

Ser Ser Lys Gln Glu Asp Lys Cys Gly Val Cys Gly Gly Asp Asn Ser
705                 710                 715                 720

His Cys Lys Val Val Lys Gly Thr Phe Thr Arg Ser Pro Lys Lys His
                725                 730                 735

Gly Tyr Ile Lys Met Phe Glu Ile Pro Ala Gly Ala Arg His Leu Leu
            740                 745                 750

Ile Gln Glu Val Asp Ala Thr Ser His His Leu Ala Val Lys Asn Leu
        755                 760                 765

Glu Thr Gly Lys Phe Ile Leu Asn Glu Glu Asn Asp Val Asp Ala Ser
    770                 775                 780
```

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Ser Lys Thr Phe Ile Ala Met Gly Val Glu Trp Glu Tyr Arg Asp Glu
785                 790                 795                 800

Asp Gly Arg Glu Thr Leu Gln Thr Met Gly Pro Leu His Gly Thr Ile
                805                 810                 815

Thr Val Leu Val Ile Pro Val Gly Asp Thr Arg Val Ser Leu Thr Tyr
            820                 825                 830

Lys Tyr Met Ile His Glu Asp Ser Leu Asn Val Asp Asp Asn Asn Val
        835                 840                 845

Leu Glu Glu Asp Ser Val Val Tyr Glu Trp Ala Leu Lys Lys Trp Ser
    850                 855                 860

Pro Cys Ser Lys Pro Cys Gly Gly Gly Ser Gln Phe Thr Lys Tyr Gly
865                 870                 875                 880

Cys Arg Arg Arg Leu Asp His Lys Met Val His Arg Gly Phe Cys Ala
                885                 890                 895

Ala Leu Ser Lys Pro Lys Ala Ile Arg Arg Ala Cys Asn Pro Gln Glu
            900                 905                 910

Cys Ser Gln Pro Val Trp Val Thr Gly Glu Trp Glu Pro Cys Ser Gln
        915                 920                 925

Thr Cys Gly Arg Thr Gly Met Gln Val Arg Ser Val Arg Cys Ile Gln
    930                 935                 940

Pro Leu His Asp Asn Thr Thr Arg Ser Val His Ala Lys His Cys Asn
945                 950                 955                 960

Asp Ala Arg Pro Glu Ser Arg Arg Ala Cys Ser Arg Glu Leu Cys Pro
                965                 970                 975

Gly Arg Trp Arg Ala Gly Pro Trp Ser Gln Cys Ser Val Thr Cys Gly
            980                 985                 990

Asn Gly Thr Gln Glu Arg Pro Val  Leu Cys Arg Thr Ala  Asp Asp Ser
        995                 1000                1005

Phe Gly  Ile Cys Gln Glu Glu  Arg Pro Glu Thr Ala  Arg Thr Cys
    1010                1015                1020

Arg Leu  Gly Pro Cys Pro Arg  Asn Ile Ser Asp Pro  Ser Lys Lys
```

1025 1030 1035

Ser Tyr Val Val Gln Trp Leu Ser Arg Pro Asp Pro Asp Ser Pro
1040 1045 1050

Ile Arg Lys Ile Ser Ser Lys Gly His Cys Gln Gly Asp Lys Ser
1055 1060 1065

Ile Phe Cys Arg Met Glu Val Leu Ser Arg Tyr Cys Ser Ile Pro
1070 1075 1080

Gly Tyr Asn Lys Leu Cys Cys Lys Ser Cys Asn Leu Tyr Asn Asn
1085 1090 1095

Leu Thr Asn Val Glu Gly Arg Ile Glu Pro Pro Pro Gly Lys His
1100 1105 1110

Asn Asp Ile Asp Val Phe Met Pro Thr Leu Pro Val Pro Thr Val
1115 1120 1125

Ala Met Glu Val Arg Pro Ser Pro Ser Thr Pro Leu Glu Val Pro
1130 1135 1140

Leu Asn Ala Ser Ser Thr Asn Ala Thr Glu Asp His Pro Glu Thr
1145 1150 1155

Asn Ala Val Asp Glu Pro Tyr Lys Ile His Gly Leu Glu Asp Glu
1160 1165 1170

Val Gln Pro Pro Asn Leu Ile Pro Arg Arg Pro Ser Pro Tyr Glu
1175 1180 1185

Lys Thr Arg Asn Gln Arg Ile Gln Glu Leu Ile Asp Glu Met Arg
1190 1195 1200

Lys Lys Glu Met Leu Gly Lys Phe
1205 1210

<210> 111
<211> 2082
<212> DNA
<213> Homo sapiens

<400> 111
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ccttcctctt tatagggaga cactctgaga aagagcacat tgtgggggcc cactccatgt 120

gatgtttgct tggttgcctg ttccctttc tacctgcaga gcacggttcc cataagggcg 180

gcgagatcag cctcctgtct catctggaag accaccactc tggggtctca gaggaatgat 240

ggaagccttg gggtttctaa aattggaagt gaatggcccc atggtgacgg tggccctgtc 300

agtggctctc ttggccctcc tgaaatggta ctccacatca gcattctcaa gactggagaa 360

gttaggcctc agacatccca agccttctcc tttcattgga aacttgacat ttttccgcca 420

gggtttttgg gaaagccaaa tggagctcag aaagctgtat ggacctctgt gtgggtacta 480

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ctactgcaat tacaccacag atgtggttgc cagcgtcgcc tttggcaccc cggtggactc 840

ctggcaggcc cctgaggatc cctttgtgaa acactgcaag cgtttcttcg aattctgcat 900

ccccagacct atcctggttt tactcttatc atttccatcc ataatggtcc cactggcccg 960

gattttgccc aataagaacc gagacgaact gaatggcttt tttaacaaac tcattaggaa 1020

tgtgattgcc ttgcgggacc agcaagctgc cgaagagagg cggagagact tcctccaaat 1080

ggtcctggat gcccgacatt ctgcaagtcc catgggcgtg caagactttg acatcgtcag 1140

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aatgtcactg aagtgattga aagagtgcct ggcatgcaag gataagaggt tctttacata 1980

acatttccta aatgcttaat aaacgtttgt tgcacttggt tttgacattg ccaatggggt 2040

ttgaaccagt gctctctcta aatgaaaaaa aaaaaaaaaa aa 2082

<210> 112
<211> 534
<212> PRT
<213> Homo sapiens

<400> 112

Met Met Glu Ala Leu Gly Phe Leu Lys Leu Glu Val Asn Gly Pro Met
1 5 10 15

Val Thr Val Ala Leu Ser Val Ala Leu Leu Ala Leu Leu Lys Trp Tyr
20 25 30

Ser Thr Ser Ala Phe Ser Arg Leu Glu Lys Leu Gly Leu Arg His Pro
35 40 45

Lys Pro Ser Pro Phe Ile Gly Asn Leu Thr Phe Phe Arg Gln Gly Phe
50 55 60

Trp Glu Ser Gln Met Glu Leu Arg Lys Leu Tyr Gly Pro Leu Cys Gly
65 70 75 80

Tyr Tyr Leu Gly Arg Arg Met Phe Ile Val Ile Ser Glu Pro Asp Met
85 90 95

Ile Lys Gln Val Leu Val Glu Asn Phe Ser Asn Phe Thr Asn Arg Met
100 105 110

Ala Ser Gly Leu Glu Phe Lys Ser Val Ala Asp Ser Val Leu Phe Leu
115 120 125

Arg Asp Lys Arg Trp Glu Glu Val Arg Gly Ala Leu Met Ser Ala Phe
130 135 140

Ser Pro Glu Lys Leu Asn Glu Met Val Pro Leu Ile Ser Gln Ala Cys
145 150 155 160

Asp Leu Leu Leu Ala His Leu Lys Arg Tyr Ala Glu Ser Gly Asp Ala
165 170 175

Phe Asp Ile Gln Arg Cys Tyr Cys Asn Tyr Thr Thr Asp Val Val Ala
180 185 190

Ser Val Ala Phe Gly Thr Pro Val Asp Ser Trp Gln Ala Pro Glu Asp
195 200 205

Pro Phe Val Lys His Cys Lys Arg Phe Phe Glu Phe Cys Ile Pro Arg
210 215 220

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Pro Ile Leu Val Leu Leu Leu Ser Phe Pro Ser Ile Met Val Pro Leu
225                 230                 235                 240

Ala Arg Ile Leu Pro Asn Lys Asn Arg Asp Glu Leu Asn Gly Phe Phe
                245                 250                 255

Asn Lys Leu Ile Arg Asn Val Ile Ala Leu Arg Asp Gln Gln Ala Ala
            260                 265                 270

Glu Glu Arg Arg Arg Asp Phe Leu Gln Met Val Leu Asp Ala Arg His
        275                 280                 285

Ser Ala Ser Pro Met Gly Val Gln Asp Phe Asp Ile Val Arg Asp Val
    290                 295                 300

Phe Ser Ser Thr Gly Cys Lys Pro Asn Pro Ser Arg Gln His Gln Pro
305                 310                 315                 320

Ser Pro Met Ala Arg Pro Leu Thr Val Asp Glu Ile Val Gly Gln Ala
                325                 330                 335

Phe Ile Phe Leu Ile Ala Gly Tyr Glu Ile Ile Thr Asn Thr Leu Ser
            340                 345                 350

Phe Ala Thr Tyr Leu Leu Ala Thr Asn Pro Asp Cys Gln Glu Lys Leu
        355                 360                 365

Leu Arg Glu Val Asp Val Phe Lys Glu Lys His Met Ala Pro Glu Phe
    370                 375                 380

Cys Ser Leu Glu Glu Gly Leu Pro Tyr Leu Asp Met Val Ile Ala Glu
385                 390                 395                 400

Thr Leu Arg Met Tyr Pro Pro Ala Phe Arg Phe Thr Arg Glu Ala Ala
                405                 410                 415

Gln Asp Cys Glu Val Leu Gly Gln Arg Ile Pro Ala Gly Ala Val Leu
            420                 425                 430

Glu Met Ala Val Gly Ala Leu His His Asp Pro Glu His Trp Pro Ser
        435                 440                 445

Pro Glu Thr Phe Asn Pro Glu Arg Phe Thr Ala Glu Ala Arg Gln Gln
    450                 455                 460

His Arg Pro Phe Thr Tyr Leu Pro Phe Gly Ala Gly Pro Arg Ser Cys
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465                 470                 475                 480

Leu Gly Val Arg Leu Gly Leu Leu Glu Val Lys Leu Thr Leu Leu His
                485                 490                 495

Val Leu His Lys Phe Arg Phe Gln Ala Cys Pro Glu Thr Gln Val Pro
            500                 505                 510

Leu Gln Leu Glu Ser Lys Ser Ala Leu Gly Pro Lys Asn Gly Val Tyr
        515                 520                 525

Ile Lys Ile Val Ser Arg
    530
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<210> 113
<211> 2240
<212> DNA
<213> Homo sapiens

<400> 113

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tcagtgtctc agaggagggg acggcagcac catggacccc cgcttgtcca ctgtccgcca      120

gacctgctgc tgcttcaatg tccgcatcgc aaccaccgcc ctggccatct accatgtgat      180

catgagcgtc ttgttgttca tcgagcactc agtagaggtg gcccatggca aggcgtcctg      240

caagctctcc cagatgggct acctcaggat cgctgacctg atctccagct tcctgctcat      300

caccatgctc ttcatcatca gcctgagcct actgatcggc gtagtcaaga accgggagaa      360

gtacctgctg cccttcctgt ccctgcaaat catggactat ctcctgtgcc tgctcaccct      420

gctgggctcc tacattgagc tgcccgccta cctcaagttg gcctcccgga gccgtgctag      480

ctcctccaag ttccccctga tgacgctgca gctgctggac ttctgcctga gcatcctgac      540

cctctgcagc tcctacatgg aagtgcccac ctatctcaac ttcaagtcca tgaaccacat      600

gaattacctc cccagccagg aggatatgcc tcataaccag ttcatcaaga tgatgatcat      660

cttttccatc gccttcatca ctgtccttat cttcaaggtc tacatgttca agtgcgtgtg      720

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gctccagaag gtggtcctgc cgtcctacga ggaagccctg tctttgccat cgaagacccc      840

agaggggggc ccagcaccac ccccatactc agaggtgtga ccctcgccag gccccagccc      900

cagtgctggg aggggtggag ctgcctcata atctgctttt ttgctttggt ggcccctgtg      960

gcctgggtgg gccctcccgc ccctccctgg caggacaatc tgcttgtgtc tccctcgctg     1020

gcctgctcct cctgcagggc ctgtgagctg ctcacaactg ggtcaacgct ttaggctgag     1080

tcactcctcg ggtctctcca taattcagcc caacaatgct tggtttattt caatcagctc     1140
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tgacacttgt ttagacgatt ggccattcta aagttggtga gtttgtcaag caactatcga 1200

cttgatcagt tcagccaagc aactgacaaa tcaaaaaccc acttgtcagt tcagtaaaat 1260

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taaatagaat acacagaata gtgatgaaat tcaatttaaa aaatcacgtt agcctccaaa 1500

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aattgttctg ctgaagagtt gtcatcaaca atccaatgct cacctattca gttgctctgt 1740

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gccacggagg cagggtctct ggggactgtc ggggggtaca gagggagaag gctctgcaag 2160

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taaagcagca acaagcttct 2240

<210> 114
<211> 262
<212> PRT
<213> Homo sapiens

<400> 114

Met Asp Pro Arg Leu Ser Thr Val Arg Gln Thr Cys Cys Cys Phe Asn
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Val Arg Ile Ala Thr Thr Ala Leu Ala Ile Tyr His Val Ile Met Ser
20 25 30

Val Leu Leu Phe Ile Glu His Ser Val Glu Val Ala His Gly Lys Ala
35 40 45

Ser Cys Lys Leu Ser Gln Met Gly Tyr Leu Arg Ile Ala Asp Leu Ile
50 55 60

Ser Ser Phe Leu Leu Ile Thr Met Leu Phe Ile Ile Ser Leu Ser Leu

65 70 75 80

Leu Ile Gly Val Val Lys Asn Arg Glu Lys Tyr Leu Leu Pro Phe Leu
85 90 95

Ser Leu Gln Ile Met Asp Tyr Leu Leu Cys Leu Leu Thr Leu Leu Gly
100 105 110

Ser Tyr Ile Glu Leu Pro Ala Tyr Leu Lys Leu Ala Ser Arg Ser Arg
115 120 125

Ala Ser Ser Ser Lys Phe Pro Leu Met Thr Leu Gln Leu Leu Asp Phe
130 135 140

Cys Leu Ser Ile Leu Thr Leu Cys Ser Ser Tyr Met Glu Val Pro Thr
145 150 155 160

Tyr Leu Asn Phe Lys Ser Met Asn His Met Asn Tyr Leu Pro Ser Gln
165 170 175

Glu Asp Met Pro His Asn Gln Phe Ile Lys Met Met Ile Ile Phe Ser
180 185 190

Ile Ala Phe Ile Thr Val Leu Ile Phe Lys Val Tyr Met Phe Lys Cys
195 200 205

Val Trp Arg Cys Tyr Arg Leu Ile Lys Cys Met Asn Ser Val Glu Glu
210 215 220

Lys Arg Asn Ser Lys Met Leu Gln Lys Val Val Leu Pro Ser Tyr Glu
225 230 235 240

Glu Ala Leu Ser Leu Pro Ser Lys Thr Pro Glu Gly Gly Pro Ala Pro
245 250 255

Pro Pro Tyr Ser Glu Val
260

<210> 115
<211> 790
<212> DNA
<213> Homo sapiens

<400> 115
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gaaagttgga gcaagcagga agtgaactga gggccaccct gggaggaagc cgactaggcg 120

aattcactta ctgaccggcc tgggctgctc tgagacatgg aggaagccag tgaaggtgga 180

ggaaatgatc gtgtgcggaa cctgcaaagt gaggtggagg gagttaagaa tattatgacc 240

cagaatgtgg agcggatcct ggcccggggg gaaaacttgg aacatctccg caacaagaca 300

gaggatctgg aagccacatc tgagcacttc aagacgacat cgcagaaggt ggctcgaaaa 360

ttctggtgga agaacgtgaa gatgattgtc cttatctgcg tgattgtttt tatcatcatc 420

ctcttcattg tgctctttgc cactggtgcc ttctcttaag taacagggaa cctctcccac 480

ctgcccttct cttcagggac aaccctccat aaatgtgtgc caagagggtc tcctttcctg 540

tcttcctcta cagagaatgc tgctcggtcc tcctaccct cttcccgagg ccctgctgcc 600

atgttgtatg ccccagaagg taccttggtc ccccggaagg agagaaaaaa gagagatgga 660

ctgtggctgc atttcttggg tccttagagt gggctggaga gacctagagg gcccagcatg 720

tggctgggaa actgttggtg gccagtgggt aataaagacc tttcagtatc cctataaaaa 780

aaaaaaaaaa 790

<210> 116
<211> 100
<212> PRT
<213> Homo sapiens

<400> 116

Met Glu Glu Ala Ser Glu Gly Gly Gly Asn Asp Arg Val Arg Asn Leu
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Gln Ser Glu Val Glu Gly Val Lys Asn Ile Met Thr Gln Asn Val Glu
20 25 30

Arg Ile Leu Ala Arg Gly Glu Asn Leu Glu His Leu Arg Asn Lys Thr
35 40 45

Glu Asp Leu Glu Ala Thr Ser Glu His Phe Lys Thr Thr Ser Gln Lys
50 55 60

Val Ala Arg Lys Phe Trp Trp Lys Asn Val Lys Met Ile Val Leu Ile
65 70 75 80

Cys Val Ile Val Phe Ile Ile Ile Leu Phe Ile Val Leu Phe Ala Thr
85 90 95

Gly Ala Phe Ser
100

<210> 117
<211> 2821
<212> DNA
<213> Homo sapiens

<400> 117

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tgaagagaag tcaagaaaat gaatgggtca agagtgatca agtaaagaag aggaaaaaaa 180

agagaaaaga ttatcaaccc aactatttcc tgtccattcc aatcaccaac aaagagatta 240

taaaaggaat taagatcctg cagaatgcaa taatacaaca agatgagcga ctggccaaag 300

caatggtcag tgatggttcc tttcatatta ccctgctggt gatgcaatta ttaaatgaag 360

atgaagtaaa cattggtatt gatgctcttt tggaattgaa accattcata gaagaactcc 420

tccagggaaa acatttgact ttgccctttc aagggattgg tacttttgga aatcaggttg 480

gatttgtgaa gctggcagaa ggagatcatg taaactcact tttggagata gcagagactg 540

caaataggac atttcaagaa aaaggcatcc tggtaggaga gagcagaagt tttaaacctc 600

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tcagtaagag gctggtggag aacgcggtgc tcaaggctgt ccagcagtat ctggaggaaa 900

cacagaataa aaacaagccg ggggagggga gctctgtgaa aaccgaagca gctgatcaga 960

atggcaatga caatgagaac aacaggaaat gagcccggaa cgcaggcccc catgtctctg 1020

tgcaaagcct ccctgcttcc ctctgctgag tctagggact gacttgcagc gtgctgttta 1080

agttaagttt ctctggtgca atctgtgaag attgcctaat acttttcatg atcgatgtgt 1140

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acagactgtg aacaaatcat tcacaaacag aataaaacag agccaacaac agtattttaa 2220

gggtcacttg cctcctgttg acacaattgt tgctaaatca aaagaagcgt tgtccaggtg 2280

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a 2821

<210> 118
<211> 326
<212> PRT
<213> Homo sapiens

<400> 118

Met Ser Glu Glu Phe Glu Ala Asn Thr Met Asp Ser Leu Val Asp Met
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Pro Phe Ala Thr Val Asp Ile Gln Asp Asp Cys Gly Ile Thr Asp Glu
20 25 30

Pro Gln Ile Asn Leu Lys Arg Ser Gln Glu Asn Glu Trp Val Lys Ser
35 40 45

Asp Gln Val Lys Lys Arg Lys Lys Lys Arg Lys Asp Tyr Gln Pro Asn
50 55 60

Tyr Phe Leu Ser Ile Pro Ile Thr Asn Lys Glu Ile Ile Lys Gly Ile
65 70 75 80

Lys Ile Leu Gln Asn Ala Ile Ile Gln Gln Asp Glu Arg Leu Ala Lys

```
                85                  90                  95

Ala Met Val Ser Asp Gly Ser Phe His Ile Thr Leu Leu Val Met Gln
            100                 105                 110

Leu Leu Asn Glu Asp Glu Val Asn Ile Gly Ile Asp Ala Leu Leu Glu
        115                 120                 125

Leu Lys Pro Phe Ile Glu Glu Leu Leu Gln Gly Lys His Leu Thr Leu
    130                 135                 140

Pro Phe Gln Gly Ile Gly Thr Phe Gly Asn Gln Val Gly Phe Val Lys
145                 150                 155                 160

Leu Ala Glu Gly Asp His Val Asn Ser Leu Leu Glu Ile Ala Glu Thr
                165                 170                 175

Ala Asn Arg Thr Phe Gln Glu Lys Gly Ile Leu Val Gly Glu Ser Arg
            180                 185                 190

Ser Phe Lys Pro His Leu Thr Phe Met Lys Leu Ser Lys Ser Pro Trp
        195                 200                 205

Leu Arg Lys Asn Gly Val Lys Lys Ile Asp Pro Asp Leu Tyr Glu Lys
    210                 215                 220

Phe Ile Ser His Arg Phe Gly Glu Glu Ile Leu Tyr Arg Ile Asp Leu
225                 230                 235                 240

Cys Ser Met Leu Lys Lys Lys Gln Ser Asn Gly Tyr Tyr His Cys Glu
                245                 250                 255

Ser Ser Ile Val Ile Gly Glu Lys Asn Gly Gly Glu Pro Asp Asp Ala
            260                 265                 270

Glu Leu Val Arg Leu Ser Lys Arg Leu Val Glu Asn Ala Val Leu Lys
        275                 280                 285

Ala Val Gln Gln Tyr Leu Glu Glu Thr Gln Asn Lys Asn Lys Pro Gly
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His His Pro Leu Asp Tyr Arg Ile Leu Leu Met Asp Glu Asp Gln Asp
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Arg Ile Tyr Val Gly Ser Lys Asp His Ile Leu Ser Leu Asn Ile Asn
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Asn Ile Ser Gln Glu Ala Leu Ser Val Phe Trp Pro Ala Ser Thr Ile
                85                  90                  95

Lys Val Glu Glu Cys Lys Met Ala Gly Lys Asp Pro Thr His Gly Cys
            100                 105                 110

Gly Asn Phe Val Arg Val Ile Gln Thr Phe Asn Arg Thr His Leu Tyr
        115                 120                 125

Val Cys Gly Ser Gly Ala Phe Ser Pro Val Cys Thr Tyr Leu Asn Arg
    130                 135                 140

Gly Arg Arg Ser Glu Asp Gln Val Phe Met Ile Asp Ser Lys Cys Glu
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Ser Gly Lys Gly Arg Cys Ser Phe Asn Pro Asn Val Asn Thr Val Ser
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Val Met Ile Asn Glu Glu Leu Phe Ser Gly Met Tyr Ile Asp Phe Met
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Gly Thr Asp Ala Ala Ile Phe Arg Ser Leu Thr Lys Arg Asn Ala Val
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Arg Thr Asp Gln His Asn Ser Lys Trp Leu Ser Glu Pro Met Phe Val
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Asp Ala His Val Ile Pro Asp Gly Thr Asp Pro Asn Asp Ala Lys Val
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Tyr Phe Phe Phe Lys Glu Lys Leu Thr Asp Asn Asn Arg Ser Thr Lys
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Leu Glu Asp Val Phe Leu Leu Glu Thr Asp Asn Pro Arg Thr Thr Leu
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Val Tyr Gly Ile Phe Thr Thr Ser Ser Ser Val Phe Lys Gly Ser Ala
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Val Cys Val Tyr His Leu Ser Asp Ile Gln Thr Val Phe Asn Gly Pro
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Phe Ala His Lys Glu Gly Pro Asn His Gln Leu Ile Ser Tyr Gln Gly
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Arg Ile Pro Tyr Pro Arg Pro Gly Thr Cys Pro Gly Gly Ala Phe Thr
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Pro Asn Met Arg Thr Thr Lys Glu Phe Pro Asp Asp Val Val Thr Phe
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Ile Arg Asn His Pro Leu Met Tyr Asn Ser Ile Tyr Pro Ile His Lys
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Arg Pro Leu Ile Val Arg Ile Gly Thr Asp Tyr Lys Tyr Thr Lys Ile
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Ala Val Asp Arg Val Asn Ala Ala Asp Gly Arg Tyr His Val Leu Phe
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Leu Gly Thr Asp Arg Gly Thr Val Gln Lys Val Val Val Leu Pro Thr
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Asn Asn Ser Val Ser Gly Glu Leu Ile Leu Glu Glu Leu Glu Val Phe
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Lys Asn His Ala Pro Ile Thr Thr Met Lys Ile Ser Ser Lys Lys Gln
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Gln Leu Tyr Val Ser Ser Asn Glu Gly Val Ser Gln Val Ser Leu His
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Arg Cys His Ile Tyr Gly Thr Ala Cys Ala Asp Cys Cys Leu Ala Arg
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Thr Gly Lys Arg Arg Ser Arg Arg Gln Asp Val Arg His Gly Asn Pro
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Leu Thr Gln Cys Arg Gly Phe Asn Leu Lys Ala Tyr Arg Asn Ala Ala
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Glu Ile Val Gln Tyr Gly Val Lys Asn Asn Thr Thr Phe Leu Glu Cys
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Ala Pro Lys Ser Pro Gln Ala Ser Ile Lys Trp Leu Leu Gln Lys Asp
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Lys Asp Arg Arg Lys Glu Val Lys Leu Asn Glu Arg Ile Ile Ala Thr
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Ser Gln Gly Leu Leu Ile Arg Ser Val Gln Gly Ser Asp Gln Gly Leu
625                 630                 635                 640

Tyr His Cys Ile Ala Thr Glu Asn Ser Phe Lys Gln Thr Ile Ala Lys
                645                 650                 655

Ile Asn Phe Lys Val Leu Asp Ser Glu Met Val Ala Val Val Thr Asp
            660                 665                 670

Lys Trp Ser Pro Trp Thr Trp Ala Ser Ser Val Arg Ala Leu Pro Phe
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His Pro Lys Asp Ile Met Gly Ala Phe Ser His Ser Glu Met Gln Met
    690                 695                 700

Ile Asn Gln Tyr Cys Lys Asp Thr Arg Gln Gln His Gln Gln Gly Asp
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<210> 122
<211> 487
<212> PRT
<213> Homo sapiens

<400> 122

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Thr Val Pro Glu Asp Asp Asn Ile Ser Asn Asp Ser Asn Asp Phe Thr
20 25 30

Glu Val Glu Asn Gly Gln Ile Asn Ser Lys Phe Ile Ser Asp Arg Glu
35 40 45

Ser Arg Arg Ser Leu Thr Asn Ser His Leu Glu Lys Lys Lys Cys Asp
50 55 60

Glu Tyr Ile Pro Gly Thr Thr Ser Leu Gly Met Ser Val Phe Asn Leu
65 70 75 80

Ser Asn Ala Ile Met Gly Ser Gly Ile Leu Gly Leu Ala Phe Ala Leu
85 90 95

Ala Asn Thr Gly Ile Leu Leu Phe Leu Val Leu Leu Thr Ser Val Thr
100 105 110

Leu Leu Ser Ile Tyr Ser Ile Asn Leu Leu Leu Ile Cys Ser Lys Glu
115 120 125

```
Thr Gly Cys Met Val Tyr Glu Lys Leu Gly Glu Gln Val Phe Gly Thr
    130                 135                 140

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

Ala Met Leu Ser Tyr Leu Phe Ile Val Lys Asn Glu Leu Pro Ser Ala
                165                 170                 175

Ile Lys Phe Leu Met Gly Lys Glu Glu Thr Phe Ser Ala Trp Tyr Val
            180                 185                 190

Asp Gly Arg Val Leu Val Val Ile Val Thr Phe Gly Ile Ile Leu Pro
        195                 200                 205

Leu Cys Leu Leu Lys Asn Leu Gly Tyr Leu Gly Tyr Thr Ser Gly Phe
    210                 215                 220

Ser Leu Ser Cys Met Val Phe Phe Leu Ile Val Val Ile Tyr Lys Lys
225                 230                 235                 240

Phe Gln Ile Pro Cys Ile Val Pro Glu Leu Asn Ser Thr Ile Ser Ala
                245                 250                 255

Asn Ser Thr Asn Ala Asp Thr Cys Thr Pro Lys Tyr Val Thr Phe Asn
            260                 265                 270

Ser Lys Thr Val Tyr Ala Leu Pro Thr Ile Ala Phe Ala Phe Val Cys
        275                 280                 285

His Pro Ser Val Leu Pro Ile Tyr Ser Glu Leu Lys Asp Arg Ser Gln
    290                 295                 300

Lys Lys Met Gln Met Val Ser Asn Ile Ser Phe Phe Ala Met Phe Val
305                 310                 315                 320

Met Tyr Phe Leu Thr Ala Ile Phe Gly Tyr Leu Thr Phe Tyr Asp Asn
                325                 330                 335

Val Gln Ser Asp Leu Leu His Lys Tyr Gln Ser Lys Asp Asp Ile Leu
            340                 345                 350

Ile Leu Thr Val Arg Leu Ala Val Ile Val Ala Val Ile Leu Thr Val
        355                 360                 365

Pro Val Leu Phe Phe Thr Val Arg Ser Ser Leu Phe Glu Leu Ala Lys
    370                 375                 380
```

```
Lys Thr Lys Phe Asn Leu Cys Arg His Thr Val Val Thr Cys Ile Leu
385                 390                 395                 400

Leu Val Val Ile Asn Leu Leu Val Ile Phe Ile Pro Ser Met Lys Asp
                405                 410                 415

Ile Phe Gly Val Val Gly Val Thr Ser Ala Asn Met Leu Ile Phe Ile
            420                 425                 430

Leu Pro Ser Ser Leu Tyr Leu Lys Ile Thr Asp Gln Asp Gly Asp Lys
        435                 440                 445

Gly Thr Gln Arg Ile Trp Ala Ala Leu Phe Leu Gly Leu Gly Val Leu
    450                 455                 460

Phe Ser Leu Val Ser Ile Pro Leu Val Ile Tyr Asp Trp Ala Cys Ser
465                 470                 475                 480

Ser Ser Ser Asp Glu Gly His
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<210> 123
<211> 3995
<212> DNA
<213> Homo sapiens

<400> 123

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gcggactgtc cttcatctac ttggattcag ttccaagaca gttgttacat ttttctccaa      180

gaagccatca aagtagaaag catagaggat gtcagaaatc agtgtactga ccatggagcg      240

gacatgataa gcatacataa tgaagaagaa aatgctttta tactggatac tttgaaaaag      300

caatggaaag gcccagatga tatcctacta ggcatgtttt atgacacaga tgatgcgagt      360

ttcaagtggt ttgataattc aaatatgaca tttgataagt ggacagacca agatgatgat      420

gaggatttag ttgacacctg tgcttttctg cacatcaaga caggtgaatg gaaaaaagga      480

aattgtgaag tttcttctgt ggaaggaaca ctatgcaaaa cagctatccc atacaaaagg      540

aaatatttat cagataacca cattttaata tcagcattgg tgattgctag cacggtaatt      600

ttgacagttt tgggagcaat catttggttc ctgtacaaaa aacattctga ttctcgtttc      660

accacagttt tttcaaccgc accccaatca ccttataatg aagactgtgt tttggtagtt      720

ggagaagaaa atgaatatcc tgttcaattt gactaagttt ttggtaatct tgcactaaga      780

catcaacaaa atgccctggc agagataact tgggaaagat tttaatataa aacttgacat      840
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agcccaagca gataaaaata aaagcccagc ctatttgtct tgcctgctgt atcttcccta 1080

tttagttgac ccactttagt ttatatgttt attagtaaac atgaaatggg gaataagtga 1140

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atagagaaag ctggcaatta ggttaacact tacatattat agtgcccctt taaggatttc 1440

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taaatataga aaaggtacag taaaaatatg gtctactaag gaaacactgt tctatatgtg 1980

gtccattact gactgaagta tactgtctag aagtctgagg ctcaaagaaa agtaatccct 2040

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taaaattctt ggttatgaaa aaaaaaaaaa aaaaa 3995

<210> 124
<211> 232
<212> PRT
<213> Homo sapiens

<400> 124

Met Leu Arg Ala Ala Leu Pro Ala Leu Leu Leu Pro Leu Leu Gly Leu
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Ala Ala Ala Ala Val Ala Asp Cys Pro Ser Ser Thr Trp Ile Gln Phe
20 25 30

Gln Asp Ser Cys Tyr Ile Phe Leu Gln Glu Ala Ile Lys Val Glu Ser
35 40 45

```
Ile Glu Asp Val Arg Asn Gln Cys Thr Asp His Gly Ala Asp Met Ile
    50                  55                  60

Ser Ile His Asn Glu Glu Glu Asn Ala Phe Ile Leu Asp Thr Leu Lys
65                  70                  75                  80

Lys Gln Trp Lys Gly Pro Asp Asp Ile Leu Leu Gly Met Phe Tyr Asp
                85                  90                  95

Thr Asp Asp Ala Ser Phe Lys Trp Phe Asp Asn Ser Asn Met Thr Phe
            100                 105                 110

Asp Lys Trp Thr Asp Gln Asp Asp Asp Glu Asp Leu Val Asp Thr Cys
        115                 120                 125

Ala Phe Leu His Ile Lys Thr Gly Glu Trp Lys Lys Gly Asn Cys Glu
    130                 135                 140

Val Ser Ser Val Glu Gly Thr Leu Cys Lys Thr Ala Ile Pro Tyr Lys
145                 150                 155                 160

Arg Lys Tyr Leu Ser Asp Asn His Ile Leu Ile Ser Ala Leu Val Ile
                165                 170                 175

Ala Ser Thr Val Ile Leu Thr Val Leu Gly Ala Ile Ile Trp Phe Leu
            180                 185                 190

Tyr Lys Lys His Ser Asp Ser Arg Phe Thr Thr Val Phe Ser Thr Ala
        195                 200                 205

Pro Gln Ser Pro Tyr Asn Glu Asp Cys Val Leu Val Val Gly Glu Glu
    210                 215                 220

Asn Glu Tyr Pro Val Gln Phe Asp
225                 230
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<210> 125
<211> 1951
<212> DNA
<213> Homo sapiens

<400> 125
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gctatggctc tcaaaccctg agcaatgaga tcatcatgtt tgtggctggc ttttggagg 480

gttacctcac tgccccacac atgaatgacc actacacaaa cctctaccca cagctgatca 540

cgaaaccttc catcatggat aaagtgcagg attttatgga gaagcaagat aagtggaccc 600

ggaaaaatat caaagaatac aagactgatt cattttggag acatacaggc tatgtgatgg 660

cacaaataga tggcctctat gtaggagcaa agaagagggc tatattagaa gggacaaagc 720

caatgaccct gttccagatt cagttcctga atagtgttgg agatctattg gatctgattc 780

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attgctccgc tcttatcaag gttcttcctg gatttgagaa catccttttt gctcactcaa 900

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ttaataaaac cctgctaaag caggtaatac ccgagactct cctgtcctgg caaagagtcc 1140

gtgtggccaa tatgatggca gatagtggca agaggtgggc agacatcttt tcaaaataca 1200

actctggcac ctataacaat caatacatgg ttctggacct gaagaaagta aagctgaacc 1260

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<210> 126
<211> 553
<212> PRT
<213> Homo sapiens

<400> 126

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Pro Leu Leu Leu Leu Leu Leu Leu Leu Pro Leu Leu Leu Val Thr Ala
            20                  25                  30

Glu Pro Pro Lys Pro Ala Gly Val Tyr Tyr Ala Thr Ala Tyr Trp Met
        35                  40                  45

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

Asp Ala Tyr Gly Phe Tyr Asn Asn Ser Val Lys Thr Thr Gly Trp Gly
65                  70                  75                  80

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

Ile Ile Met Phe Val Ala Gly Phe Leu Glu Gly Tyr Leu Thr Ala Pro
            100                 105                 110

His Met Asn Asp His Tyr Thr Asn Leu Tyr Pro Gln Leu Ile Thr Lys
        115                 120                 125

Pro Ser Ile Met Asp Lys Val Gln Asp Phe Met Glu Lys Gln Asp Lys
    130                 135                 140

Trp Thr Arg Lys Asn Ile Lys Glu Tyr Lys Thr Asp Ser Phe Trp Arg
145                 150                 155                 160

His Thr Gly Tyr Val Met Ala Gln Ile Asp Gly Leu Tyr Val Gly Ala
                165                 170                 175

Lys Lys Arg Ala Ile Leu Glu Gly Thr Lys Pro Met Thr Leu Phe Gln
            180                 185                 190

Ile Gln Phe Leu Asn Ser Val Gly Asp Leu Leu Asp Leu Ile Pro Ser
        195                 200                 205

Leu Ser Pro Thr Lys Asn Gly Ser Leu Lys Val Phe Lys Arg Trp Asp
    210                 215                 220

Met Gly His Cys Ser Ala Leu Ile Lys Val Leu Pro Gly Phe Glu Asn
225                 230                 235                 240
```

```
Ile Leu Phe Ala His Ser Ser Trp Tyr Thr Tyr Ala Ala Met Leu Arg
                245                 250                 255

Ile Tyr Lys His Trp Asp Phe Asn Val Ile Asp Lys Asp Thr Ser Ser
            260                 265                 270

Ser Arg Leu Ser Phe Ser Ser Tyr Pro Gly Phe Leu Glu Ser Leu Asp
        275                 280                 285

Asp Phe Tyr Ile Leu Ser Ser Gly Leu Ile Leu Leu Gln Thr Thr Asn
    290                 295                 300

Ser Val Phe Asn Lys Thr Leu Leu Lys Gln Val Ile Pro Glu Thr Leu
305                 310                 315                 320

Leu Ser Trp Gln Arg Val Arg Val Ala Asn Met Met Ala Asp Ser Gly
                325                 330                 335

Lys Arg Trp Ala Asp Ile Phe Ser Lys Tyr Asn Ser Gly Thr Tyr Asn
            340                 345                 350

Asn Gln Tyr Met Val Leu Asp Leu Lys Lys Val Lys Leu Asn His Ser
        355                 360                 365

Leu Asp Lys Gly Thr Leu Tyr Ile Val Glu Gln Ile Pro Thr Tyr Val
    370                 375                 380

Glu Tyr Ser Glu Gln Thr Asp Val Leu Arg Lys Gly Tyr Trp Pro Ser
385                 390                 395                 400

Tyr Asn Val Pro Phe His Glu Lys Ile Tyr Asn Trp Ser Gly Tyr Pro
                405                 410                 415

Leu Leu Val Gln Lys Leu Gly Leu Asp Tyr Ser Tyr Asp Leu Ala Pro
            420                 425                 430

Arg Ala Lys Ile Phe Arg Arg Asp Gln Gly Lys Val Thr Asp Thr Ala
        435                 440                 445

Ser Met Lys Tyr Ile Met Arg Tyr Asn Asn Tyr Lys Lys Asp Pro Tyr
    450                 455                 460

Ser Arg Gly Asp Pro Cys Asn Thr Ile Cys Cys Arg Glu Asp Leu Asn
465                 470                 475                 480

Ser Pro Asn Pro Ser Pro Gly Gly Cys Tyr Asp Thr Lys Val Ala Asp
                485                 490                 495
```

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Ile Tyr Leu Ala Ser Gln Tyr Thr Ser Tyr Ala Ile Ser Gly Pro Thr
            500                 505                 510

Val Gln Gly Gly Leu Pro Val Phe Arg Trp Asp Arg Phe Asn Lys Thr
        515                 520                 525

Leu His Gln Gly Met Pro Glu Val Tyr Asn Phe Asp Phe Ile Thr Met
    530                 535                 540

Lys Pro Ile Leu Lys Leu Asp Ile Lys
545                 550
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<210> 127
<211> 3121
<212> DNA
<213> Homo sapiens

<400> 127

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caggctgccc acatcctctg ccgggagctg ggcttcacag aggccacagg ctggacccac      360

agtgccaaat atggccctgg aacaggccgc atctggctgg acaacttgag ctgcagtggg      420

accgagcaga gtgtgactga atgtgcctcc cggggctggg ggaacagtga ctgtacgcac      480

gatgaggatg ctggggtcat ctgcaaagac cagcgcctcc ctggcttctc ggactccaat      540

gtcattgagg tagagcatca cctgcaagtg gaggaggtgc gaattcgacc cgccgttggg      600

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tggtcgcaag tgtgcgacaa aggctggagc gcccacaaca gccacgtggt ctgcgggatg      720

ctgggcttcc ccagcgaaaa gagggtcaac gcggccttct acaggctgct agcccaacgg      780

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Phe Pro Arg Lys Pro Tyr Glu Gly Arg Val Glu Ile Gln Arg Ala Gly
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Glu Trp Gly Thr Ile Cys Asp Asp Asp Phe Thr Leu Gln Ala Ala His
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Ile Leu Cys Arg Glu Leu Gly Phe Thr Glu Ala Thr Gly Trp Thr His
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Ser Ala Lys Tyr Gly Pro Gly Thr Gly Arg Ile Trp Leu Asp Asn Leu
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Ser Cys Ser Gly Thr Glu Gln Ser Val Thr Glu Cys Ala Ser Arg Gly
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Trp Gly Asn Ser Asp Cys Thr His Asp Glu Asp Ala Gly Val Ile Cys
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Lys Asp Gln Arg Leu Pro Gly Phe Ser Asp Ser Asn Val Ile Glu Val
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Glu His His Leu Gln Val Glu Glu Val Arg Ile Arg Pro Ala Val Gly
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Val Asn Ala Ala Phe Tyr Arg Leu Leu Ala Gln Arg Gln Gln His Ser
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Phe Gly Leu His Gly Val Ala Cys Val Gly Thr Glu Ala His Leu Ser
                245                 250                 255

Leu Cys Ser Leu Glu Phe Tyr Arg Ala Asn Asp Thr Ala Arg Cys Pro
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Gly Gly Gly Pro Ala Val Val Ser Cys Val Pro Gly Pro Val Tyr Ala
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Ala Ser Ser Gly Gln Lys Lys Gln Gln Gln Ser Lys Pro Gln Gly Glu
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Glu Val Leu Lys Ala Ser Thr Trp Gly Thr Val Cys Asp Arg Lys Trp
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Asp Leu His Ala Ala Ser Val Val Cys Arg Glu Leu Gly Phe Gly Ser
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Ala Arg Glu Ala Leu Ser Gly Ala Arg Met Gly Gln Gly Met Gly Ala
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Ile His Leu Ser Glu Val Arg Cys Ser Gly Gln Glu Leu Ser Leu Trp
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Lys Cys Pro His Lys Asn Ile Thr Ala Glu Asp Cys Ser His Ser Gln
385                 390                 395                 400

Asp Ala Gly Val Arg Cys Asn Leu Pro Tyr Thr Gly Ala Glu Thr Arg
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Ile Arg Leu Ser Gly Gly Arg Ser Gln His Glu Gly Arg Val Glu Val
            420                 425                 430

Gln Ile Gly Gly Pro Gly Pro Leu Arg Trp Gly Leu Ile Cys Gly Asp
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Asp Trp Gly Thr Leu Glu Ala Met Val Ala Cys Arg Gln Leu Gly Leu
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Leu Ser Leu Asp Gln Cys Ala His His Gly Thr His Ile Thr Cys Lys
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Arg Thr Gly Thr Arg Phe Thr Ala Gly Val Ile Cys Ser Glu Thr Ala
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Ser Asp Leu Leu Leu His Ser Ala Leu Val Gln Glu Thr Ala Tyr Ile
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Glu Asp Arg Pro Leu His Met Leu Tyr Cys Ala Ala Glu Glu Asn Cys
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Leu Ala Ser Ser Ala Arg Ser Ala Asn Trp Pro Tyr Gly His Arg Arg
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Leu Leu Arg Phe Ser Ser Gln Ile His Asn Leu Gly Arg Ala Asp Phe
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Arg Pro Lys Ala Gly Arg His Ser Trp Val Trp His Glu Cys His Gly
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His Tyr His Ser Met Asp Ile Phe Thr His Tyr Asp Ile Leu Thr Pro
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Asn Gly Thr Lys Val Ala Glu Gly His Lys Ala Ser Phe Cys Leu Glu
625                 630                 635                 640

Asp Thr Glu Cys Gln Glu Asp Val Ser Lys Arg Tyr Glu Cys Ala Asn
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Phe Gly Glu Gln Gly Ile Thr Val Gly Cys Trp Asp Leu Tyr Arg His
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Asp Ile Asp Cys Gln Trp Ile Asp Ile Thr Asp Val Lys Pro Gly Asn
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Tyr Ile Leu Gln Val Val Ile Asn Pro Asn Phe Glu Val Ala Glu Ser
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Asp Phe Thr Asn Asn Ala Met Lys Cys Asn Cys Lys Tyr Asp Gly His
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Lys Asp Ile Val Gln Thr Val Arg Ser Arg Leu Glu Glu Ala Gly Ile
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Lys Val His Asp Val Arg Leu Asn Gly Ser Ala Ala Gly His Val Leu
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Val Lys Asp Asn Gly Leu Gly Cys Lys Asp Leu Asp Leu Ile Phe His
85 90 95

Val Ala Leu Pro Thr Glu Ala Glu Phe Gln Leu Val Arg Asp Val Val
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Leu Cys Ser Leu Leu Asn Phe Leu Pro Glu Gly Val Asn Lys Leu Lys
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Val Cys Thr Asp Thr Asp Arg Trp Ser Leu Ile Ser Leu Ser Asn Lys
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Asn Gly Lys Asn Val Glu Leu Lys Phe Val Asp Ser Ile Arg Arg Gln
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Phe Glu Phe Ser Val Asp Ser Phe Gln Ile Ile Leu Asp Ser Leu Leu
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Thr Val Ile Gly Glu Ser Met Tyr Gly Asp Phe Glu Glu Ala Phe Asp
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Gly Gly Gly Leu Leu Lys Tyr Ser Asn Leu Leu Val Arg Asp Phe Arg
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Pro Thr Asp Gln Glu Glu Ile Lys Thr Leu Glu Arg Tyr Met Cys Ser
            260                 265                 270

Arg Phe Phe Ile Asp Phe Pro Asp Ile Leu Glu Gln Gln Arg Lys Leu
        275                 280                 285

Glu Thr Tyr Leu Gln Asn His Phe Ala Glu Glu Glu Arg Ser Lys Tyr
    290                 295                 300

Asp Tyr Leu Met Ile Leu Arg Arg Val Val Asn Glu Ser Thr Val Cys
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Leu Met Gly His Glu Arg Arg Gln Thr Leu Asn Leu Ile Ser Leu Leu
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Ala Leu Arg Val Leu Ala Glu Gln Asn Ile Ile Pro Ser Ala Thr Asn
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Val Thr Cys Tyr Tyr Gln Pro Ala Pro Tyr Val Ser Asp Gly Asn Phe
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Pro Cys Ala Pro Gln Val Ser Gly Ile Arg Gly Asp Ala Leu Glu Arg
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Tyr Gln Ser Asp Gly Val Tyr Leu Ile Tyr Pro Ser Gly Pro Ser Val
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Pro Val Pro Val Phe Cys Asp Met Thr Thr Glu Gly Gly Lys Trp Thr
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Val Phe Gln Lys Arg Phe Asn Gly Ser Val Ser Phe Phe Arg Gly Trp
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Asn Asp Tyr Lys Leu Gly Phe Gly Arg Ala Asp Gly Glu Tyr Trp Leu
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Gly Leu Gln Asn Met His Leu Leu Thr Leu Lys Gln Lys Tyr Glu Leu
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Arg Val Asp Leu Glu Asp Phe Glu Asn Asn Thr Ala Tyr Ala Lys Tyr
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Tyr Thr Leu Phe Val Ala Gly Phe Glu Asp Gly Gly Ala Gly Asp Ser
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Leu Ser Tyr His Ser Gly Gln Lys Phe Ser Thr Phe Asp Arg Asp Gln

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Asp Leu Phe Val Gln Asn Cys Ala Ala Leu Ser Ser Gly Ala Phe Trp
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Phe Arg Ser Cys His Phe Ala Asn Leu Asn Gly Phe Tyr Leu Gly Gly
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Val Leu Ser Gln Asp Tyr Ser Arg Ile Gln Gly Gly Trp Thr Thr Ile
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Ser Gln Leu Thr Gln Ile Leu Ser His Cys Cys Val Gly Leu Glu Pro
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Gly Glu Asp Ala Glu Glu Phe Tyr Asn Glu Leu Leu Pro Ser Ala Ala
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Glu Asn Phe Leu Val Leu Gly Arg Gln Leu Gln Thr Cys Phe Ile Asn
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Ala Ala Lys Ala Glu Glu Lys Asp Glu Leu Leu His Phe Phe Gln Ile
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Val Thr Asp Ser Leu Phe Trp Leu Leu Gly Gly His Val Glu Leu Ile
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Gln Asn Val Leu Gln Ser Asp His Phe Leu His Leu Leu Gln Ala Asp
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Asn Val Gln Ile Gly Ser Ala Val Met Met Met Leu Gln Asn Ile Leu
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Gln Ile Asn Ser Gly Asp Leu Leu Arg Ile Gly Arg Lys Ala Leu Tyr
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Ser Ile Leu Asp Glu Val Ile Phe Lys Leu Phe Ser Thr Pro Ser Pro
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Val Ile Arg Ser Thr Ala Thr Lys Leu Leu Leu Leu Met Ala Glu Ser
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His Gln Glu Ile Leu Ile Leu Leu Arg Gln Ser Thr Cys Tyr Lys Gly
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Leu Arg Arg Leu Leu Ser Lys Gln Glu Thr Gly Thr Glu Phe Ser Gln
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Val Ile Ala Leu Gln Arg Ser Phe Arg Ser Lys Arg Ser Lys Met Leu
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Gln Leu Gln Arg Gln Arg Ala Met Arg Leu Ser Arg Glu Leu Gln Leu
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Ser Met Leu Glu Ile Val His Pro Gly Gln Val Glu Lys His Tyr Arg
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Glu Met Glu Glu Lys Ser Ala Leu Ile Ile Gln Lys His Trp Arg Gly
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Tyr Arg Glu Arg Lys Asn Phe His Gln Gln Arg Gln Ser Leu Ile Glu
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Lys Cys Arg Lys Lys Lys Lys Leu Phe Ala Pro Trp Arg Gly Leu Gln
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Tyr Val Arg Arg His Leu Gly Ser Pro Met Ser Asp Val Val Ser Arg
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Pro Pro Pro Lys Pro Pro Arg Pro Gln Pro Pro Pro Gln Gln Val Arg
35 40 45

Ser Ala Thr Ala Gly Ser Glu Gly Gly Phe Leu Ala Pro Glu Tyr Arg
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Glu Glu Gly Ala Ala Val Ala Ser Arg Val Arg Arg Arg Gly Gln Gln
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Asp Val Leu Arg Gly Pro Asn Val Cys Gly Ser Arg Phe His Ser Tyr
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Cys Cys Pro Gly Trp Lys Thr Leu Pro Gly Gly Asn Gln Cys Ile Val
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Pro Ile Cys Arg Asn Ser Cys Gly Asp Gly Phe Cys Ser Arg Pro Asn
115 120 125

Met Cys Thr Cys Ser Ser Gly Gln Ile Ser Ser Thr Cys Gly Ser Lys
130 135 140

Ser Ile Gln Gln Cys Ser Val Arg Cys Met Asn Gly Gly Thr Cys Ala
145 150 155 160

Asp Asp His Cys Gln Cys Gln Lys Gly Tyr Ile Gly Thr Tyr Cys Gly
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Gln Pro Val Cys Glu Asn Gly Cys Gln Asn Gly Gly Arg Cys Ile Gly
180 185 190

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Pro Asn Arg Cys Ala Cys Val Tyr Gly Phe Thr Gly Pro Gln Cys Glu
        195                 200                 205

Arg Asp Tyr Arg Thr Gly Pro Cys Phe Thr Gln Val Asn Asn Gln Met
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Cys Gln Gly Gln Leu Thr Gly Ile Val Cys Thr Lys Thr Leu Cys Cys
225                 230                 235                 240

Ala Thr Ile Gly Arg Ala Trp Gly His Pro Cys Glu Met Cys Pro Ala
                245                 250                 255

Gln Pro Gln Pro Cys Arg Arg Gly Phe Ile Pro Asn Ile Arg Thr Gly
            260                 265                 270

Ala Cys Gln Asp Val Asp Glu Cys Gln Ala Ile Pro Gly Ile Cys Gln
        275                 280                 285

Gly Gly Asn Cys Ile Asn Thr Val Gly Ser Phe Glu Cys Arg Cys Pro
    290                 295                 300

Ala Gly His Lys Gln Ser Glu Thr Thr Gln Lys Cys Glu Asp Ile Asp
305                 310                 315                 320

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

Thr Val Gly Ser Tyr Phe Cys Val Cys Pro Arg Gly Tyr Val Thr Ser
            340                 345                 350

Thr Asp Gly Ser Arg Cys Ile Asp Gln Arg Thr Gly Met Cys Phe Ser
        355                 360                 365

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

Lys Met Gln Cys Cys Cys Glu Pro Gly Arg Cys Trp Gly Ile Gly Thr
385                 390                 395                 400

Ile Pro Glu Ala Cys Pro Val Arg Gly Ser Glu Glu Tyr Arg Arg Leu
                405                 410                 415

Cys Met Asp Gly Leu Pro Met Gly Gly Ile Pro Gly Ser Ala Gly Ser
            420                 425                 430

Arg Pro Gly Gly Thr Gly Gly Asn Gly Phe Ala Pro Ser Gly Asn Gly
        435                 440                 445
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Asn Gly Tyr Gly Pro Gly Gly Thr Gly Phe Ile Pro Ile Pro Gly Gly
    450                 455                 460

Asn Gly Phe Ser Pro Gly Val Gly Gly Ala Gly Val Gly Ala Gly Gly
465                 470                 475                 480

Gln Gly Pro Ile Ile Thr Gly Leu Thr Ile Leu Asn Gln Thr Ile Asp
                485                 490                 495

Ile Cys Lys His His Ala Asn Leu Cys Leu Asn Gly Arg Cys Ile Pro
            500                 505                 510

Thr Val Ser Ser Tyr Arg Cys Glu Cys Asn Met Gly Tyr Lys Gln Asp
        515                 520                 525

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

Thr Asn Gly Asp Cys Val Asn Thr Pro Gly Ser Tyr Tyr Cys Lys Cys
545                 550                 555                 560

His Ala Gly Phe Gln Arg Thr Pro Thr Lys Gln Ala Cys Ile Asp Ile
                565                 570                 575

Asp Glu Cys Ile Gln Asn Gly Val Leu Cys Lys Asn Gly Arg Cys Val
            580                 585                 590

Asn Thr Asp Gly Ser Phe Gln Cys Ile Cys Asn Ala Gly Phe Glu Leu
        595                 600                 605

Thr Thr Asp Gly Lys Asn Cys Val Asp His Asp Glu Cys Thr Thr Thr
    610                 615                 620

Asn Met Cys Leu Asn Gly Met Cys Ile Asn Glu Asp Gly Ser Phe Lys
625                 630                 635                 640

Cys Ile Cys Lys Pro Gly Phe Val Leu Ala Pro Asn Gly Arg Tyr Cys
                645                 650                 655

Thr Asp Val Asp Glu Cys Gln Thr Pro Gly Ile Cys Met Asn Gly His
            660                 665                 670

Cys Ile Asn Ser Glu Gly Ser Phe Arg Cys Asp Cys Pro Pro Gly Leu
        675                 680                 685

Ala Val Gly Met Asp Gly Arg Val Cys Val Asp Thr His Met Arg Ser
    690                 695                 700
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Thr Cys Tyr Gly Gly Ile Lys Lys Gly Val Cys Val Arg Pro Phe Pro
705                 710                 715                 720

Gly Ala Val Thr Lys Ser Glu Cys Cys Cys Ala Asn Pro Asp Tyr Gly
                725                 730                 735

Phe Gly Glu Pro Cys Gln Pro Cys Pro Ala Lys Asn Ser Ala Glu Phe
            740                 745                 750

His Gly Leu Cys Ser Ser Gly Val Gly Ile Thr Val Asp Gly Arg Asp
        755                 760                 765

Ile Asn Glu Cys Ala Leu Asp Pro Asp Ile Cys Ala Asn Gly Ile Cys
    770                 775                 780

Glu Asn Leu Arg Gly Ser Tyr Arg Cys Asn Cys Asn Ser Gly Tyr Glu
785                 790                 795                 800

Pro Asp Ala Ser Gly Arg Asn Cys Ile Asp Ile Asp Glu Cys Leu Val
                805                 810                 815

Asn Arg Leu Leu Cys Asp Asn Gly Leu Cys Arg Asn Thr Pro Gly Ser
            820                 825                 830

Tyr Ser Cys Thr Cys Pro Pro Gly Tyr Val Phe Arg Thr Glu Thr Glu
        835                 840                 845

Thr Cys Glu Asp Ile Asn Glu Cys Glu Ser Asn Pro Cys Val Asn Gly
    850                 855                 860

Ala Cys Arg Asn Asn Leu Gly Ser Phe Asn Cys Glu Cys Ser Pro Gly
865                 870                 875                 880

Ser Lys Leu Ser Ser Thr Gly Leu Ile Cys Ile Asp Ser Leu Lys Gly
                885                 890                 895

Thr Cys Trp Leu Asn Ile Gln Asp Ser Arg Cys Glu Val Asn Ile Asn
            900                 905                 910

Gly Ala Thr Leu Lys Ser Glu Cys Cys Ala Thr Leu Gly Ala Ala Trp
        915                 920                 925

Gly Ser Pro Cys Glu Arg Cys Glu Leu Asp Thr Ala Cys Pro Arg Gly
    930                 935                 940

Leu Ala Arg Ile Lys Gly Val Thr Cys Glu Asp Val Asn Glu Cys Glu
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945 950 955 960

Val Phe Pro Gly Val Cys Pro Asn Gly Arg Cys Val Asn Ser Lys Gly
965 970 975

Ser Phe His Cys Glu Cys Pro Glu Gly Leu Thr Leu Asp Gly Thr Gly
980 985 990

Arg Val Cys Leu Asp Ile Arg Met Glu Gln Cys Tyr Leu Lys Trp Asp
995 1000 1005

Glu Asp Glu Cys Ile His Pro Val Pro Gly Lys Phe Arg Met Asp
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Ala Cys Cys Cys Ala Val Gly Ala Ala Trp Gly Thr Glu Cys Glu
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Glu Cys Pro Lys Pro Gly Thr Lys Glu Tyr Glu Thr Leu Cys Pro
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Arg Gly Ala Gly Phe Ala Asn Arg Gly Asp Val Leu Thr Gly Arg
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Pro Phe Tyr Lys Asp Ile Asn Glu Cys Lys Ala Phe Pro Gly Met
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Cys Thr Tyr Gly Lys Cys Arg Asn Thr Ile Gly Ser Phe Lys Cys
1085 1090 1095

Arg Cys Asn Ser Gly Phe Ala Leu Asp Met Glu Glu Arg Asn Cys
1100 1105 1110

Thr Asp Ile Asp Glu Cys Arg Ile Ser Pro Asp Leu Cys Gly Ser
1115 1120 1125

Gly Ile Cys Val Asn Thr Pro Gly Ser Phe Glu Cys Glu Cys Phe
1130 1135 1140

Glu Gly Tyr Glu Ser Gly Phe Met Met Met Lys Asn Cys Met Asp
1145 1150 1155

Ile Asp Glu Cys Glu Arg Asn Pro Leu Leu Cys Arg Gly Gly Thr
1160 1165 1170

Cys Val Asn Thr Glu Gly Ser Phe Gln Cys Asp Cys Pro Leu Gly
1175 1180 1185

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His Glu  Leu Ser Pro Ser Arg  Glu Asp Cys Val Asp  Ile Asn Glu
    1190                 1195                 1200

Cys Ser  Leu Ser Asp Asn Leu  Cys Arg Asn Gly Lys  Cys Val Asn
    1205                 1210                 1215

Met Ile  Gly Thr Tyr Gln Cys  Ser Cys Asn Pro Gly  Tyr Gln Ala
    1220                 1225                 1230

Thr Pro  Asp Arg Gln Gly Cys  Thr Asp Ile Asp Glu  Cys Met Ile
    1235                 1240                 1245

Met Asn  Gly Gly Cys Asp Thr  Gln Cys Thr Asn Ser  Glu Gly Ser
    1250                 1255                 1260

Tyr Glu  Cys Ser Cys Ser Glu  Gly Tyr Ala Leu Met  Pro Asp Gly
    1265                 1270                 1275

Arg Ser  Cys Ala Asp Ile Asp  Glu Cys Glu Asn Asn  Pro Asp Ile
    1280                 1285                 1290

Cys Asp  Gly Gly Gln Cys Thr  Asn Ile Pro Gly Glu  Tyr Arg Cys
    1295                 1300                 1305

Leu Cys  Tyr Asp Gly Phe Met  Ala Ser Met Asp Met  Lys Thr Cys
    1310                 1315                 1320

Ile Asp  Val Asn Glu Cys Asp  Leu Asn Ser Asn Ile  Cys Met Phe
    1325                 1330                 1335

Gly Glu  Cys Glu Asn Thr Lys  Gly Ser Phe Ile Cys  His Cys Gln
    1340                 1345                 1350

Leu Gly  Tyr Ser Val Lys Lys  Gly Thr Thr Gly Cys  Thr Asp Val
    1355                 1360                 1365

Asp Glu  Cys Glu Ile Gly Ala  His Asn Cys Asp Met  His Ala Ser
    1370                 1375                 1380

Cys Leu  Asn Ile Pro Gly Ser  Phe Lys Cys Ser Cys  Arg Glu Gly
    1385                 1390                 1395

Trp Ile  Gly Asn Gly Ile Lys  Cys Ile Asp Leu Asp  Glu Cys Ser
    1400                 1405                 1410

Asn Gly  Thr His Gln Cys Ser  Ile Asn Ala Gln Cys  Val Asn Thr
    1415                 1420                 1425
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Pro Gly  Ser Tyr Arg Cys Ala  Cys Ser Glu Gly Phe  Thr Gly Asp
    1430                 1435                 1440

Gly Phe  Thr Cys Ser Asp Val  Asp Glu Cys Ala Glu  Asn Ile Asn
    1445                 1450                 1455

Leu Cys  Glu Asn Gly Gln Cys  Leu Asn Val Pro Gly  Ala Tyr Arg
    1460                 1465                 1470

Cys Glu  Cys Glu Met Gly Phe  Thr Pro Ala Ser Asp  Ser Arg Ser
    1475                 1480                 1485

Cys Gln  Asp Ile Asp Glu Cys  Ser Phe Gln Asn Ile  Cys Val Phe
    1490                 1495                 1500

Gly Thr  Cys Asn Asn Leu Pro  Gly Met Phe His Cys  Ile Cys Asp
    1505                 1510                 1515

Asp Gly  Tyr Glu Leu Asp Arg  Thr Gly Gly Asn Cys  Thr Asp Ile
    1520                 1525                 1530

Asp Glu  Cys Ala Asp Pro Ile  Asn Cys Val Asn Gly  Leu Cys Val
    1535                 1540                 1545

Asn Thr  Pro Gly Arg Tyr Glu  Cys Asn Cys Pro Pro  Asp Phe Gln
    1550                 1555                 1560

Leu Asn  Pro Thr Gly Val Gly  Cys Val Asp Asn Arg  Val Gly Asn
    1565                 1570                 1575

Cys Tyr  Leu Lys Phe Gly Pro  Arg Gly Asp Gly Ser  Leu Ser Cys
    1580                 1585                 1590

Asn Thr  Glu Ile Gly Val Gly  Val Ser Arg Ser Ser  Cys Cys Cys
    1595                 1600                 1605

Ser Leu  Gly Lys Ala Trp Gly  Asn Pro Cys Glu Thr  Cys Pro Pro
    1610                 1615                 1620

Val Asn  Ser Thr Glu Tyr Tyr  Thr Leu Cys Pro Gly  Gly Glu Gly
    1625                 1630                 1635

Phe Arg  Pro Asn Pro Ile Thr  Ile Ile Leu Glu Asp  Ile Asp Glu
    1640                 1645                 1650

Cys Gln  Glu Leu Pro Gly Leu  Cys Gln Gly Gly Asn  Cys Ile Asn
    1655                 1660                 1665
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Thr Phe  Gly Ser Phe Gln Cys  Glu Cys Pro Gln Gly  Tyr Tyr Leu
    1670                 1675                 1680

Ser Glu  Asp Thr Arg Ile Cys  Glu Asp Ile Asp Glu  Cys Phe Ala
    1685                 1690                 1695

His Pro  Gly Val Cys Gly Pro  Gly Thr Cys Tyr Asn  Thr Leu Gly
    1700                 1705                 1710

Asn Tyr  Thr Cys Ile Cys Pro  Pro Glu Tyr Met Gln  Val Asn Gly
    1715                 1720                 1725

Gly His  Asn Cys Met Asp Met  Arg Lys Ser Phe Cys  Tyr Arg Ser
    1730                 1735                 1740

Tyr Asn  Gly Thr Thr Cys Glu  Asn Glu Leu Pro Phe  Asn Val Thr
    1745                 1750                 1755

Lys Arg  Met Cys Cys Cys Thr  Tyr Asn Val Gly Lys  Ala Trp Asn
    1760                 1765                 1770

Lys Pro  Cys Glu Pro Cys Pro  Thr Pro Gly Thr Ala  Asp Phe Lys
    1775                 1780                 1785

Thr Ile  Cys Gly Asn Ile Pro  Gly Phe Thr Phe Asp  Ile His Thr
    1790                 1795                 1800

Gly Lys  Ala Val Asp Ile Asp  Glu Cys Lys Glu Ile  Pro Gly Ile
    1805                 1810                 1815

Cys Ala  Asn Gly Val Cys Ile  Asn Gln Ile Gly Ser  Phe Arg Cys
    1820                 1825                 1830

Glu Cys  Pro Thr Gly Phe Ser  Tyr Asn Asp Leu Leu  Leu Val Cys
    1835                 1840                 1845

Glu Asp  Ile Asp Glu Cys Ser  Asn Gly Asp Asn Leu  Cys Gln Arg
    1850                 1855                 1860

Asn Ala  Asp Cys Ile Asn Ser  Pro Gly Ser Tyr Arg  Cys Glu Cys
    1865                 1870                 1875

Ala Ala  Gly Phe Lys Leu Ser  Pro Asn Gly Ala Cys  Val Asp Arg
    1880                 1885                 1890

Asn Glu  Cys Leu Glu Ile Pro  Asn Val Cys Ser His  Gly Leu Cys
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    1895                1900                1905

Val Asp  Leu Gln Gly Ser Tyr  Gln Cys Ile Cys His  Asn Gly Phe
    1910                1915                1920

Lys Ala  Ser Gln Asp Gln Thr  Met Cys Met Asp Val  Asp Glu Cys
    1925                1930                1935

Glu Arg  His Pro Cys Gly Asn  Gly Thr Cys Lys Asn  Thr Val Gly
    1940                1945                1950

Ser Tyr  Asn Cys Leu Cys Tyr  Pro Gly Phe Glu Leu  Thr His Asn
    1955                1960                1965

Asn Asp  Cys Leu Asp Ile Asp  Glu Cys Ser Ser Phe  Phe Gly Gln
    1970                1975                1980

Val Cys  Arg Asn Gly Arg Cys  Phe Asn Glu Ile Gly  Ser Phe Lys
    1985                1990                1995

Cys Leu  Cys Asn Glu Gly Tyr  Glu Leu Thr Pro Asp  Gly Lys Asn
    2000                2005                2010

Cys Ile  Asp Thr Asn Glu Cys  Val Ala Leu Pro Gly  Ser Cys Ser
    2015                2020                2025

Pro Gly  Thr Cys Gln Asn Leu  Glu Gly Ser Phe Arg  Cys Ile Cys
    2030                2035                2040

Pro Pro  Gly Tyr Glu Val Lys  Ser Glu Asn Cys Ile  Asp Ile Asn
    2045                2050                2055

Glu Cys  Asp Glu Asp Pro Asn  Ile Cys Leu Phe Gly  Ser Cys Thr
    2060                2065                2070

Asn Thr  Pro Gly Gly Phe Gln  Cys Leu Cys Pro Pro  Gly Phe Val
    2075                2080                2085

Leu Ser  Asp Asn Gly Arg Arg  Cys Phe Asp Thr Arg  Gln Ser Phe
    2090                2095                2100

Cys Phe  Thr Asn Phe Glu Asn  Gly Lys Cys Ser Val  Pro Lys Ala
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Phe Asn  Thr Thr Lys Ala Lys  Cys Cys Cys Ser Lys  Met Pro Gly
    2120                2125                2130
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Glu Gly  Trp Gly Asp Pro Cys  Glu Leu Cys Pro Lys  Asp Asp Glu
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Val Ala  Phe Gln Asp Leu Cys  Pro Tyr Gly His Gly  Thr Val Pro
    2150                 2155                 2160

Ser Leu  His Asp Thr Arg Glu  Asp Val Asn Glu Cys  Leu Glu Ser
    2165                 2170                 2175

Pro Gly  Ile Cys Ser Asn Gly  Gln Cys Ile Asn Thr  Asp Gly Ser
    2180                 2185                 2190

Phe Arg  Cys Glu Cys Pro Met  Gly Tyr Asn Leu Asp  Tyr Thr Gly
    2195                 2200                 2205

Val Arg  Cys Val Asp Thr Asp  Glu Cys Ser Ile Gly  Asn Pro Cys
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Gly Asn  Gly Thr Cys Thr Asn  Val Ile Gly Ser Phe  Glu Cys Asn
    2225                 2230                 2235

Cys Asn  Glu Gly Phe Glu Pro  Gly Pro Met Met Asn  Cys Glu Asp
    2240                 2245                 2250

Ile Asn  Glu Cys Ala Gln Asn  Pro Leu Leu Cys Ala  Phe Arg Cys
    2255                 2260                 2265

Met Asn  Thr Phe Gly Ser Tyr  Glu Cys Thr Cys Pro  Ile Gly Tyr
    2270                 2275                 2280

Ala Leu  Arg Glu Asp Gln Lys  Met Cys Lys Asp Leu  Asp Glu Cys
    2285                 2290                 2295

Ala Glu  Gly Leu His Asp Cys  Glu Ser Arg Gly Met  Met Cys Lys
    2300                 2305                 2310

Asn Leu  Ile Gly Thr Phe Met  Cys Ile Cys Pro Pro  Gly Met Ala
    2315                 2320                 2325

Arg Arg  Pro Asp Gly Glu Gly  Cys Val Asp Glu Asn  Glu Cys Arg
    2330                 2335                 2340

Thr Lys  Pro Gly Ile Cys Glu  Asn Gly Arg Cys Val  Asn Ile Ile
    2345                 2350                 2355

Gly Ser  Tyr Arg Cys Glu Cys  Asn Glu Gly Phe Gln  Ser Ser Ser
    2360                 2365                 2370
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Ser Gly  Thr Glu Cys Leu Asp  Asn Arg Gln Gly Leu  Cys Phe Ala
    2375                 2380                 2385

Glu Val  Leu Gln Thr Ile Cys  Gln Met Ala Ser Ser  Ser Arg Asn
    2390                 2395                 2400

Leu Val  Thr Lys Ser Glu Cys  Cys Cys Asp Gly Gly  Arg Gly Trp
    2405                 2410                 2415

Gly His  Gln Cys Glu Leu Cys  Pro Leu Pro Gly Thr  Ala Gln Tyr
    2420                 2425                 2430

Lys Lys  Ile Cys Pro His Gly  Pro Gly Tyr Thr Thr  Asp Gly Arg
    2435                 2440                 2445

Asp Ile  Asp Glu Cys Lys Val  Met Pro Asn Leu Cys  Thr Asn Gly
    2450                 2455                 2460

Gln Cys  Ile Asn Thr Met Gly  Ser Phe Arg Cys Phe  Cys Lys Val
    2465                 2470                 2475

Gly Tyr  Thr Thr Asp Ile Ser  Gly Thr Ser Cys Ile  Asp Leu Asp
    2480                 2485                 2490

Glu Cys  Ser Gln Ser Pro Lys  Pro Cys Asn Tyr Ile  Cys Lys Asn
    2495                 2500                 2505

Thr Glu  Gly Ser Tyr Gln Cys  Ser Cys Pro Arg Gly  Tyr Val Leu
    2510                 2515                 2520

Gln Glu  Asp Gly Lys Thr Cys  Lys Asp Leu Asp Glu  Cys Gln Thr
    2525                 2530                 2535

Lys Gln  His Asn Cys Gln Phe  Leu Cys Val Asn Thr  Leu Gly Gly
    2540                 2545                 2550

Phe Thr  Cys Lys Cys Pro Pro  Gly Phe Thr Gln His  His Thr Ala
    2555                 2560                 2565

Cys Ile  Asp Asn Asn Glu Cys  Gly Ser Gln Pro Ser  Leu Cys Gly
    2570                 2575                 2580

Ala Lys  Gly Ile Cys Gln Asn  Thr Pro Gly Ser Phe  Ser Cys Glu
    2585                 2590                 2595

Cys Gln  Arg Gly Phe Ser Leu  Asp Ala Thr Gly Leu  Asn Cys Glu
    2600                 2605                 2610
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Asp Val  Asp Glu Cys Asp Gly  Asn His Arg Cys Gln  His Gly Cys
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Gln Asn  Ile Leu Gly Gly Tyr  Arg Cys Gly Cys Pro  Gln Gly Tyr
    2630                 2635                 2640

Ile Gln  His Tyr Gln Trp Asn  Gln Cys Val Asp Glu  Asn Glu Cys
    2645                 2650                 2655

Ser Asn  Pro Asn Ala Cys Gly  Ser Ala Ser Cys Tyr  Asn Thr Leu
    2660                 2665                 2670

Gly Ser  Tyr Lys Cys Ala Cys  Pro Ser Gly Phe Ser  Phe Asp Gln
    2675                 2680                 2685

Phe Ser  Ser Ala Cys His Asp  Val Asn Glu Cys Ser  Ser Ser Lys
    2690                 2695                 2700

Asn Pro  Cys Asn Tyr Gly Cys  Ser Asn Thr Glu Gly  Gly Tyr Leu
    2705                 2710                 2715

Cys Gly  Cys Pro Pro Gly Tyr  Tyr Arg Val Gly Gln  Gly His Cys
    2720                 2725                 2730

Val Ser  Gly Met Gly Phe Asn  Lys Gly Gln Tyr Leu  Ser Leu Asp
    2735                 2740                 2745

Thr Glu  Val Asp Glu Glu Asn  Ala Leu Ser Pro Glu  Ala Cys Tyr
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Glu Cys  Lys Ile Asn Gly Tyr  Ser Lys Lys Asp Ser  Arg Gln Lys
    2765                 2770                 2775

Arg Ser  Ile His Glu Pro Asp  Pro Thr Ala Val Glu  Gln Ile Ser
    2780                 2785                 2790

Leu Glu  Ser Val Asp Met Asp  Ser Pro Val Asn Met  Lys Phe Asn
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Leu Ser  His Leu Gly Ser Lys  Glu His Ile Leu Glu  Leu Arg Pro
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Ala Ile  Gln Pro Leu Asn Asn  His Ile Arg Tyr Val  Ile Ser Gln
    2825                 2830                 2835

Gly Asn  Asp Asp Ser Val Phe  Arg Ile His Gln Arg  Asn Gly Leu
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Ser Tyr Leu His Thr Ala Lys Lys Lys Leu Met Pro Gly Thr Tyr
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Thr Leu Glu Ile Thr Ser Ile Pro Leu Tyr Lys Lys Lys Glu Leu
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<211> 298
<212> PRT
<213> Homo sapiens

<400> 138

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Tyr Gly Thr Asp Asn Phe Glu Glu Ser Ile Phe Ser Gln Asp Tyr Glu
35 40 45

Asp Lys Tyr Leu Asp Gly Lys Asn Ile Lys Glu Lys Glu Thr Val Ile
50 55 60

Ile Pro Asn Glu Lys Ser Leu Gln Leu Gln Lys Asp Glu Ala Ile Thr
65 70 75 80

Pro Leu Pro Pro Lys Lys Glu Asn Asp Glu Met Pro Thr Cys Leu Leu
85 90 95

Cys Val Cys Leu Ser Gly Ser Val Tyr Cys Glu Glu Val Asp Ile Asp
100 105 110

Ala Val Pro Pro Leu Pro Lys Glu Ser Ala Tyr Leu Tyr Ala Arg Phe
115 120 125

Asn Lys Ile Lys Lys Leu Thr Ala Lys Asp Phe Ala Asp Ile Pro Asn
130 135 140

Leu Arg Arg Leu Asp Phe Thr Gly Asn Leu Ile Glu Asp Ile Glu Asp
145 150 155 160

Gly Thr Phe Ser Lys Leu Ser Leu Leu Glu Glu Leu Ser Leu Ala Glu
165 170 175

Asn Gln Leu Leu Lys Leu Pro Val Leu Pro Pro Lys Leu Thr Leu Phe
180 185 190

Asn Ala Lys Tyr Asn Lys Ile Lys Ser Arg Gly Ile Lys Ala Asn Ala
195 200 205

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Phe Lys Lys Leu Asn Asn Leu Thr Phe Leu Tyr Leu Asp His Asn Ala
    210                 215                 220

Leu Glu Ser Val Pro Leu Asn Leu Pro Glu Ser Leu Arg Val Ile His
225                 230                 235                 240

Leu Gln Phe Asn Asn Ile Ala Ser Ile Thr Asp Asp Thr Phe Cys Lys
                245                 250                 255

Ala Asn Asp Thr Ser Tyr Ile Arg Asp Arg Ile Glu Glu Ile Arg Leu
            260                 265                 270

Glu Gly Asn Pro Ile Val Leu Gly Lys His Pro Asn Ser Phe Ile Cys
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Leu Lys Arg Leu Pro Ile Gly Ser Tyr Phe
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<210> 139
<211> 2542
<212> DNA
<213> Homo sapiens

<400> 139

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tccaagaaga ttgtatttgc ttaaattgct acagtaattc aagagacagc cctgtctgga      240

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cagacaaatg ctatggatgg gctagtaaac ttgaccatgc ttgatctctg ttataattat      960

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<210> 140
<211> 421
<212> PRT
<213> Homo sapiens

<400> 140

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Gln Glu Pro Asp Asp Asp Tyr Gln Thr Gly Phe Pro Phe Arg Gln Asn
        35                  40                  45

Val Asp Tyr Gly Val Pro Phe His Gln Tyr Thr Leu Gly Cys Val Ser
    50                  55                  60

Glu Cys Phe Cys Pro Thr Asn Phe Pro Ser Ser Met Tyr Cys Asp Asn
65                  70                  75                  80

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

Tyr Leu Gln Phe Asn Glu Ile Glu Ala Val Thr Ala Asn Ser Phe Ile
            100                 105                 110

Asn Ala Thr His Leu Lys Glu Ile Asn Leu Ser His Asn Lys Ile Lys
        115                 120                 125

Ser Gln Lys Ile Asp Tyr Gly Val Phe Ala Lys Leu Pro Asn Leu Leu
    130                 135                 140

Gln Leu His Leu Glu His Asn Asn Leu Glu Glu Phe Pro Phe Pro Leu
145                 150                 155                 160

Pro Lys Ser Leu Glu Arg Leu Leu Leu Gly Tyr Asn Glu Ile Ser Lys
                165                 170                 175

Leu Gln Thr Asn Ala Met Asp Gly Leu Val Asn Leu Thr Met Leu Asp
            180                 185                 190

Leu Cys Tyr Asn Tyr Leu His Asp Ser Leu Leu Lys Asp Lys Ile Phe
        195                 200                 205

Ala Lys Met Glu Lys Leu Met Gln Leu Asn Leu Cys Ser Asn Arg Leu
    210                 215                 220

Glu Ser Met Pro Pro Gly Leu Pro Ser Ser Leu Met Tyr Leu Ser Leu
225                 230                 235                 240

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

Pro Lys Leu His Thr Leu Arg Met Ser His Asn Lys Leu Gln Asp Ile
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260 265 270

Pro Tyr Asn Ile Phe Asn Leu Pro Asn Ile Val Glu Leu Ser Val Gly
275 280 285

His Asn Lys Leu Lys Gln Ala Phe Tyr Ile Pro Arg Asn Leu Glu His
290 295 300

Leu Tyr Leu Gln Asn Asn Glu Ile Glu Lys Met Asn Leu Thr Val Met
305 310 315 320

Cys Pro Ser Ile Asp Pro Leu His Tyr His His Leu Thr Tyr Ile Arg
325 330 335

Val Asp Gln Asn Lys Leu Lys Glu Pro Ile Ser Ser Tyr Ile Phe Phe
340 345 350

Cys Phe Pro His Ile His Thr Ile Tyr Tyr Gly Glu Gln Arg Ser Thr
355 360 365

Asn Gly Gln Thr Ile Gln Leu Lys Thr Gln Val Phe Arg Arg Phe Pro
370 375 380

Asp Asp Asp Asp Glu Ser Glu Asp His Asp Asp Pro Asp Asn Ala His
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Glu Ser Pro Glu Gln Glu Gly Ala Glu Gly His Phe Asp Leu His Tyr
405 410 415

Tyr Glu Asn Gln Glu
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<210> 141
<211> 2541
<212> DNA
<213> Homo sapiens

<400> 141
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<210> 142
<211> 379
<212> PRT
<213> Homo sapiens

<400> 142

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20 25 30

Asp Met Glu Asp Thr Asp Asp Asp Asp Asp Asp Asp Asp Asp Asp Asp
35 40 45

Asp Asp Glu Asp Asn Ser Leu Phe Pro Thr Arg Glu Pro Arg Ser His
50 55 60

Phe Phe Pro Phe Asp Leu Phe Pro Met Cys Pro Phe Gly Cys Gln Cys
65 70 75 80

Tyr Ser Arg Val Val His Cys Ser Asp Leu Gly Leu Thr Ser Val Pro
85 90 95

Thr Asn Ile Pro Phe Asp Thr Arg Met Leu Asp Leu Gln Asn Asn Lys
100 105 110

Ile Lys Glu Ile Lys Glu Asn Asp Phe Lys Gly Leu Thr Ser Leu Tyr
115 120 125

Gly Leu Ile Leu Asn Asn Asn Lys Leu Thr Lys Ile His Pro Lys Ala
130 135 140

Phe Leu Thr Thr Lys Lys Leu Arg Arg Leu Tyr Leu Ser His Asn Gln
145 150 155 160

Leu Ser Glu Ile Pro Leu Asn Leu Pro Lys Ser Leu Ala Glu Leu Arg
165 170 175

Ile His Glu Asn Lys Val Lys Lys Ile Gln Lys Asp Thr Phe Lys Gly
180 185 190

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Met Asn Ala Leu His Val Leu Glu Met Ser Ala Asn Pro Leu Asp Asn
        195                 200                 205

Asn Gly Ile Glu Pro Gly Ala Phe Glu Gly Val Thr Val Phe His Ile
    210                 215                 220

Arg Ile Ala Glu Ala Lys Leu Thr Ser Val Pro Lys Gly Leu Pro Pro
225                 230                 235                 240

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

Leu Glu Asp Phe Lys Arg Tyr Lys Glu Leu Gln Arg Leu Gly Leu Gly
            260                 265                 270

Asn Asn Lys Ile Thr Asp Ile Glu Asn Gly Ser Leu Ala Asn Ile Pro
        275                 280                 285

Arg Val Arg Glu Ile His Leu Glu Asn Asn Lys Leu Lys Lys Ile Pro
    290                 295                 300

Ser Gly Leu Pro Glu Leu Lys Tyr Leu Gln Ile Ile Phe Leu His Ser
305                 310                 315                 320

Asn Ser Ile Ala Arg Val Gly Val Asn Asp Phe Cys Pro Thr Val Pro
                325                 330                 335

Lys Met Lys Lys Ser Leu Tyr Ser Ala Ile Ser Leu Phe Asn Asn Pro
            340                 345                 350

Val Lys Tyr Trp Glu Met Gln Pro Ala Thr Phe Arg Cys Val Leu Ser
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Arg Met Ser Val Gln Leu Gly Asn Phe Gly Met
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<210> 143
<211> 4615
<212> DNA
<213> Homo sapiens

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

Asp Leu Phe His Cys Val Ser Phe Thr Leu Pro Arg Ile Ser Ala Ser
85 90 95

Ser Glu Val Ala Phe Leu Ser Ile Gln Ile Lys Gly Pro Thr Gln Asp
100 105 110

Phe Arg Lys Arg Asn Thr Val Leu Val Leu Asn Thr Gln Ser Leu Val
115 120 125

Phe Val Gln Thr Asp Lys Pro Met Tyr Lys Pro Gly Gln Thr Val Arg
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Phe Arg Val Val Ser Val Asp Glu Asn Phe Arg Pro Arg Asn Glu Leu
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Ile Pro Leu Ile Tyr Leu Glu Asn Pro Arg Arg Asn Arg Ile Ala Gln
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Trp Gln Ser Leu Lys Leu Glu Ala Gly Ile Asn Gln Leu Ser Phe Pro
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Leu Ser Ser Glu Pro Ile Gln Gly Ser Tyr Arg Val Val Val Gln Thr
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Glu Ser Gly Gly Arg Ile Gln His Pro Phe Thr Val Glu Glu Phe Val
    210                 215                 220

Leu Pro Lys Phe Glu Val Lys Val Gln Val Pro Lys Ile Ile Ser Ile
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Met Asp Glu Lys Val Asn Ile Thr Val Cys Gly Glu Tyr Thr Tyr Gly
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Lys Pro Val Pro Gly Leu Ala Thr Val Ser Leu Cys Arg Lys Leu Ser
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Arg Val Leu Asn Cys Asp Lys Gln Glu Val Cys Glu Glu Phe Ser Gln
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Gln Leu Asn Ser Asn Gly Cys Ile Thr Gln Gln Val His Thr Lys Met
    290                 295                 300

Leu Gln Ile Thr Asn Thr Gly Phe Glu Met Lys Leu Arg Val Glu Ala
305                 310                 315                 320

Arg Ile Arg Glu Glu Gly Thr Asp Leu Glu Val Thr Ala Asn Arg Ile
                325                 330                 335

Ser Glu Ile Thr Asn Ile Val Ser Lys Leu Lys Phe Val Lys Val Asp
            340                 345                 350

Ser His Phe Arg Gln Gly Ile Pro Phe Phe Ala Gln Val Leu Leu Val
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Asp Gly Lys Gly Val Pro Ile Pro Asn Lys Leu Phe Phe Ile Ser Val
    370                 375                 380

Asn Asp Ala Asn Tyr Tyr Ser Asn Ala Thr Thr Asn Glu Gln Gly Leu
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Val Arg Val Phe Thr Val His Pro Asn Leu Cys Phe His Tyr Ser Trp
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Val Ala Glu Asp His Gln Gly Ala Gln His Thr Ala Asn Arg Val Phe
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Ser Leu Ser Gly Ser Tyr Ile His Leu Glu Pro Val Ala Gly Thr Leu
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Pro Cys Gly His Thr Glu Thr Ile Thr Ala His Tyr Thr Leu Asn Arg
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Ala Lys Gly Val Ile Val Arg Ser Gly Thr His Thr Leu Pro Val Glu
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Ser His Ala His Leu Gln Val Ala Ala Ala Pro Gln Ser Leu Cys Ala
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Leu Arg Ala Val Asp Gln Ser Val Leu Leu Met Lys Pro Glu Ala Glu
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Leu Ser Val Ser Ser Val Tyr Asn Leu Leu Thr Val Lys Asp Leu Thr
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Asn Phe Pro Asp Asn Val Asp Gln Gln Glu Glu Glu Gln Gly His Cys
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Pro Arg Pro Phe Phe Ile His Asn Gly Ala Ile Tyr Val Pro Leu Ser
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Ser Asn Glu Ala Asp Ile Tyr Ser Phe Leu Lys Gly Met Gly Leu Lys
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Val Phe Thr Asn Ser Lys Ile Arg Lys Pro Lys Ser Cys Ser Val Ile
        675                 680                 685

Pro Ser Val Ser Ala Gly Ala Val Gly Gln Gly Tyr Tyr Gly Ala Gly
    690                 695                 700

Leu Gly Val Val Glu Arg Pro Tyr Val Pro Gln Leu Gly Thr Tyr Asn
705                 710                 715                 720

Val Ile Pro Leu Asn Asn Glu Gln Ser Ser Gly Pro Val Pro Glu Thr
                725                 730                 735

Val Arg Ser Tyr Phe Pro Glu Thr Trp Ile Trp Glu Leu Val Ala Val
            740                 745                 750

Asn Ser Ser Gly Val Ala Glu Val Gly Val Thr Val Pro Asp Thr Ile
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Thr Glu Trp Lys Ala Gly Ala Phe Cys Leu Ser Glu Asp Ala Gly Leu
    770                 775                 780

Gly Ile Ser Ser Thr Ala Ser Leu Arg Ala Phe Gln Pro Phe Phe Val
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Glu Leu Thr Met Pro Tyr Ser Val Ile Arg Gly Glu Val Phe Thr Leu
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Lys Ala Thr Val Leu Asn Tyr Leu Pro Lys Cys Ile Arg Val Ser Val
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Gln Leu Lys Ala Ser Pro Ala Phe Leu Ala Ser Gln Asn Thr Lys Gly
        835                 840                 845

Glu Glu Ser Tyr Cys Ile Cys Gly Asn Glu Arg Gln Thr Leu Ser Trp
    850                 855                 860

Thr Val Thr Pro Lys Thr Leu Gly Asn Val Asn Phe Ser Val Ser Ala
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Glu Ala Met Gln Ser Leu Glu Leu Cys Gly Asn Glu Val Val Glu Val
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Pro Glu Ile Lys Arg Lys Asp Thr Val Ile Lys Thr Leu Leu Val Glu
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Ala Glu Gly Ile Glu Gln Glu Lys Thr Phe Ser Ser Met Thr Cys Ala
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Ser Gly Ala Asn Val Ser Glu Gln Leu Ser Leu Lys Leu Pro Ser Asn
    930                 935                 940

Val Val Lys Glu Ser Ala Arg Ala Ser Phe Ser Val Leu Gly Asp Ile
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Leu Gly Ser Ala Met Gln Asn Ile Gln Asn Leu Leu Gln Met Pro Tyr
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Gly Cys Gly Glu Gln Asn Met Val Leu Phe Ala Pro Asn Ile Tyr Val
            980                 985                 990

Leu Asn Tyr Leu Asn Glu Thr Gln  Gln Leu Thr Gln Glu  Ile Lys Ala
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Lys Ala  Val Gly Tyr Leu Ile  Thr Gly Tyr Gln Arg  Gln Leu Asn
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Tyr Lys  His Gln Asp Gly Ser  Tyr Ser Thr Phe Gly  Glu Arg Tyr
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Gly Arg  Asn Gln Gly Asn Thr  Trp Leu Thr Ala Phe  Val Leu Lys
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Thr Phe  Ala Gln Ala Arg Ser  Tyr Ile Phe Ile Asp  Glu Ala His
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Ile Thr  Gln Ser Leu Thr Trp  Leu Ser Gln Met Gln  Lys Asp Asn
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Gly Cys  Phe Arg Ser Ser Gly  Ser Leu Leu Asn Asn  Ala Ile Lys
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Gly Gly  Val Glu Asp Glu Ala  Thr Leu Ser Ala Tyr  Val Thr Ile
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Ala Leu  Leu Glu Ile Pro Leu  Pro Val Thr Asn Pro  Ile Val Arg
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Asn Ala  Leu Phe Cys Leu Glu  Ser Ala Trp Asn Val  Ala Lys Glu
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Gly Thr  His Gly Ser His Val  Tyr Thr Lys Ala Leu  Leu Ala Tyr
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Ala Phe  Ser Leu Leu Gly Lys  Gln Asn Gln Asn Arg  Glu Ile Leu
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Asn Ser  Leu Asp Lys Glu Ala  Val Lys Glu Asp Asn  Leu Val His
    1175                1180                1185

Trp Glu  Arg Pro Gln Arg Pro  Lys Ala Pro Val Gly  His Leu Tyr
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Gln Thr  Gln Ala Pro Ser Ala  Glu Val Glu Met Thr  Ser Tyr Val
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Leu Leu  Ala Tyr Leu Thr Ala  Gln Pro Ala Pro Thr  Ser Gly Asp
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Leu Thr  Ser Ala Thr Asn Ile  Val Lys Trp Ile Met  Lys Gln Gln
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Asn Ala  Gln Gly Gly Phe Ser  Ser Thr Gln Asp Thr  Val Val Ala
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Leu His  Ala Leu Ser Arg Tyr  Gly Ala Ala Thr Phe  Thr Arg Thr
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Glu Lys  Thr Ala Gln Val Thr  Val Gln Asp Ser Gln  Thr Phe Ser
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Gly Glu  Arg Cys Val Tyr Leu  Gln Thr Ser Met Lys  Tyr Asn Ile
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Leu Pro  Glu Lys Glu Asp Ser  Pro Phe Ala Leu Lys  Val Gln Thr
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Val Pro  Gln Thr Cys Asp Gly  His Lys Ala His Thr  Ser Phe Gln
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Ile Ser  Leu Thr Ile Ser Tyr  Thr Gly Asn Arg Pro  Ala Ser Asn
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Pro Val Gly Asp Leu Lys Pro Ala Ile Val Lys Val Tyr Asp Tyr
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Phe Leu Ser Pro Pro Ala Pro Ala Pro Lys Asn Gly Ser Ser Ser Asp
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Ser Ser Val Gly Glu Lys Leu Gly Ala Ala Ala Ala Asp Ala Val Thr
35 40 45

Gly Arg Thr Glu Glu Tyr Arg Arg Arg Arg His Thr Met Asp Lys Asp
50 55 60

Ser Arg Gly Ala Ala Ala Thr Thr Thr Thr Thr Glu His Arg Phe Phe
65 70 75 80

Arg Arg Ser Val Ile Cys Asp Ser Asn Ala Thr Ala Leu Glu Leu Pro
85 90 95

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Gly Leu Pro Leu Ser Leu Pro Gln Pro Ser Ile Pro Ala Ala Val Pro
            100                 105                 110

Gln Ser Ala Pro Pro Glu Pro His Arg Glu Glu Thr Val Thr Ala Thr
        115                 120                 125

Ala Thr Ser Gln Val Ala Gln Gln Pro Pro Ala Ala Ala Ala Pro Gly
    130                 135                 140

Glu Gln Ala Val Ala Gly Pro Ala Pro Ser Thr Val Pro Ser Ser Thr
145                 150                 155                 160

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

Glu Pro Pro Pro Ala Arg Ser Gly Ser Gly Gly Gly Ser Ala Lys Glu
            180                 185                 190

Pro Gln Glu Glu Arg Ser Gln Gln Gln Asp Asp Ile Glu Glu Leu Glu
        195                 200                 205

Thr Lys Ala Val Gly Met Ser Asn Asp Gly Arg Phe Leu Lys Phe Asp
    210                 215                 220

Ile Glu Ile Gly Arg Gly Ser Phe Lys Thr Val Tyr Lys Gly Leu Asp
225                 230                 235                 240

Thr Glu Thr Thr Val Glu Val Ala Trp Cys Glu Leu Gln Asp Arg Lys
                245                 250                 255

Leu Thr Lys Ser Glu Arg Gln Arg Phe Lys Glu Glu Ala Glu Met Leu
            260                 265                 270

Lys Gly Leu Gln His Pro Asn Ile Val Arg Phe Tyr Asp Ser Trp Glu
        275                 280                 285

Ser Thr Val Lys Gly Lys Lys Cys Ile Val Leu Val Thr Glu Leu Met
    290                 295                 300

Thr Ser Gly Thr Leu Lys Thr Tyr Leu Lys Arg Phe Lys Val Met Lys
305                 310                 315                 320

Ile Lys Val Leu Arg Ser Trp Cys Arg Gln Ile Leu Lys Gly Leu Gln
                325                 330                 335

Phe Leu His Thr Arg Thr Pro Pro Ile Ile His Arg Asp Leu Lys Cys
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            340                 345                 350

Asp Asn Ile Phe Ile Thr Gly Pro Thr Gly Ser Val Lys Ile Gly Asp
        355                 360                 365

Leu Gly Leu Ala Thr Leu Lys Arg Ala Ser Phe Ala Lys Ser Val Ile
    370                 375                 380

Gly Thr Pro Glu Phe Met Ala Pro Glu Met Tyr Glu Glu Lys Tyr Asp
385                 390                 395                 400

Glu Ser Val Asp Val Tyr Ala Phe Gly Met Cys Met Leu Glu Met Ala
                405                 410                 415

Thr Ser Glu Tyr Pro Tyr Ser Glu Cys Gln Asn Ala Ala Gln Ile Tyr
            420                 425                 430

Arg Arg Val Thr Ser Gly Val Lys Pro Ala Ser Phe Asp Lys Val Ala
        435                 440                 445

Ile Pro Glu Val Lys Glu Ile Ile Glu Gly Cys Ile Arg Gln Asn Lys
    450                 455                 460

Asp Glu Arg Tyr Ser Ile Lys Asp Leu Leu Asn His Ala Phe Phe Gln
465                 470                 475                 480

Glu Glu Thr Gly Val Arg Val Glu Leu Ala Glu Glu Asp Asp Gly Glu
                485                 490                 495

Lys Ile Ala Ile Lys Leu Trp Leu Arg Ile Glu Asp Ile Lys Lys Leu
            500                 505                 510

Lys Gly Lys Tyr Lys Asp Asn Glu Ala Ile Glu Phe Ser Phe Asp Leu
        515                 520                 525

Glu Arg Asp Val Pro Glu Asp Val Ala Gln Glu Met Val Glu Ser Gly
    530                 535                 540

Tyr Val Cys Glu Gly Asp His Lys Thr Met Ala Lys Ala Ile Lys Asp
545                 550                 555                 560

Arg Val Ser Leu Ile Lys Arg Lys Arg Glu Gln Arg Gln Leu Val Arg
                565                 570                 575

Glu Glu Gln Glu Lys Lys Lys Gln Glu Glu Ser Ser Leu Lys Gln Gln
            580                 585                 590
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Val Glu Gln Ser Ser Ala Ser Gln Thr Gly Ile Lys Gln Leu Pro Ser
        595                 600                 605

Ala Ser Thr Gly Ile Pro Thr Ala Ser Thr Thr Ser Ala Ser Val Ser
    610                 615                 620

Thr Gln Val Glu Pro Glu Glu Pro Glu Ala Asp Gln His Gln Gln Leu
625                 630                 635                 640

Gln Tyr Gln Gln Pro Ser Ile Ser Val Leu Ser Asp Gly Thr Val Asp
                645                 650                 655

Ser Gly Gln Gly Ser Ser Val Phe Thr Glu Ser Arg Val Ser Ser Gln
            660                 665                 670

Gln Thr Val Ser Tyr Gly Ser Gln His Glu Gln Ala His Ser Thr Gly
        675                 680                 685

Thr Val Pro Gly His Ile Pro Ser Thr Val Gln Ala Gln Ser Gln Pro
    690                 695                 700

His Gly Val Tyr Pro Pro Ser Ser Val Pro Arg Arg Gly Arg Ser Met
705                 710                 715                 720

Ser Val Cys Val Pro Ile Phe Leu Leu Leu Pro Leu Cys Pro Ala Ser
                725                 730                 735

Leu Pro Val Leu Phe His Pro Thr Ala Ser Thr Val Cys Thr Ser Phe
            740                 745                 750

Ser Phe Pro Pro Pro Asp Cys Pro Glu Glu Thr Phe Ala Glu Lys Leu
        755                 760                 765

Ser Lys Ala Leu Glu Ser Val Leu Pro Met His Ser Ala Ser Gln Arg
    770                 775                 780

Lys His Arg Arg Ser Ser Leu Pro Ser Leu Phe Val Ser Thr Pro Gln
785                 790                 795                 800

Ser Met Ala His Pro Cys Gly Gly Thr Pro Thr Tyr Pro Glu Ser Gln
                805                 810                 815

Ile Phe Phe Pro Thr Ile His Glu Arg Pro Val Ser Phe Ser Pro Pro
            820                 825                 830

Pro Thr Cys Pro Pro Lys Val Ala Ile Ser Gln Arg Arg Lys Ser Thr
        835                 840                 845
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Ser Phe Leu Glu Ala Gln Thr His His Phe Gln Pro Leu Leu Arg Thr
    850                 855                 860

Val Gly Gln Ser Leu Leu Pro Pro Gly Gly Ser Pro Thr Asn Trp Thr
865                 870                 875                 880

Pro Glu Ala Val Val Met Leu Gly Thr Thr Ala Ser Arg Val Thr Gly
                885                 890                 895

Glu Ser Cys Glu Ile Gln Val His Pro Met Phe Glu Pro Ser Gln Val
            900                 905                 910

Tyr Ser Asp Tyr Arg Pro Gly Leu Val Leu Pro Glu Glu Ala His Tyr
        915                 920                 925

Phe Ile Pro Gln Glu Ala Val Tyr Val Ala Gly Val His Tyr Gln Ala
    930                 935                 940

Arg Val Ala Glu Gln Tyr Glu Gly Ile Pro Tyr Asn Ser Ser Val Leu
945                 950                 955                 960

Ser Ser Pro Met Lys Gln Ile Pro Glu Gln Lys Pro Val Gln Gly Gly
                965                 970                 975

Pro Thr Ser Ser Ser Val Phe Glu Phe Pro Ser Gly Gln Ala Phe Leu
            980                 985                 990

Val Gly His Leu Gln Asn Leu Arg  Leu Asp Ser Gly Leu  Gly Pro Gly
        995                 1000                1005

Ser Pro  Leu Ser Ser Ile Ser  Ala Pro Ile Ser Thr  Asp Ala Thr
    1010                1015                1020

Arg Leu  Lys Phe His Pro Val  Phe Val Pro His Ser  Ala Pro Ala
    1025                1030                1035

Val Leu  Thr His Asn Asn Glu  Ser Arg Ser Asn Cys  Val Phe Glu
    1040                1045                1050

Phe His  Val His Thr Pro Ser  Ser Ser Ser Gly Glu  Gly Gly Gly
    1055                1060                1065

Ile Leu  Pro Gln Arg Val Tyr  Arg Asn Arg Gln Val  Ala Val Asp
    1070                1075                1080

Leu Asn  Gln Glu Glu Leu Pro  Pro Gln Ser Val Gly  Leu His Gly
    1085                1090                1095
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Tyr Leu  Gln Pro Val Thr Glu  Glu Lys His Asn Tyr  His Ala Pro
    1100                 1105                 1110

Glu Leu  Thr Val Ser Val Val  Glu Pro Ile Gly Gln  Asn Trp Pro
    1115                 1120                 1125

Ile Gly  Ser Pro Glu Tyr Ser  Ser Asp Ser Ser Gln  Ile Thr Ser
    1130                 1135                 1140

Ser Asp  Pro Ser Asp Phe Gln  Ser Pro Pro Pro Thr  Gly Gly Ala
    1145                 1150                 1155

Ala Ala  Pro Phe Gly Ser Asp  Val Ser Met Pro Phe  Ile His Leu
    1160                 1165                 1170

Pro Gln  Thr Val Leu Gln Glu  Ser Pro Leu Phe Phe  Cys Phe Pro
    1175                 1180                 1185

Gln Gly  Thr Thr Ser Gln Gln  Val Leu Thr Ala Ser  Phe Ser Ser
    1190                 1195                 1200

Gly Gly  Ser Ala Leu His Pro  Gln Ala Gln Gly Gln  Ser Gln Gly
    1205                 1210                 1215

Gln Pro  Ser Ser Ser Ser Leu  Thr Gly Val Ser Ser  Ser Gln Pro
    1220                 1225                 1230

Ile Gln  His Pro Gln Gln Gln  Gln Gly Ile Gln Gln  Thr Ala Pro
    1235                 1240                 1245

Pro Gln  Gln Thr Val Gln Tyr  Ser Leu Ser Gln Thr  Ser Thr Ser
    1250                 1255                 1260

Ser Glu  Ala Thr Thr Ala Gln  Pro Val Ser Gln Pro  Gln Ala Pro
    1265                 1270                 1275

Gln Val  Leu Pro Gln Val Ser  Ala Gly Lys Gln Ser  Thr Gln Gly
    1280                 1285                 1290

Val Ser  Gln Val Ala Pro Ala  Glu Pro Val Ala Val  Ala Gln Thr
    1295                 1300                 1305

Gln Ala  Thr Gln Pro Thr Thr  Leu Ala Ser Ser Val  Asp Ser Ala
    1310                 1315                 1320

His Ser  Asp Val Ala Ser Gly  Met Ser Asp Gly Asn  Glu Asn Val
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    1325                1330                1335

Pro Ser  Ser Ser Gly Arg His  Glu Gly Arg Thr Thr  Lys Arg His
    1340                1345                1350

Tyr Arg  Lys Ser Val Arg Ser  Arg Ser Arg His Glu  Lys Thr Ser
    1355                1360                1365

Arg Pro  Lys Leu Arg Ile Leu  Asn Val Ser Asn Lys  Gly Asp Arg
    1370                1375                1380

Val Val  Glu Cys Gln Leu Glu  Thr His Asn Arg Lys  Met Val Thr
    1385                1390                1395

Phe Lys  Phe Asp Leu Asp Gly  Asp Asn Pro Glu Glu  Ile Ala Thr
    1400                1405                1410

Ile Met  Val Asn Asn Asp Phe  Ile Leu Ala Ile Glu  Arg Glu Ser
    1415                1420                1425

Phe Val  Asp Gln Val Arg Glu  Ile Ile Glu Lys Ala  Asp Glu Met
    1430                1435                1440

Leu Ser  Glu Asp Val Ser Val  Glu Pro Glu Gly Asp  Gln Gly Leu
    1445                1450                1455

Glu Ser  Leu Gln Gly Lys Asp  Asp Tyr Gly Phe Ser  Gly Ser Gln
    1460                1465                1470

Lys Leu  Glu Gly Glu Phe Lys  Gln Pro Ile Pro Ala  Ser Ser Met
    1475                1480                1485

Pro Gln  Gln Ile Gly Ile Pro  Thr Ser Ser Leu Thr  Gln Val Val
    1490                1495                1500

His Ser  Ala Gly Arg Arg Phe  Ile Val Ser Pro Val  Pro Glu Ser
    1505                1510                1515

Arg Leu  Arg Glu Ser Lys Val  Phe Pro Ser Glu Ile  Thr Asp Thr
    1520                1525                1530

Val Ala  Ala Ser Thr Ala Gln  Ser Pro Gly Met Asn  Leu Ser His
    1535                1540                1545

Ser Ala  Ser Ser Leu Ser Leu  Gln Gln Ala Phe Ser  Glu Leu Arg
    1550                1555                1560
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Arg Ala  Gln Met Thr Glu Gly  Pro Asn Thr Ala Pro  Pro Asn Phe
    1565                 1570                 1575

Ser His  Thr Gly Pro Thr Phe  Pro Val Val Pro Pro  Phe Leu Ser
    1580                 1585                 1590

Ser Ile  Ala Gly Val Pro Thr  Thr Ala Ala Ala Thr  Ala Pro Val
    1595                 1600                 1605

Pro Ala  Thr Ser Ser Pro Pro  Asn Asp Ile Ser Thr  Ser Val Ile
    1610                 1615                 1620

Gln Ser  Glu Val Thr Val Pro  Thr Glu Glu Gly Ile  Ala Gly Val
    1625                 1630                 1635

Ala Thr  Ser Thr Gly Val Val  Thr Ser Gly Gly Leu  Pro Ile Pro
    1640                 1645                 1650

Pro Val  Ser Glu Ser Pro Val  Leu Ser Ser Val Val  Ser Ser Ile
    1655                 1660                 1665

Thr Ile  Pro Ala Val Val Ser  Ile Ser Thr Thr Ser  Pro Ser Leu
    1670                 1675                 1680

Gln Val  Pro Thr Ser Thr Ser  Glu Ile Val Val Ser  Ser Thr Ala
    1685                 1690                 1695

Leu Tyr  Pro Ser Val Thr Val  Ser Ala Thr Ser Ala  Ser Ala Gly
    1700                 1705                 1710

Gly Ser  Thr Ala Thr Pro Gly  Pro Lys Pro Pro Ala  Val Val Ser
    1715                 1720                 1725

Gln Gln  Ala Ala Gly Ser Thr  Thr Val Gly Ala Thr  Leu Thr Ser
    1730                 1735                 1740

Val Ser  Thr Thr Thr Ser Phe  Pro Ser Thr Ala Ser  Gln Leu Cys
    1745                 1750                 1755

Ile Gln  Leu Ser Ser Ser Thr  Ser Thr Pro Thr Leu  Ala Glu Thr
    1760                 1765                 1770

Val Val  Val Ser Ala His Ser  Leu Asp Lys Thr Ser  His Ser Ser
    1775                 1780                 1785

Thr Thr  Gly Leu Ala Phe Ser  Leu Ser Ala Pro Ser  Ser Ser Ser
    1790                 1795                 1800
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Ser Pro  Gly Ala Gly Val Ser  Ser Tyr Ile Ser Gln  Pro Gly Gly
    1805                 1810                 1815

Leu His  Pro Leu Val Ile Pro  Ser Val Ile Ala Ser  Thr Pro Ile
    1820                 1825                 1830

Leu Pro  Gln Ala Ala Gly Pro  Thr Ser Thr Pro Leu  Leu Pro Gln
    1835                 1840                 1845

Val Pro  Ser Ile Pro Pro Leu  Val Gln Pro Val Ala  Asn Val Pro
    1850                 1855                 1860

Ala Val  Gln Gln Thr Leu Ile  His Ser Gln Pro Gln  Pro Ala Leu
    1865                 1870                 1875

Leu Pro  Asn Gln Pro His Thr  His Cys Pro Glu Val  Asp Ser Asp
    1880                 1885                 1890

Thr Gln  Pro Lys Ala Pro Gly  Ile Asp Asp Ile Lys  Thr Leu Glu
    1895                 1900                 1905

Glu Lys  Leu Arg Ser Leu Phe  Ser Glu His Ser Ser  Ser Gly Ala
    1910                 1915                 1920

Gln His  Ala Ser Val Ser Leu  Glu Thr Ser Leu Val  Ile Glu Ser
    1925                 1930                 1935

Thr Val  Thr Pro Gly Ile Pro  Thr Thr Ala Val Ala  Pro Ser Lys
    1940                 1945                 1950

Leu Leu  Thr Ser Thr Thr Ser  Thr Cys Leu Pro Pro  Thr Asn Leu
    1955                 1960                 1965

Pro Leu  Gly Thr Val Ala Leu  Pro Val Thr Pro Val  Val Thr Pro
    1970                 1975                 1980

Gly Gln  Val Ser Thr Pro Val  Ser Thr Thr Thr Ser  Gly Val Lys
    1985                 1990                 1995

Pro Gly  Thr Ala Pro Ser Lys  Pro Pro Leu Thr Lys  Ala Pro Val
    2000                 2005                 2010

Leu Pro  Val Gly Thr Glu Leu  Pro Ala Gly Thr Leu  Pro Ser Glu
    2015                 2020                 2025

Gln Leu  Pro Pro Phe Pro Gly  Pro Ser Leu Thr Gln  Ser Gln Gln
    2030                 2035                 2040
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Pro Leu  Glu Asp Leu Asp Ala  Gln Leu Arg Arg Thr  Leu Ser Pro
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Glu Met  Ile Thr Val Thr Ser  Ala Val Gly Pro Val  Ser Met Ala
    2060                 2065                 2070

Ala Pro  Thr Ala Ile Thr Glu  Ala Gly Thr Gln Pro  Gln Lys Gly
    2075                 2080                 2085

Val Ser  Gln Val Lys Glu Gly  Pro Val Leu Ala Thr  Ser Ser Gly
    2090                 2095                 2100

Ala Gly  Val Phe Lys Met Gly  Arg Phe Gln Val Ser  Val Ala Ala
    2105                 2110                 2115

Asp Gly  Ala Gln Lys Glu Gly  Lys Asn Lys Ser Glu  Asp Ala Lys
    2120                 2125                 2130

Ser Val  His Phe Glu Ser Ser  Thr Ser Glu Ser Ser  Val Leu Ser
    2135                 2140                 2145

Ser Ser  Ser Pro Glu Ser Thr  Leu Val Lys Pro Glu  Pro Asn Gly
    2150                 2155                 2160

Ile Thr  Ile Pro Gly Ile Ser  Ser Asp Val Pro Glu  Ser Ala His
    2165                 2170                 2175

Lys Thr  Thr Ala Ser Glu Ala  Lys Ser Asp Thr Gly  Gln Pro Thr
    2180                 2185                 2190

Lys Val  Gly Arg Phe Gln Val  Thr Thr Thr Ala Asn  Lys Val Gly
    2195                 2200                 2205

Arg Phe  Ser Val Ser Lys Thr  Glu Asp Lys Ile Thr  Asp Thr Lys
    2210                 2215                 2220

Lys Glu  Gly Pro Val Ala Ser  Pro Pro Phe Met Asp  Leu Glu Gln
    2225                 2230                 2235

Ala Val  Leu Pro Ala Val Ile  Pro Lys Lys Glu Lys  Pro Glu Leu
    2240                 2245                 2250

Ser Glu  Pro Ser His Leu Asn  Gly Pro Ser Ser Asp  Pro Glu Ala
    2255                 2260                 2265

Ala Phe  Leu Ser Arg Asp Val  Asp Asp Gly Ser Gly  Ser Pro His
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Ser Pro His Gln Leu Ser Ser Lys Ser Leu Pro Ser Gln Asn Leu
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Ser Gln Ser Leu Ser Asn Ser Phe Asn Ser Ser Tyr Met Ser Ser
2300 2305 2310

Asp Asn Glu Ser Asp Ile Glu Asp Glu Asp Leu Lys Leu Glu Leu
2315 2320 2325

Arg Arg Leu Arg Asp Lys His Leu Lys Glu Ile Gln Asp Leu Gln
2330 2335 2340

Ser Arg Gln Lys His Glu Ile Glu Ser Leu Tyr Thr Lys Leu Gly
2345 2350 2355

Lys Val Pro Pro Ala Val Ile Ile Pro Pro Ala Ala Pro Leu Ser
2360 2365 2370

Gly Arg Arg Arg Arg Pro Thr Lys Ser Lys Gly Ser Lys Ser Ser
2375 2380 2385

Arg Ser Ser Ser Leu Gly Asn Lys Ser Pro Gln Leu Ser Gly Asn
2390 2395 2400

Leu Ser Gly Gln Ser Ala Ala Ser Val Leu His Pro Gln Gln Thr
2405 2410 2415

Leu His Pro Pro Gly Asn Ile Pro Glu Ser Gly Gln Asn Gln Leu
2420 2425 2430

Leu Gln Pro Leu Lys Pro Ser Pro Ser Ser Asp Asn Leu Tyr Ser
2435 2440 2445

Ala Phe Thr Ser Asp Gly Ala Ile Ser Val Pro Ser Leu Ser Ala
2450 2455 2460

Pro Gly Gln Gly Thr Ser Ser Thr Asn Thr Val Gly Ala Thr Val
2465 2470 2475

Asn Ser Gln Ala Ala Gln Ala Gln Pro Pro Ala Met Thr Ser Ser
2480 2485 2490

Arg Lys Gly Thr Phe Thr Asp Asp Leu His Lys Leu Val Asp Asn
2495 2500 2505

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Trp Ala  Arg Asp Ala Met Asn  Leu Ser Gly Arg Arg  Gly Ser Lys
    2510                 2515                 2520

Gly His  Met Asn Tyr Glu Gly  Pro Gly Met Ala Arg  Lys Phe Ser
    2525                 2530                 2535

Ala Pro  Gly Gln Leu Cys Ile  Ser Met Thr Ser Asn  Leu Gly Gly
    2540                 2545                 2550

Ser Ala  Pro Ile Ser Ala Ala  Ser Ala Thr Ser Leu  Gly His Phe
    2555                 2560                 2565

Thr Lys  Ser Met Cys Pro Pro  Gln Gln Tyr Gly Phe  Pro Ala Thr
    2570                 2575                 2580

Pro Phe  Gly Ala Gln Trp Ser  Gly Thr Gly Gly Pro  Ala Pro Gln
    2585                 2590                 2595

Pro Leu  Gly Gln Phe Gln Pro  Val Gly Thr Ala Ser  Leu Gln Asn
    2600                 2605                 2610

Phe Asn  Ile Ser Asn Leu Gln  Lys Ser Ile Ser Asn  Pro Pro Gly
    2615                 2620                 2625

Ser Asn  Leu Arg Thr Thr
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<212> DNA
<213> Homo sapiens

<400> 147

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aatttgcagt ggatctttat caagaggttt ccttatctca taaggacaac attatatttt      180

caccccttgg aataactttg gttcttgaga tggtacaact gggagccaaa ggaaaagcac      240

agcagcagat aagacaaact ttaaaacaac aggaaacctc agctggggaa gaatttttg       300

tactgaagtc atttttctct gccatctcag agaaaaaaca agaatttaca tttaatcttg      360

ccaatgccct ctaccttcaa gaaggattca ctgtgaaaga acagtatctc catggcaaca      420

aggaattttt tcagagtgct ataaaactgg tggattttca agatgcaaag gcttgtgcag      480

agatgataag tacctgggta gaaagaaaaa cagatggaaa aattaaagac atgttttcag      540

gggaagaatt tggccctctg actcggcttg tcctggtgaa tgctatttat ttcaaaggag      600

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ctcaacaaat cctaaaatgg ctctctgaga tgcaagaaga ggaagtagaa ataagcctcc 900

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<210> 148
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<212> PRT
<213> Homo sapiens

<400> 148

Met Asp Thr Ile Phe Leu Trp Ser Leu Leu Leu Leu Phe Phe Gly Ser
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Gln Ala Ser Arg Cys Ser Ala Gln Lys Asn Thr Glu Phe Ala Val Asp
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Leu Tyr Gln Glu Val Ser Leu Ser His Lys Asp Asn Ile Ile Phe Ser
35 40 45

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

Gly Lys Ala Gln Gln Gln Ile Arg Gln Thr Leu Lys Gln Gln Glu Thr
65 70 75 80

Ser Ala Gly Glu Glu Phe Phe Val Leu Lys Ser Phe Phe Ser Ala Ile
85 90 95

Ser Glu Lys Lys Gln Glu Phe Thr Phe Asn Leu Ala Asn Ala Leu Tyr
100 105 110

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Leu Gln Glu Gly Phe Thr Val Lys Glu Gln Tyr Leu His Gly Asn Lys
        115                 120                 125

Glu Phe Phe Gln Ser Ala Ile Lys Leu Val Asp Phe Gln Asp Ala Lys
    130                 135                 140

Ala Cys Ala Glu Met Ile Ser Thr Trp Val Glu Arg Lys Thr Asp Gly
145                 150                 155                 160

Lys Ile Lys Asp Met Phe Ser Gly Glu Glu Phe Gly Pro Leu Thr Arg
                165                 170                 175

Leu Val Leu Val Asn Ala Ile Tyr Phe Lys Gly Asp Trp Lys Gln Lys
            180                 185                 190

Phe Arg Lys Glu Asp Thr Gln Leu Ile Asn Phe Thr Lys Lys Asn Gly
        195                 200                 205

Ser Thr Val Lys Ile Pro Met Met Lys Ala Leu Leu Arg Thr Lys Tyr
    210                 215                 220

Gly Tyr Phe Ser Glu Ser Ser Leu Asn Tyr Gln Val Leu Glu Leu Ser
225                 230                 235                 240

Tyr Lys Gly Asp Glu Phe Ser Leu Ile Ile Ile Leu Pro Ala Glu Gly
                245                 250                 255

Met Asp Ile Glu Glu Val Glu Lys Leu Ile Thr Ala Gln Gln Ile Leu
            260                 265                 270

Lys Trp Leu Ser Glu Met Gln Glu Glu Glu Val Glu Ile Ser Leu Pro
        275                 280                 285

Arg Phe Lys Val Glu Gln Lys Val Asp Phe Lys Asp Val Leu Tyr Ser
    290                 295                 300

Leu Asn Ile Thr Glu Ile Phe Ser Gly Gly Cys Asp Leu Ser Gly Ile
305                 310                 315                 320

Thr Asp Ser Ser Glu Val Tyr Val Ser Gln Val Thr Gln Lys Val Phe
                325                 330                 335

Phe Glu Ile Asn Glu Asp Gly Ser Glu Ala Ala Thr Ser Thr Gly Ile
            340                 345                 350

His Ile Pro Val Ile Met Ser Leu Ala Gln Ser Gln Phe Ile Ala Asn
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355 360 365

His Pro Phe Leu Phe Ile Met Lys His Asn Pro Thr Glu Ser Ile Leu
370 375 380

Phe Met Gly Arg Val Thr Asn Pro Asp Thr Gln Glu Ile Lys Gly Arg
385 390 395 400

Asp Leu Asp Ser Leu
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<210> 149
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<212> DNA
<213> Homo sapiens

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ttggaaaaaa tgaagaaatt cctaggaagc aaaggaggaa gatctaccac agaaggttga 180

ggaaaagttc aacctcacac aagcacagat caaacagaca gcttggaatt cagcaaacaa 240

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gtgaggaggg tgaggaggat gaggaggacg aggaggaccc ggtaagagga gatatgttcc 960

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<400> 150

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Thr Asp Phe Gly Lys Asn Glu Glu Ile Pro Arg Lys Gln Arg Arg Lys
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Ile Tyr His Arg Arg Leu Arg Lys Ser Ser Thr Ser His Lys His Arg
35 40 45

Ser Asn Arg Gln Leu Gly Ile Gln Gln Thr Thr Val Phe Thr Pro Val
50 55 60

Ala Arg Leu Pro Ile Val Asn Phe Asp Tyr Ser Met Glu Glu Lys Phe
65 70 75 80

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

Pro Gly Lys Lys Gly His Cys Leu Val Lys Gly Ile Thr Met Tyr Asn
100 105 110

Lys Ala Val Trp Ser Pro Glu Pro Cys Thr Thr Cys Leu Cys Ser Asp
115 120 125

Gly Arg Val Leu Cys Asp Glu Thr Met Cys His Pro Gln Arg Cys Pro
130 135 140

Gln Thr Val Ile Pro Glu Gly Glu Cys Cys Pro Val Cys Ser Ala Thr
145 150 155 160

Val Ser Tyr Ser Leu Leu Ser Gly Ile Ala Leu Asn Asp Arg Asn Glu
165 170 175

Phe Ser Gly Asp Ser Ser Glu Gln Arg Glu Pro Thr Asn Leu Leu His
180 185 190

Lys Gln Leu Pro Pro Pro Gln Val Gly Met Asp Arg Ile Val Arg Lys
195 200 205

Glu Ala Leu Gln Ser Glu Glu Asp Glu Glu Val Lys Glu Glu Asp Thr
210 215 220

```
Glu Gln Lys Arg Glu Thr Pro Glu Ser Arg Asn Gln Gly Gln Leu Tyr
225                 230                 235                 240

Ser Glu Gly Asp Ser Arg Gly Gly Asp Arg Lys Gln Arg Pro Gly Glu
                245                 250                 255

Glu Arg Arg Leu Ala His Gln Gln Gln Arg Gln Gly Arg Glu Glu Glu
            260                 265                 270

Glu Asp Glu Glu Glu Glu Gly Glu Glu Gly Glu Glu Asp Glu Glu Asp
        275                 280                 285

Glu Glu Asp Pro Val Arg Gly Asp Met Phe Arg Met Pro Ser Arg Ser
    290                 295                 300

Pro Leu Pro Ala Pro Pro Arg Gly Thr Leu Arg Leu Pro Ser Gly Cys
305                 310                 315                 320

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

Ile Pro Pro Leu Thr Ala Pro Gln Ile Thr Ser Leu Glu Leu Thr Gly
            340                 345                 350

Asn Ser Ile Ala Ser Ile Pro Asp Glu Ala Phe Asn Gly Leu Pro Asn
        355                 360                 365

Leu Glu Arg Leu Asp Leu Ser Lys Asn Asn Ile Thr Ser Ser Gly Ile
    370                 375                 380

Gly Pro Lys Ala Phe Lys Leu Leu Lys Lys Leu Met Arg Leu Asn Met
385                 390                 395                 400

Asp Gly Asn Asn Leu Ile Gln Ile Pro Ser Gln Leu Pro Ser Thr Leu
                405                 410                 415

Glu Glu Leu Lys Val Asn Glu Asn Asn Leu Gln Ala Ile Asp Glu Glu
            420                 425                 430

Ser Leu Ser Asp Leu Asn Gln Leu Val Thr Leu Glu Leu Glu Gly Asn
        435                 440                 445

Asn Leu Ser Glu Ala Asn Val Asn Pro Leu Ala Phe Lys Pro Leu Lys
    450                 455                 460

Ser Leu Ala Tyr Leu Arg Leu Gly Lys Asn Lys Phe Arg Ile Ile Pro
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465                 470                 475                 480

Gln Gly Leu Pro Gly Ser Ile Glu Glu Leu Tyr Leu Glu Asn Asn Gln
                485                 490                 495

Ile Glu Glu Ile Thr Glu Ile Cys Phe Asn His Thr Arg Lys Ile Asn
            500                 505                 510

Val Ile Val Leu Arg Tyr Asn Lys Ile Glu Glu Asn Arg Ile Ala Pro
        515                 520                 525

Leu Ala Trp Ile Asn Gln Glu Asn Leu Glu Ser Ile Asp Leu Ser Tyr
    530                 535                 540

Asn Lys Leu Tyr His Val Pro Ser Tyr Leu Pro Lys Ser Leu Leu His
545                 550                 555                 560

Leu Val Leu Leu Gly Asn Gln Ile Glu Arg Ile Pro Gly Tyr Val Phe
                565                 570                 575

Gly His Met Glu Pro Gly Leu Glu Tyr Leu Tyr Leu Ser Phe Asn Lys
            580                 585                 590

Leu Ala Asp Asp Gly Met Asp Arg Val Ser Phe Tyr Gly Ala Tyr His
        595                 600                 605

Ser Leu Arg Glu Leu Phe Leu Asp His Asn Asp Leu Lys Ser Ile Pro
    610                 615                 620

Pro Gly Ile Gln Glu Met Lys Ala Leu His Phe Leu Arg Leu Asn Asn
625                 630                 635                 640

Asn Lys Ile Arg Asn Ile Leu Pro Glu Glu Ile Cys Asn Ala Glu Glu
                645                 650                 655

Asp Asp Asp Ser Asn Leu Glu His Leu His Leu Glu Asn Asn Tyr Ile
            660                 665                 670

Lys Ile Arg Glu Ile Pro Ser Tyr Thr Phe Ser Cys Ile Arg Ser Tyr
        675                 680                 685

Ser Ser Ile Val Leu Lys Pro Gln Asn Ile Lys
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<210>  151
<211>  3450
<212>  DNA
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atttctgaaa tcgaagatgc tgcattcctg gcccgagaga aagcgaaagc agatgctgaa 1140

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<210> 152
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<212> PRT
<213> Homo sapiens

<400> 152

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Leu Ala Val Tyr Tyr Arg Gly Gly Ala Leu Leu Thr Ser Pro Ser Gly
        35                  40                  45

Pro Gly Tyr His Ile Met Leu Pro Phe Ile Thr Thr Phe Arg Ser Val
    50                  55                  60

Gln Thr Thr Leu Gln Thr Asp Glu Val Lys Asn Val Pro Cys Gly Thr
65                  70                  75                  80

Ser Gly Gly Val Met Ile Tyr Ile Asp Arg Ile Glu Val Val Asn Met
                85                  90                  95

Leu Ala Pro Tyr Ala Val Phe Asp Ile Val Arg Asn Tyr Thr Ala Asp
            100                 105                 110

Tyr Asp Lys Thr Leu Ile Phe Asn Lys Ile His His Glu Leu Asn Gln
        115                 120                 125

Phe Cys Ser Ala His Thr Leu Gln Glu Val Tyr Ile Glu Leu Phe Asp
    130                 135                 140

Gln Ile Asp Glu Asn Leu Lys Gln Ala Leu Gln Lys Asp Leu Asn Leu
145                 150                 155                 160

Met Ala Pro Gly Leu Thr Ile Gln Ala Val Arg Val Thr Lys Pro Lys
                165                 170                 175

Ile Pro Glu Ala Ile Arg Arg Asn Phe Glu Leu Met Glu Ala Glu Lys
            180                 185                 190

Thr Lys Leu Leu Ile Ala Ala Gln Lys Gln Lys Val Val Glu Lys Glu
        195                 200                 205

Ala Glu Thr Glu Arg Lys Lys Ala Val Ile Glu Ala Glu Lys Ile Ala
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Glu Lys Arg Ile Ser Glu Ile Glu Asp Ala Ala Phe Leu Ala Arg Glu
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Leu Trp Leu Tyr Thr Ser Arg Cys Arg Asp Ala Gly Thr Glu Leu Thr
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Gly His Leu Val Pro His His Asp Gly Leu Arg Val Trp Cys Pro Glu
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Ser Glu Ala His Ile Pro Leu Pro Pro Ala Pro Glu Gly Cys Pro Trp
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Ser Cys Arg Leu Leu Gly Ile Gly Gly His Leu Ser Pro Gln Gly Lys
115 120 125

Leu Thr Leu Pro Glu Glu His Pro Cys Leu Lys Ala Pro Arg Leu Arg
130 135 140

Cys Gln Ser Cys Lys Leu Ala Gln Ala Pro Gly Leu Arg Ala Gly Glu
145 150 155 160

Arg Ser Pro Glu Glu Ser Leu Gly Gly Arg Arg Lys Arg Asn Val Asn
165 170 175

Thr Ala Pro Gln Phe Gln Pro Pro Ser Tyr Gln Ala Thr Val Pro Glu
180 185 190

Asn Gln Pro Ala Gly Thr Pro Val Ala Ser Leu Arg Ala Ile Asp Pro
195 200 205

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Asp Ser Arg Ser Asn Gln Phe Phe Ser Leu Asp Pro Val Thr Gly Ala
225                 230                 235                 240

Val Thr Thr Ala Glu Glu Leu Asp Arg Glu Thr Lys Ser Thr His Val
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Phe Arg Val Thr Ala Gln Asp His Gly Met Pro Arg Arg Ser Ala Leu
            260                 265                 270

Ala Thr Leu Thr Ile Leu Val Thr Asp Thr Asn Asp His Asp Pro Val
        275                 280                 285

Phe Glu Gln Gln Glu Tyr Lys Glu Ser Leu Arg Glu Asn Leu Glu Val
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Gly Tyr Glu Val Leu Thr Val Arg Ala Thr Asp Gly Asp Ala Pro Pro
305                 310                 315                 320

Asn Ala Asn Ile Leu Tyr Arg Leu Leu Glu Gly Ser Gly Gly Ser Pro
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Ser Glu Val Phe Glu Ile Asp Pro Arg Ser Gly Val Ile Arg Thr Arg
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Ala Ser Asp Gln Gly Arg Asp Pro Gly Pro Arg Ser Thr Thr Ala Ala
    370                 375                 380

Val Phe Leu Ser Val Glu Asp Asp Asn Asp Asn Ala Pro Gln Phe Ser
385                 390                 395                 400

Glu Lys Arg Tyr Val Val Gln Val Arg Glu Asp Val Thr Pro Gly Ala
                405                 410                 415

Pro Val Leu Arg Val Thr Ala Ser Asp Arg Asp Lys Gly Ser Asn Ala
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Val Val His Tyr Ser Ile Met Ser Gly Asn Ala Arg Gly Gln Phe Tyr
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Asp Ile Asn Asp Asn Ala Pro Ile Phe Val Ser Thr Pro Phe Gln Ala
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545                 550                 555                 560

Trp Ile Ser Val Ala Ala Glu Leu Asp Arg Glu Glu Val Asp Phe Tyr
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Ser Phe Gly Val Glu Ala Arg Asp His Gly Thr Pro Ala Leu Thr Ala
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Ser Ala Ser Val Ser Val Thr Val Leu Asp Val Asn Asp Asn Asn Pro
        595                 600                 605

Thr Phe Thr Gln Pro Glu Tyr Thr Val Arg Leu Asn Glu Asp Ala Ala
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Val Gly Thr Ser Val Val Thr Val Ser Ala Val Asp Arg Asp Ala His
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Thr Asp Glu Asp Thr Gly Glu Asn Ala Arg Ile Thr Tyr Phe Met Glu
            740                 745                 750

Asp Ser Ile Pro Gln Phe Arg Ile Asp Ala Asp Thr Gly Ala Val Thr
        755                 760                 765

Thr Gln Ala Glu Leu Asp Tyr Glu Asp Gln Val Ser Tyr Thr Leu Ala
    770                 775                 780

Ile Thr Ala Arg Asp Asn Gly Ile Pro Gln Lys Ser Asp Thr Thr Tyr
785                 790                 795                 800

Leu Glu Ile Leu Val Asn Asp Val Asn Asp Asn Ala Pro Gln Phe Leu
                805                 810                 815

Arg Asp Ser Tyr Gln Gly Ser Val Tyr Glu Asp Val Pro Pro Phe Thr
            820                 825                 830

Ser Val Leu Gln Ile Ser Ala Thr Asp Arg Asp Ser Gly Leu Asn Gly
        835                 840                 845

Arg Val Phe Tyr Thr Phe Gln Gly Gly Asp Asp Gly Asp Gly Asp Phe
    850                 855                 860

Ile Val Glu Ser Thr Ser Gly Ile Val Arg Thr Leu Arg Arg Leu Asp
865                 870                 875                 880

Arg Glu Asn Val Ala Gln Tyr Val Leu Arg Ala Tyr Ala Val Asp Lys
                885                 890                 895

Gly Met Pro Pro Ala Arg Thr Pro Met Glu Val Thr Val Thr Val Leu
            900                 905                 910

Asp Val Asn Asp Asn Pro Pro Val Phe Glu Gln Asp Glu Phe Asp Val
        915                 920                 925

Phe Val Glu Glu Asn Ser Pro Ile Gly Leu Ala Val Ala Arg Val Thr
    930                 935                 940

Ala Thr Asp Pro Asp Glu Gly Thr Asn Ala Gln Ile Met Tyr Gln Ile
945                 950                 955                 960
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Val Glu Gly Asn Ile Pro Glu Val Phe Gln Leu Asp Ile Phe Ser Gly
               965                 970                 975

Glu Leu Thr Ala Leu Val Asp Leu Asp Tyr Glu Asp Arg Pro Glu Tyr
           980                 985                 990

Val Leu Val Ile Gln Ala Thr Ser  Ala Pro Leu Val Ser  Arg Ala Thr
       995                 1000                1005

Val His  Val Arg Leu Leu Asp  Arg Asn Asp Asn Pro  Pro Val Leu
    1010                1015                1020

Gly Asn  Phe Glu Ile Leu Phe  Asn Asn Tyr Val Thr  Asn Arg Ser
    1025                1030                1035

Ser Ser  Phe Pro Gly Gly Ala  Ile Gly Arg Val Pro  Ala His Asp
    1040                1045                1050

Pro Asp  Ile Ser Asp Ser Leu  Thr Tyr Ser Phe Glu  Arg Gly Asn
    1055                1060                1065

Glu Leu  Ser Leu Val Leu Leu  Asn Ala Ser Thr Gly  Glu Leu Lys
    1070                1075                1080

Leu Ser  Arg Ala Leu Asp Asn  Asn Arg Pro Leu Glu  Ala Ile Met
    1085                1090                1095

Ser Val  Leu Val Ser Asp Gly  Val His Ser Val Thr  Ala Gln Cys
    1100                1105                1110

Ala Leu  Arg Val Thr Ile Ile  Thr Asp Glu Met Leu  Thr His Ser
    1115                1120                1125

Ile Thr  Leu Arg Leu Glu Asp  Met Ser Pro Glu Arg  Phe Leu Ser
    1130                1135                1140

Pro Leu  Leu Gly Leu Phe Ile  Gln Ala Val Ala Ala  Thr Leu Ala
    1145                1150                1155

Thr Pro  Pro Asp His Val Val  Val Phe Asn Val Gln  Arg Asp Thr
    1160                1165                1170

Asp Ala  Pro Gly Gly His Ile  Leu Asn Val Ser Leu  Ser Val Gly
    1175                1180                1185

Gln Pro  Pro Gly Pro Gly Gly  Gly Pro Pro Phe Leu  Pro Ser Glu
    1190                1195                1200
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Asp Leu  Gln Glu Arg Leu Tyr  Leu Asn Arg Ser Leu  Leu Thr Ala
    1205                 1210                 1215

Ile Ser  Ala Gln Arg Val Leu  Pro Phe Asp Asp Asn  Ile Cys Leu
    1220                 1225                 1230

Arg Glu  Pro Cys Glu Asn Tyr  Met Arg Cys Val Ser  Val Leu Arg
    1235                 1240                 1245

Phe Asp  Ser Ser Ala Pro Phe  Ile Ala Ser Ser Ser  Val Leu Phe
    1250                 1255                 1260

Arg Pro  Ile His Pro Val Gly  Gly Leu Arg Cys Arg  Cys Pro Pro
    1265                 1270                 1275

Gly Phe  Thr Gly Asp Tyr Cys  Glu Thr Glu Val Asp  Leu Cys Tyr
    1280                 1285                 1290

Ser Arg  Pro Cys Gly Pro His  Gly Arg Cys Arg Ser  Arg Glu Gly
    1295                 1300                 1305

Gly Tyr  Thr Cys Leu Cys Arg  Asp Gly Tyr Thr Gly  Glu His Cys
    1310                 1315                 1320

Glu Val  Ser Ala Arg Ser Gly  Arg Cys Thr Pro Gly  Val Cys Lys
    1325                 1330                 1335

Asn Gly  Gly Thr Cys Val Asn  Leu Leu Val Gly Gly  Phe Lys Cys
    1340                 1345                 1350

Asp Cys  Pro Ser Gly Asp Phe  Glu Lys Pro Tyr Cys  Gln Val Thr
    1355                 1360                 1365

Thr Arg  Ser Phe Pro Ala His  Ser Phe Ile Thr Phe  Arg Gly Leu
    1370                 1375                 1380

Arg Gln  Arg Phe His Phe Thr  Leu Ala Leu Ser Phe  Ala Thr Lys
    1385                 1390                 1395

Glu Arg  Asp Gly Leu Leu Leu  Tyr Asn Gly Arg Phe  Asn Glu Lys
    1400                 1405                 1410

His Asp  Phe Val Ala Leu Glu  Val Ile Gln Glu Gln  Val Gln Leu
    1415                 1420                 1425

Thr Phe  Ser Ala Gly Glu Ser  Thr Thr Thr Val Ser  Pro Phe Val
```

```
    1430                1435                1440

Pro Gly  Gly Val Ser Asp Gly  Gln Trp His Thr Val  Gln Leu Lys
    1445                1450                1455

Tyr Tyr  Asn Lys Pro Leu Leu  Gly Gln Thr Gly Leu  Pro Gln Gly
    1460                1465                1470

Pro Ser  Glu Gln Lys Val Ala  Val Val Thr Val Asp  Gly Cys Asp
    1475                1480                1485

Thr Gly  Val Ala Leu Arg Phe  Gly Ser Val Leu Gly  Asn Tyr Ser
    1490                1495                1500

Cys Ala  Ala Gln Gly Thr Gln  Gly Gly Ser Lys Lys  Ser Leu Asp
    1505                1510                1515

Leu Thr  Gly Pro Leu Leu Leu  Gly Gly Val Pro Asp  Leu Pro Glu
    1520                1525                1530

Ser Phe  Pro Val Arg Met Arg  Gln Phe Val Gly Cys  Met Arg Asn
    1535                1540                1545

Leu Gln  Val Asp Ser Arg His  Ile Asp Met Ala Asp  Phe Ile Ala
    1550                1555                1560

Asn Asn  Gly Thr Val Pro Gly  Cys Pro Ala Lys Lys  Asn Val Cys
    1565                1570                1575

Asp Ser  Asn Thr Cys His Asn  Gly Gly Thr Cys Val  Asn Gln Trp
    1580                1585                1590

Asp Ala  Phe Ser Cys Glu Cys  Pro Leu Gly Phe Gly  Gly Lys Ser
    1595                1600                1605

Cys Ala  Gln Glu Met Ala Asn  Pro Gln His Phe Leu  Gly Ser Ser
    1610                1615                1620

Leu Val  Ala Trp His Gly Leu  Ser Leu Pro Ile Ser  Gln Pro Trp
    1625                1630                1635

Tyr Leu  Ser Leu Met Phe Arg  Thr Arg Gln Ala Asp  Gly Val Leu
    1640                1645                1650

Leu Gln  Ala Ile Thr Arg Gly  Arg Ser Thr Ile Thr  Leu Gln Leu
    1655                1660                1665
```

```
Arg Glu  Gly His Val Met Leu  Ser Val Glu Gly Thr  Gly Leu Gln
    1670                 1675                 1680

Ala Ser  Ser Leu Arg Leu Glu  Pro Gly Arg Ala Asn  Asp Gly Asp
    1685                 1690                 1695

Trp His  His Ala Gln Leu Ala  Leu Gly Ala Ser Gly  Gly Pro Gly
    1700                 1705                 1710

His Ala  Ile Leu Ser Phe Asp  Tyr Gly Gln Gln Arg  Ala Glu Gly
    1715                 1720                 1725

Asn Leu  Gly Pro Arg Leu His  Gly Leu His Leu Ser  Asn Ile Thr
    1730                 1735                 1740

Val Gly  Gly Ile Pro Gly Pro  Ala Gly Gly Val Ala  Arg Gly Phe
    1745                 1750                 1755

Arg Gly  Cys Leu Gln Gly Val  Arg Val Ser Asp Thr  Pro Glu Gly
    1760                 1765                 1770

Val Asn  Ser Leu Asp Pro Ser  His Gly Glu Ser Ile  Asn Val Glu
    1775                 1780                 1785

Gln Gly  Cys Ser Leu Pro Asp  Pro Cys Asp Ser Asn  Pro Cys Pro
    1790                 1795                 1800

Ala Asn  Ser Tyr Cys Ser Asn  Asp Trp Asp Ser Tyr  Ser Cys Ser
    1805                 1810                 1815

Cys Asp  Pro Gly Tyr Tyr Gly  Asp Asn Cys Thr Asn  Val Cys Asp
    1820                 1825                 1830

Leu Asn  Pro Cys Glu His Gln  Ser Val Cys Thr Arg  Lys Pro Ser
    1835                 1840                 1845

Ala Pro  His Gly Tyr Thr Cys  Glu Cys Pro Pro Asn  Tyr Leu Gly
    1850                 1855                 1860

Pro Tyr  Cys Glu Thr Arg Ile  Asp Gln Pro Cys Pro  Arg Gly Trp
    1865                 1870                 1875

Trp Gly  His Pro Thr Cys Gly  Pro Cys Asn Cys Asp  Val Ser Lys
    1880                 1885                 1890

Gly Phe  Asp Pro Asp Cys Asn  Lys Thr Ser Gly Glu  Cys His Cys
    1895                 1900                 1905
```

```
Lys Glu  Asn His Tyr Arg Pro  Pro Gly Ser Pro Thr  Cys Leu Leu
    1910                 1915                 1920

Cys Asp  Cys Tyr Pro Thr Gly  Ser Leu Ser Arg Val  Cys Asp Pro
    1925                 1930                 1935

Glu Asp  Gly Gln Cys Pro Cys  Lys Pro Gly Val Ile  Gly Arg Gln
    1940                 1945                 1950

Cys Asp  Arg Cys Asp Asn Pro  Phe Ala Glu Val Thr  Thr Asn Gly
    1955                 1960                 1965

Cys Glu  Val Asn Tyr Asp Ser  Cys Pro Arg Ala Ile  Glu Ala Gly
    1970                 1975                 1980

Ile Trp  Trp Pro Arg Thr Arg  Phe Gly Leu Pro Ala  Ala Ala Pro
    1985                 1990                 1995

Cys Pro  Lys Gly Ser Phe Gly  Thr Ala Val Arg His  Cys Asp Glu
    2000                 2005                 2010

His Arg  Gly Trp Leu Pro Pro  Asn Leu Phe Asn Cys  Thr Ser Ile
    2015                 2020                 2025

Thr Phe  Ser Glu Leu Lys Gly  Phe Ala Glu Arg Leu  Gln Arg Asn
    2030                 2035                 2040

Glu Ser  Gly Leu Asp Ser Gly  Arg Ser Gln Gln Leu  Ala Leu Leu
    2045                 2050                 2055

Leu Arg  Asn Ala Thr Gln His  Thr Ala Gly Tyr Phe  Gly Ser Asp
    2060                 2065                 2070

Val Lys  Val Ala Tyr Gln Leu  Ala Thr Arg Leu Leu  Ala His Glu
    2075                 2080                 2085

Ser Thr  Gln Arg Gly Phe Gly  Leu Ser Ala Thr Gln  Asp Val His
    2090                 2095                 2100

Phe Thr  Glu Asn Leu Leu Arg  Val Gly Ser Ala Leu  Leu Asp Thr
    2105                 2110                 2115

Ala Asn  Lys Arg His Trp Glu  Leu Ile Gln Gln Thr  Glu Gly Gly
    2120                 2125                 2130

Thr Ala  Trp Leu Leu Gln His  Tyr Glu Ala Tyr Ala  Ser Ala Leu
    2135                 2140                 2145
```

```
Ala Gln  Asn Met Arg His Thr  Tyr Leu Ser Pro Phe  Thr Ile Val
    2150                 2155                 2160

Thr Pro  Asn Ile Val Ile Ser  Val Val Arg Leu Asp  Lys Gly Asn
    2165                 2170                 2175

Phe Ala  Gly Ala Lys Leu Pro  Arg Tyr Glu Ala Leu  Arg Gly Glu
    2180                 2185                 2190

Gln Pro  Pro Asp Leu Glu Thr  Thr Val Ile Leu Pro  Glu Ser Val
    2195                 2200                 2205

Phe Arg  Glu Thr Pro Pro Val  Val Arg Pro Ala Gly  Pro Gly Glu
    2210                 2215                 2220

Ala Gln  Glu Pro Glu Glu Leu  Ala Arg Arg Gln Arg  Arg His Pro
    2225                 2230                 2235

Glu Leu  Ser Gln Gly Glu Ala  Val Ala Ser Val Ile  Ile Tyr Arg
    2240                 2245                 2250

Thr Leu  Ala Gly Leu Leu Pro  His Asn Tyr Asp Pro  Asp Lys Arg
    2255                 2260                 2265

Ser Leu  Arg Val Pro Lys Arg  Pro Ile Ile Asn Thr  Pro Val Val
    2270                 2275                 2280

Ser Ile  Ser Val His Asp Asp  Glu Glu Leu Leu Pro  Arg Ala Leu
    2285                 2290                 2295

Asp Lys  Pro Val Thr Val Gln  Phe Arg Leu Leu Glu  Thr Glu Glu
    2300                 2305                 2310

Arg Thr  Lys Pro Ile Cys Val  Phe Trp Asn His Ser  Ile Leu Val
    2315                 2320                 2325

Ser Gly  Thr Gly Gly Trp Ser  Ala Arg Gly Cys Glu  Val Val Phe
    2330                 2335                 2340

Arg Asn  Glu Ser His Val Ser  Cys Gln Cys Asn His  Met Thr Ser
    2345                 2350                 2355

Phe Ala  Val Leu Met Asp Val  Ser Arg Arg Glu Asn  Gly Glu Ile
    2360                 2365                 2370

Leu Pro  Leu Lys Thr Leu Thr  Tyr Val Ala Leu Gly  Val Thr Leu
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Ala Ala Leu Leu Leu Thr Phe Phe Phe Leu Thr Leu Leu Arg Ile
2390 2395 2400

Leu Arg Ser Asn Gln His Gly Ile Arg Arg Asn Leu Thr Ala Ala
2405 2410 2415

Leu Gly Leu Ala Gln Leu Val Phe Leu Leu Gly Ile Asn Gln Ala
2420 2425 2430

Asp Leu Pro Phe Ala Cys Thr Val Ile Ala Ile Leu Leu His Phe
2435 2440 2445

Leu Tyr Leu Cys Thr Phe Ser Trp Ala Leu Leu Glu Ala Leu His
2450 2455 2460

Leu Tyr Arg Ala Leu Thr Glu Val Arg Asp Val Asn Thr Gly Pro
2465 2470 2475

Met Arg Phe Tyr Tyr Met Leu Gly Trp Gly Val Pro Ala Phe Ile
2480 2485 2490

Thr Gly Leu Ala Val Gly Leu Asp Pro Glu Gly Tyr Gly Asn Pro
2495 2500 2505

Asp Phe Cys Trp Leu Ser Ile Tyr Asp Thr Leu Ile Trp Ser Phe
2510 2515 2520

Ala Gly Pro Val Ala Phe Ala Val Ser Met Ser Val Phe Leu Tyr
2525 2530 2535

Ile Leu Ala Ala Arg Ala Ser Cys Ala Ala Gln Arg Gln Gly Phe
2540 2545 2550

Glu Lys Lys Gly Pro Val Ser Gly Leu Gln Pro Ser Phe Ala Val
2555 2560 2565

Leu Leu Leu Leu Ser Ala Thr Trp Leu Leu Ala Leu Leu Ser Val
2570 2575 2580

Asn Ser Asp Thr Leu Leu Phe His Tyr Leu Phe Ala Thr Cys Asn
2585 2590 2595

Cys Ile Gln Gly Pro Phe Ile Phe Leu Ser Tyr Val Val Leu Ser
2600 2605 2610

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Lys Glu  Val Arg Lys Ala Leu  Lys Leu Ala Cys Ser  Arg Lys Pro
    2615                 2620                 2625

Ser Pro  Asp Pro Ala Leu Thr  Thr Lys Ser Thr Leu  Thr Ser Ser
    2630                 2635                 2640

Tyr Asn  Cys Pro Ser Pro Tyr  Ala Asp Gly Arg Leu  Tyr Gln Pro
    2645                 2650                 2655

Tyr Gly  Asp Ser Ala Gly Ser  Leu His Ser Thr Ser  Arg Ser Gly
    2660                 2665                 2670

Lys Ser  Gln Pro Ser Tyr Ile  Pro Phe Leu Leu Arg  Glu Glu Ser
    2675                 2680                 2685

Ala Leu  Asn Pro Gly Gln Gly  Pro Pro Gly Leu Gly  Asp Pro Gly
    2690                 2695                 2700

Ser Leu  Phe Leu Glu Gly Gln  Asp Gln Gln His Asp  Pro Asp Thr
    2705                 2710                 2715

Asp Ser  Asp Ser Asp Leu Ser  Leu Glu Asp Asp Gln  Ser Gly Ser
    2720                 2725                 2730

Tyr Ala  Ser Thr His Ser Ser  Asp Ser Glu Glu Glu  Glu Glu Glu
    2735                 2740                 2745

Glu Glu  Glu Glu Ala Ala Phe  Pro Gly Glu Gln Gly  Trp Asp Ser
    2750                 2755                 2760

Leu Leu  Gly Pro Gly Ala Glu  Arg Leu Pro Leu His  Ser Thr Pro
    2765                 2770                 2775

Lys Asp  Gly Gly Pro Gly Pro  Gly Lys Ala Pro Trp  Pro Gly Asp
    2780                 2785                 2790

Phe Gly  Thr Thr Ala Lys Glu  Ser Ser Gly Asn Gly  Ala Pro Glu
    2795                 2800                 2805

Glu Arg  Leu Arg Glu Asn Gly  Asp Ala Leu Ser Arg  Glu Gly Ser
    2810                 2815                 2820

Leu Gly  Pro Leu Pro Gly Ser  Ser Ala Gln Pro His  Lys Gly Ile
    2825                 2830                 2835

Leu Lys  Lys Lys Cys Leu Pro  Thr Ile Ser Glu Lys  Ser Ser Leu
    2840                 2845                 2850
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Leu Arg Leu Pro Leu Glu Gln Cys Thr Gly Ser Ser Arg Gly Ser
2855 2860 2865

Ser Ala Ser Glu Gly Ser Arg Gly Gly Pro Pro Pro Arg Pro Pro
2870 2875 2880

Pro Arg Gln Ser Leu Gln Glu Gln Leu Asn Gly Val Met Pro Ile
2885 2890 2895

Ala Met Ser Ile Lys Ala Gly Thr Val Asp Glu Asp Ser Ser Gly
2900 2905 2910

Ser Glu Phe Leu Phe Phe Asn Phe Leu His
2915 2920

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gtttttaaaa ataaaacatt gataaaaggt gtttggataa ta 2442

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<211> 398
<212> PRT
<213> Homo sapiens

<400> 156

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Val Ser Gly Ser Leu Leu Pro Gly Pro Gly Ala Ala Gln Asn Ala Gly
20 25 30

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

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        35                  40                  45

Glu Leu Tyr Cys Asp Val Val Gly Ser Pro Thr Pro Glu Ile Gln Trp
    50                  55                  60

Trp Tyr Ala Glu Val Asn Arg Ala Glu Ser Phe Arg Gln Leu Trp Asp
65                  70                  75                  80

Gly Ala Arg Lys Arg Arg Val Thr Val Asn Thr Ala Tyr Gly Ser Asn
                85                  90                  95

Gly Val Ser Val Leu Arg Ile Thr Arg Leu Thr Leu Glu Asp Ser Gly
            100                 105                 110

Thr Tyr Glu Cys Arg Ala Ser Asn Asp Pro Lys Arg Asn Asp Leu Arg
        115                 120                 125

Gln Asn Pro Ser Ile Thr Trp Ile Arg Ala Gln Ala Thr Ile Ser Val
    130                 135                 140

Leu Gln Lys Pro Arg Ile Val Thr Ser Glu Glu Val Ile Ile Arg Asp
145                 150                 155                 160

Ser Pro Val Leu Pro Val Thr Leu Gln Cys Asn Leu Thr Ser Ser Ser
                165                 170                 175

His Thr Leu Thr Tyr Ser Tyr Trp Thr Lys Asn Gly Val Glu Leu Ser
            180                 185                 190

Ala Thr Arg Lys Asn Ala Ser Asn Met Glu Tyr Arg Ile Asn Lys Pro
        195                 200                 205

Arg Ala Glu Asp Ser Gly Glu Tyr His Cys Val Tyr His Phe Val Ser
    210                 215                 220

Ala Pro Lys Ala Asn Ala Thr Ile Glu Val Lys Ala Ala Pro Asp Ile
225                 230                 235                 240

Thr Gly His Lys Arg Ser Glu Asn Lys Asn Glu Gly Gln Asp Ala Thr
                245                 250                 255

Met Tyr Cys Lys Ser Val Gly Tyr Pro His Pro Asp Trp Ile Trp Arg
            260                 265                 270

Lys Lys Glu Asn Gly Met Pro Met Asp Ile Val Asn Thr Ser Gly Arg
        275                 280                 285
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Phe Phe Ile Ile Asn Lys Glu Asn Tyr Thr Glu Leu Asn Ile Val Asn
    290                 295                 300

Leu Gln Ile Thr Glu Asp Pro Gly Glu Tyr Glu Cys Asn Ala Thr Asn
305                 310                 315                 320

Ala Ile Gly Ser Ala Ser Val Val Thr Val Leu Arg Val Arg Ser His
                325                 330                 335

Leu Ala Pro Leu Trp Pro Phe Leu Gly Ile Leu Ala Glu Ile Ile Ile
            340                 345                 350

Leu Val Val Ile Ile Val Val Tyr Glu Lys Arg Lys Arg Pro Asp Glu
        355                 360                 365

Val Pro Asp Asp Asp Glu Pro Ala Gly Pro Met Lys Thr Asn Ser Thr
    370                 375                 380

Asn Asn His Lys Asp Lys Asn Leu Arg Gln Arg Asn Thr Asn
385                 390                 395
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<210> 157
<211> 2251
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<213> Homo sapiens

<400> 158

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

Val Leu His Pro Asn Thr Lys Leu Arg Gln Ala Glu Arg Leu Phe Glu
                85                  90                  95

Asn Gln Leu Val Gly Pro Glu Ser Ile Ala His Ile Gly Asp Val Met
            100                 105                 110

Phe Thr Gly Thr Ala Asp Gly Arg Val Val Lys Leu Glu Asn Gly Glu
        115                 120                 125

Ile Glu Thr Ile Ala Arg Phe Gly Ser Gly Pro Cys Lys Thr Arg Asp
    130                 135                 140

Asp Glu Pro Val Cys Gly Arg Pro Leu Gly Ile Arg Ala Gly Pro Asn
145                 150                 155                 160

Gly Thr Leu Phe Val Ala Asp Ala Tyr Lys Gly Leu Phe Glu Val Asn
                165                 170                 175

Pro Trp Lys Arg Glu Val Lys Leu Leu Leu Ser Ser Glu Thr Pro Ile
            180                 185                 190

Glu Gly Lys Asn Met Ser Phe Val Asn Asp Leu Thr Val Thr Gln Asp
        195                 200                 205

Gly Arg Lys Ile Tyr Phe Thr Asp Ser Ser Ser Lys Trp Gln Arg Arg
    210                 215                 220

Asp Tyr Leu Leu Leu Val Met Glu Gly Thr Asp Asp Gly Arg Leu Leu
225                 230                 235                 240

Glu Tyr Asp Thr Val Thr Arg Glu Val Lys Val Leu Leu Asp Gln Leu
                245                 250                 255

Arg Phe Pro Asn Gly Val Gln Leu Ser Pro Ala Glu Asp Phe Val Leu
            260                 265                 270

Val Ala Glu Thr Thr Met Ala Arg Ile Arg Arg Val Tyr Val Ser Gly
        275                 280                 285
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Leu Met Lys Gly Gly Ala Asp Leu Phe Val Glu Asn Met Pro Gly Phe
    290                 295                 300

Pro Asp Asn Ile Arg Pro Ser Ser Ser Gly Gly Tyr Trp Val Gly Met
305                 310                 315                 320

Ser Thr Ile Arg Pro Asn Pro Gly Phe Ser Met Leu Asp Phe Leu Ser
                325                 330                 335

Glu Arg Pro Trp Ile Lys Arg Met Ile Phe Lys Leu Phe Ser Gln Glu
            340                 345                 350

Thr Val Met Lys Phe Val Pro Arg Tyr Ser Leu Val Leu Glu Leu Ser
        355                 360                 365

Asp Ser Gly Ala Phe Arg Arg Ser Leu His Asp Pro Asp Gly Leu Val
    370                 375                 380

Ala Thr Tyr Ile Ser Glu Val His Glu His Asp Gly His Leu Tyr Leu
385                 390                 395                 400

Gly Ser Phe Arg Ser Pro Phe Leu Cys Arg Leu Ser Leu Gln Ala Val
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<212> DNA
<213> Homo sapiens

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aagaagccag aagccgagct ctgtcagggc tcaacctcca acttgtttca gttcattcat      180

ccttctctcc tttccgctca gactgtagag ctcggtctct ccaagtttgt gcctaagaag      240

atgataatca cacaaacaag tcactgttac atgaccagcc ttgggattct tttcctgatt      300

aatattctcc ctggaaccac tggtcaaggg gaatcaagac gacaagaacc cggggacttt      360

gtgaagcagg acattggcgg gctgtctcct aagcatgccc cagatattcc tgatgacagc      420

actgacaaca tcactatctt caccagaatc ttggatcgtc ttctggacgg ctatgacaac      480

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<211> 492
<212> PRT
<213> Homo sapiens

<400> 160

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Leu Phe Leu Ile Asn Ile Leu Pro Gly Thr Thr Gly Gln Gly Glu Ser
20 25 30

Arg Arg Gln Glu Pro Gly Asp Phe Val Lys Gln Asp Ile Gly Gly Leu
35 40 45

Ser Pro Lys His Ala Pro Asp Ile Pro Asp Asp Ser Thr Asp Asn Ile
50 55 60

Thr Ile Phe Thr Arg Ile Leu Asp Arg Leu Leu Asp Gly Tyr Asp Asn
65 70 75 80

Arg Leu Arg Pro Gly Leu Gly Asp Ala Val Thr Glu Val Lys Thr Asp
85 90 95

Ile Tyr Val Thr Ser Phe Gly Pro Val Ser Asp Thr Asp Met Glu Tyr
100 105 110

Thr Ile Asp Val Phe Phe Arg Gln Thr Trp His Asp Glu Arg Leu Lys
115 120 125

Phe Asp Gly Pro Met Lys Ile Leu Pro Leu Asn Asn Leu Leu Ala Ser
130 135 140

Lys Ile Trp Thr Pro Asp Thr Phe Phe His Asn Gly Lys Lys Ser Val
145 150 155 160

Ala His Asn Met Thr Thr Pro Asn Lys Leu Leu Arg Leu Val Asp Asn
165 170 175

Gly Thr Leu Leu Tyr Thr Met Arg Leu Thr Ile His Ala Glu Cys Pro
180 185 190

```
Met His Leu Glu Asp Phe Pro Met Asp Val His Ala Cys Pro Leu Lys
        195                 200                 205

Phe Gly Ser Tyr Ala Tyr Thr Thr Ala Glu Val Val Tyr Ser Trp Thr
    210                 215                 220

Leu Gly Lys Asn Lys Ser Val Glu Val Ala Gln Asp Gly Ser Arg Leu
225                 230                 235                 240

Asn Gln Tyr Asp Leu Leu Gly His Val Val Gly Thr Glu Ile Ile Arg
                245                 250                 255

Ser Ser Thr Gly Glu Tyr Val Val Met Thr Thr His Phe His Leu Lys
            260                 265                 270

Arg Lys Ile Gly Tyr Phe Val Ile Gln Thr Tyr Leu Pro Cys Ile Met
        275                 280                 285

Thr Val Ile Leu Ser Gln Val Ser Phe Trp Leu Asn Arg Glu Ser Val
    290                 295                 300

Pro Ala Arg Thr Val Phe Gly Val Thr Thr Val Leu Thr Met Thr Thr
305                 310                 315                 320

Leu Ser Ile Ser Ala Arg Asn Ser Leu Pro Lys Val Ala Tyr Ala Thr
                325                 330                 335

Ala Met Asp Trp Phe Ile Ala Val Cys Tyr Ala Phe Val Phe Ser Ala
            340                 345                 350

Leu Ile Glu Phe Ala Thr Val Asn Tyr Phe Thr Lys Arg Ser Trp Ala
        355                 360                 365

Trp Glu Gly Lys Lys Val Pro Glu Ala Leu Glu Met Lys Lys Lys Thr
    370                 375                 380

Pro Ala Ala Pro Ala Lys Lys Thr Ser Thr Thr Phe Asn Ile Val Gly
385                 390                 395                 400

Thr Thr Tyr Pro Ile Asn Leu Ala Lys Asp Thr Glu Phe Ser Thr Ile
                405                 410                 415

Ser Lys Gly Ala Ala Pro Ser Ala Ser Ser Thr Pro Thr Ile Ile Ala
            420                 425                 430

Ser Pro Lys Ala Thr Tyr Val Gln Asp Ser Pro Thr Glu Thr Lys Thr
        435                 440                 445
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Tyr Asn Ser Val Ser Lys Val Asp Lys Ile Ser Arg Ile Ile Phe Pro
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Arg Glu Ser Ala Ile Lys Gly Met Ile Arg Lys Gln
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<212> DNA
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acaggcaata aatttataaa taaaagctga aaaaaaaaaa a 5561

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<211> 999
<212> PRT
<213> Homo sapiens

<400> 162

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Val Val Ile Leu Val His Gly Glu Leu Arg Ile Glu Thr Lys Gly Gln
20 25 30

Tyr Asp Glu Glu Glu Met Thr Met Gln Gln Ala Lys Arg Arg Gln Lys
35 40 45

Arg Glu Trp Val Lys Phe Ala Lys Pro Cys Arg Glu Gly Glu Asp Asn
50 55 60

Ser Lys Arg Asn Pro Ile Ala Lys Ile Thr Ser Asp Tyr Gln Ala Thr
65 70 75 80

Gln Lys Ile Thr Tyr Arg Ile Ser Gly Val Gly Ile Asp Gln Pro Pro
85 90 95

Phe Gly Ile Phe Val Val Asp Lys Asn Thr Gly Asp Ile Asn Ile Thr
100 105 110

Ala Ile Val Asp Arg Glu Glu Thr Pro Ser Phe Leu Ile Thr Cys Arg
115 120 125

Ala Leu Asn Ala Gln Gly Leu Asp Val Glu Lys Pro Leu Ile Leu Thr
130 135 140

Val Lys Ile Leu Asp Ile Asn Asp Asn Pro Pro Val Phe Ser Gln Gln
145 150 155 160

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

Met Ile Leu Asn Ala Thr Asp Ala Asp Glu Pro Asn His Leu Asn Ser
            180                 185                 190

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

Phe Leu Leu Ser Arg Asn Thr Gly Glu Val Arg Thr Leu Thr Asn Ser
    210                 215                 220

Leu Asp Arg Glu Gln Ala Ser Ser Tyr Arg Leu Val Val Ser Gly Ala
225                 230                 235                 240

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

Val Lys Asp Val Asn Asp Asn Phe Pro Met Phe Arg Asp Ser Gln Tyr
            260                 265                 270

Ser Ala Arg Ile Glu Glu Asn Ile Leu Ser Ser Glu Leu Leu Arg Phe
        275                 280                 285

Gln Val Thr Asp Leu Asp Glu Glu Tyr Thr Asp Asn Trp Leu Ala Val
    290                 295                 300

Tyr Phe Phe Thr Ser Gly Asn Glu Gly Asn Trp Phe Glu Ile Gln Thr
305                 310                 315                 320

Asp Pro Arg Thr Asn Glu Gly Ile Leu Lys Val Val Lys Ala Leu Asp
                325                 330                 335

Tyr Glu Gln Leu Gln Ser Val Lys Leu Ser Ile Ala Val Lys Asn Lys
            340                 345                 350

Ala Glu Phe His Gln Ser Val Ile Ser Arg Tyr Arg Val Gln Ser Thr
        355                 360                 365

Pro Val Thr Ile Gln Val Ile Asn Val Arg Glu Gly Ile Ala Phe Arg
    370                 375                 380

Pro Ala Ser Lys Thr Phe Thr Val Gln Lys Gly Ile Ser Ser Lys Lys
385                 390                 395                 400

Leu Val Asp Tyr Ile Leu Gly Thr Tyr Gln Ala Ile Asp Glu Asp Thr
                405                 410                 415
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Asn Lys Ala Ala Ser Asn Val Lys Tyr Val Met Gly Arg Asn Asp Gly
            420                 425                 430

Gly Tyr Leu Met Ile Asp Ser Lys Thr Ala Glu Ile Lys Phe Val Lys
        435                 440                 445

Asn Met Asn Arg Asp Ser Thr Phe Ile Val Asn Lys Thr Ile Thr Ala
    450                 455                 460

Glu Val Leu Ala Ile Asp Glu Tyr Thr Gly Lys Thr Ser Thr Gly Thr
465                 470                 475                 480

Val Tyr Val Arg Val Pro Asp Phe Asn Asp Asn Cys Pro Thr Ala Val
                485                 490                 495

Leu Glu Lys Asp Ala Val Cys Ser Ser Ser Pro Ser Val Val Val Ser
            500                 505                 510

Ala Arg Thr Leu Asn Asn Arg Tyr Thr Gly Pro Tyr Thr Phe Ala Leu
        515                 520                 525

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

Asn Ala Thr Ser Ala Leu Leu Arg Ala Gln Glu Gln Ile Pro Pro Gly
545                 550                 555                 560

Val Tyr His Ile Ser Leu Val Leu Thr Asp Ser Gln Asn Asn Arg Cys
                565                 570                 575

Glu Met Pro Arg Ser Leu Thr Leu Glu Val Cys Gln Cys Asp Asn Arg
            580                 585                 590

Gly Ile Cys Gly Thr Ser Tyr Pro Thr Thr Ser Pro Gly Thr Arg Tyr
        595                 600                 605

Gly Arg Pro His Ser Gly Arg Leu Gly Pro Ala Ala Ile Gly Leu Leu
    610                 615                 620

Leu Leu Gly Leu Leu Leu Leu Leu Leu Ala Pro Leu Leu Leu Leu Thr
625                 630                 635                 640

Cys Asp Cys Gly Ala Gly Ser Thr Gly Gly Val Thr Gly Gly Phe Ile
                645                 650                 655

Pro Val Pro Asp Gly Ser Glu Gly Thr Ile His Gln Trp Gly Ile Glu
```

660 665 670

Gly Ala His Pro Glu Asp Lys Glu Ile Thr Asn Ile Cys Val Pro Pro
675 680 685

Val Thr Ala Asn Gly Ala Asp Phe Met Glu Ser Ser Glu Val Cys Thr
690 695 700

Asn Thr Tyr Ala Arg Gly Thr Ala Val Glu Gly Thr Ser Gly Met Glu
705 710 715 720

Met Thr Thr Lys Leu Gly Ala Ala Thr Glu Ser Gly Gly Ala Ala Gly
725 730 735

Phe Ala Thr Gly Thr Val Ser Gly Ala Ala Ser Gly Phe Gly Ala Ala
740 745 750

Thr Gly Val Gly Ile Cys Ser Ser Gly Gln Ser Gly Thr Met Arg Thr
755 760 765

Arg His Ser Thr Gly Gly Thr Asn Lys Asp Tyr Ala Asp Gly Ala Ile
770 775 780

Ser Met Asn Phe Leu Asp Ser Tyr Phe Ser Gln Lys Ala Phe Ala Cys
785 790 795 800

Ala Glu Glu Asp Asp Gly Gln Glu Ala Asn Asp Cys Leu Leu Ile Tyr
805 810 815

Asp Asn Glu Gly Ala Asp Ala Thr Gly Ser Pro Val Gly Ser Val Gly
820 825 830

Cys Cys Ser Phe Ile Ala Asp Asp Leu Asp Asp Ser Phe Leu Asp Ser
835 840 845

Leu Gly Pro Lys Phe Lys Lys Leu Ala Glu Ile Ser Leu Gly Val Asp
850 855 860

Gly Glu Gly Lys Glu Val Gln Pro Pro Ser Lys Asp Ser Gly Tyr Gly
865 870 875 880

Ile Glu Ser Cys Gly His Pro Ile Glu Val Gln Gln Thr Gly Phe Val
885 890 895

Lys Cys Gln Thr Leu Ser Gly Ser Gln Gly Ala Ser Ala Leu Ser Thr
900 905 910

```
Ser Gly Ser Val Gln Pro Ala Val Ser Ile Pro Asp Pro Leu Gln His
        915                 920                 925

Gly Asn Tyr Leu Val Thr Glu Thr Tyr Ser Ala Ser Gly Ser Leu Val
    930                 935                 940

Gln Pro Ser Thr Ala Gly Phe Asp Pro Leu Leu Thr Gln Asn Val Ile
945                 950                 955                 960

Val Thr Glu Arg Val Ile Cys Pro Ile Ser Ser Val Pro Gly Asn Leu
                965                 970                 975

Ala Gly Pro Thr Gln Leu Arg Gly Ser His Thr Met Leu Cys Thr Glu
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Asp Pro Cys Ser Arg Leu Ile
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<211> 6369
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<213> Homo sapiens

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ctgggccctg accctgctgg gcctgctggg cgcaggtgcc agcctgaggc cccgcaagct      180

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caggaagcgc ctggtggagt gcggcagcct cttcaagggc atctgcgctc tgcgcgccct      480

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```

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<210> 164
<211> 1838
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<213> Homo sapiens

<400> 164

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Gly Ala Ser Leu Arg Pro Arg Lys Leu Asp Phe Phe Arg Ser Glu Lys
            20                  25                  30

Glu Leu Asn His Leu Ala Val Asp Glu Ala Ser Gly Val Val Tyr Leu
        35                  40                  45

Gly Ala Val Asn Ala Leu Tyr Gln Leu Asp Ala Lys Leu Gln Leu Glu
    50                  55                  60

Gln Gln Val Ala Thr Gly Pro Ala Leu Asp Asn Lys Lys Cys Thr Pro
65                  70                  75                  80

Pro Ile Glu Ala Ser Gln Cys His Glu Ala Glu Met Thr Asp Asn Val
                85                  90                  95

Asn Gln Leu Leu Leu Leu Asp Pro Pro Arg Lys Arg Leu Val Glu Cys
            100                 105                 110

Gly Ser Leu Phe Lys Gly Ile Cys Ala Leu Arg Ala Leu Ser Asn Ile
        115                 120                 125

Ser Leu Arg Leu Phe Tyr Glu Asp Gly Ser Gly Glu Lys Ser Phe Val
    130                 135                 140

Ala Ser Asn Asp Glu Gly Val Ala Thr Val Gly Leu Val Ser Ser Thr
145                 150                 155                 160

Gly Pro Gly Gly Asp Arg Val Leu Phe Val Gly Lys Gly Asn Gly Pro
                165                 170                 175

His Asp Asn Gly Ile Ile Val Ser Thr Arg Leu Leu Asp Arg Thr Asp
            180                 185                 190

Ser Arg Glu Ala Phe Glu Ala Tyr Thr Asp His Ala Thr Tyr Lys Ala
        195                 200                 205

Gly Tyr Leu Ser Thr Asn Thr Gln Gln Phe Val Ala Ala Phe Glu Asp
    210                 215                 220

Gly Pro Tyr Val Phe Phe Val Phe Asn Gln Gln Asp Lys His Pro Ala
225                 230                 235                 240

Arg Asn Arg Thr Leu Leu Ala Arg Met Cys Arg Glu Asp Pro Asn Tyr
                245                 250                 255
```

```
Tyr Ser Tyr Leu Glu Met Asp Leu Gln Cys Arg Asp Pro Asp Ile His
            260                 265                 270

Ala Ala Ala Phe Gly Thr Cys Leu Ala Ala Ser Val Ala Ala Pro Gly
        275                 280                 285

Ser Gly Arg Val Leu Tyr Ala Val Phe Ser Arg Asp Ser Arg Ser Ser
    290                 295                 300

Gly Gly Pro Gly Ala Gly Leu Cys Leu Phe Pro Leu Asp Lys Val His
305                 310                 315                 320

Ala Lys Met Glu Ala Asn Arg Asn Ala Cys Tyr Thr Gly Thr Arg Glu
                325                 330                 335

Ala Arg Asp Ile Phe Tyr Lys Pro Phe His Gly Asp Ile Gln Cys Gly
            340                 345                 350

Gly His Ala Pro Gly Ser Ser Lys Ser Phe Pro Cys Gly Ser Glu His
        355                 360                 365

Leu Pro Tyr Pro Leu Gly Ser Arg Asp Gly Leu Arg Gly Thr Ala Val
    370                 375                 380

Leu Gln Arg Gly Gly Leu Asn Leu Thr Ala Val Thr Val Ala Ala Glu
385                 390                 395                 400

Asn Asn His Thr Val Ala Phe Leu Gly Thr Ser Asp Gly Arg Ile Leu
                405                 410                 415

Lys Val Tyr Leu Thr Pro Asp Gly Thr Ser Ser Glu Tyr Asp Ser Ile
            420                 425                 430

Leu Val Glu Ile Asn Lys Arg Val Lys Arg Asp Leu Val Leu Ser Gly
        435                 440                 445

Asp Leu Gly Ser Leu Tyr Ala Met Thr Gln Asp Lys Val Phe Arg Leu
    450                 455                 460

Pro Val Gln Glu Cys Leu Ser Tyr Pro Thr Cys Thr Gln Cys Arg Asp
465                 470                 475                 480

Ser Gln Asp Pro Tyr Cys Gly Trp Cys Val Val Glu Gly Arg Cys Thr
                485                 490                 495

Arg Lys Ala Glu Cys Pro Arg Ala Glu Glu Ala Ser His Trp Leu Trp
            500                 505                 510
```

```
Ser Arg Ser Lys Ser Cys Val Ala Val Thr Ser Ala Gln Pro Gln Asn
        515                 520                 525

Met Ser Arg Arg Ala Gln Gly Glu Val Gln Leu Thr Val Ser Pro Leu
    530                 535                 540

Pro Ala Leu Ser Glu Glu Asp Glu Leu Leu Cys Leu Phe Gly Glu Ser
545                 550                 555                 560

Pro Pro His Pro Ala Arg Val Glu Gly Glu Ala Val Ile Cys Asn Ser
                565                 570                 575

Pro Ser Ser Ile Pro Val Thr Pro Pro Gly Gln Asp His Val Ala Val
            580                 585                 590

Thr Ile Gln Leu Leu Leu Arg Arg Gly Asn Ile Phe Leu Thr Ser Tyr
        595                 600                 605

Gln Tyr Pro Phe Tyr Asp Cys Arg Gln Ala Met Ser Leu Glu Glu Asn
    610                 615                 620

Leu Pro Cys Ile Ser Cys Val Ser Asn Arg Trp Thr Cys Gln Trp Asp
625                 630                 635                 640

Leu Arg Tyr His Glu Cys Arg Glu Ala Ser Pro Asn Pro Glu Asp Gly
                645                 650                 655

Ile Val Arg Ala His Met Glu Asp Ser Cys Pro Gln Phe Leu Gly Pro
            660                 665                 670

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

Gly Lys Asn Leu Asp Thr Val Lys Gly Ser Ser Leu His Val Gly Ser
    690                 695                 700

Asp Leu Leu Lys Phe Met Glu Pro Val Thr Met Gln Glu Ser Gly Thr
705                 710                 715                 720

Phe Ala Phe Arg Thr Pro Lys Leu Ser His Asp Ala Asn Glu Thr Leu
                725                 730                 735

Pro Leu His Leu Tyr Val Lys Ser Tyr Gly Lys Asn Ile Asp Ser Lys
            740                 745                 750

Leu His Val Thr Leu Tyr Asn Cys Ser Phe Gly Arg Ser Asp Cys Ser
```

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        755                 760                 765

Leu Cys Arg Ala Ala Asn Pro Asp Tyr Arg Cys Ala Trp Cys Gly Gly
    770                 775                 780

Gln Ser Arg Cys Val Tyr Glu Ala Leu Cys Asn Thr Thr Ser Glu Cys
785                 790                 795                 800

Pro Pro Pro Val Ile Thr Arg Ile Gln Pro Glu Thr Gly Pro Leu Gly
                805                 810                 815

Gly Gly Ile Arg Ile Thr Ile Leu Gly Ser Asn Leu Gly Val Gln Ala
            820                 825                 830

Gly Asp Ile Gln Arg Ile Ser Val Ala Gly Arg Asn Cys Ser Phe Gln
        835                 840                 845

Pro Glu Arg Tyr Ser Val Ser Thr Arg Ile Val Cys Val Ile Glu Ala
    850                 855                 860

Ala Glu Thr Pro Phe Thr Gly Gly Val Glu Val Asp Val Phe Gly Lys
865                 870                 875                 880

Leu Gly Arg Ser Pro Pro Asn Val Gln Phe Thr Phe Gln Gln Pro Lys
                885                 890                 895

Pro Leu Ser Val Glu Pro Gln Gln Gly Pro Gln Ala Gly Gly Thr Thr
            900                 905                 910

Leu Thr Ile His Gly Thr His Leu Asp Thr Gly Ser Gln Glu Asp Val
        915                 920                 925

Arg Val Thr Leu Asn Gly Val Pro Cys Lys Val Thr Lys Phe Gly Ala
    930                 935                 940

Gln Leu Gln Cys Val Thr Gly Pro Gln Ala Thr Arg Gly Gln Met Leu
945                 950                 955                 960

Leu Glu Val Ser Tyr Gly Gly Ser Pro Val Pro Asn Pro Gly Ile Phe
                965                 970                 975

Phe Thr Tyr Arg Glu Asn Pro Val Leu Arg Ala Phe Glu Pro Leu Arg
            980                 985                 990

Ser Phe Ala Ser Gly Gly Arg Ser  Ile Asn Val Thr Gly  Gln Gly Phe
        995                 1000                1005
```

```
Ser Leu  Ile Gln Arg Phe Ala  Met Val Val Ile Ala  Glu Pro Leu
    1010                 1015                 1020

Gln Ser  Trp Gln Pro Pro Arg  Glu Ala Glu Ser Leu  Gln Pro Met
    1025                 1030                 1035

Thr Val  Val Gly Thr Asp Tyr  Val Phe His Asn Asp  Thr Lys Val
    1040                 1045                 1050

Val Phe  Leu Ser Pro Ala Val  Pro Glu Glu Pro Glu  Ala Tyr Asn
    1055                 1060                 1065

Leu Thr  Val Leu Ile Glu Met  Asp Gly His Arg Ala  Leu Leu Arg
    1070                 1075                 1080

Thr Glu  Ala Gly Ala Phe Glu  Tyr Val Pro Asp Pro  Thr Phe Glu
    1085                 1090                 1095

Asn Phe  Thr Gly Gly Val Lys  Lys Gln Val Asn Lys  Leu Ile His
    1100                 1105                 1110

Ala Arg  Gly Thr Asn Leu Asn  Lys Ala Met Thr Leu  Gln Glu Ala
    1115                 1120                 1125

Glu Ala  Phe Val Gly Ala Glu  Arg Cys Thr Met Lys  Thr Leu Thr
    1130                 1135                 1140

Glu Thr  Asp Leu Tyr Cys Glu  Pro Pro Glu Val Gln  Pro Pro Pro
    1145                 1150                 1155

Lys Arg  Arg Gln Lys Arg Asp  Thr Thr His Asn Leu  Pro Glu Phe
    1160                 1165                 1170

Ile Val  Lys Phe Gly Ser Arg  Glu Trp Val Leu Gly  Arg Val Glu
    1175                 1180                 1185

Tyr Asp  Thr Arg Val Ser Asp  Val Pro Leu Ser Leu  Ile Leu Pro
    1190                 1195                 1200

Leu Val  Ile Val Pro Met Val  Val Val Ile Ala Val  Ser Val Tyr
    1205                 1210                 1215

Cys Tyr  Trp Arg Lys Ser Gln  Gln Ala Glu Arg Glu  Tyr Glu Lys
    1220                 1225                 1230

Ile Lys  Ser Gln Leu Glu Gly  Leu Glu Glu Ser Val  Arg Asp Arg
    1235                 1240                 1245
```

```
Cys Lys  Lys Glu Phe Thr Asp  Leu Met Ile Glu Met  Glu Asp Gln
    1250                 1255                 1260

Thr Asn  Asp Val His Glu Ala  Gly Ile Pro Val Leu  Asp Tyr Lys
    1265                 1270                 1275

Thr Tyr  Thr Asp Arg Val Phe  Phe Leu Pro Ser Lys  Asp Gly Asp
    1280                 1285                 1290

Lys Asp  Val Met Ile Thr Gly  Lys Leu Asp Ile Pro  Glu Pro Arg
    1295                 1300                 1305

Arg Pro  Val Val Glu Gln Ala  Leu Tyr Gln Phe Ser  Asn Leu Leu
    1310                 1315                 1320

Asn Ser  Lys Ser Phe Leu Ile  Asn Phe Ile His Thr  Leu Glu Asn
    1325                 1330                 1335

Gln Arg  Glu Phe Ser Ala Arg  Ala Lys Val Tyr Phe  Ala Ser Leu
    1340                 1345                 1350

Leu Thr  Val Ala Leu His Gly  Lys Leu Glu Tyr Tyr  Thr Asp Ile
    1355                 1360                 1365

Met His  Thr Leu Phe Leu Glu  Leu Leu Glu Gln Tyr  Val Val Ala
    1370                 1375                 1380

Lys Asn  Pro Lys Leu Met Leu  Arg Arg Ser Glu Thr  Val Val Glu
    1385                 1390                 1395

Arg Met  Leu Ser Asn Trp Met  Ser Ile Cys Leu Tyr  Gln Tyr Leu
    1400                 1405                 1410

Lys Asp  Ser Ala Gly Glu Pro  Leu Tyr Lys Leu Phe  Lys Ala Ile
    1415                 1420                 1425

Lys His  Gln Val Glu Lys Gly  Pro Val Asp Ala Val  Gln Lys Lys
    1430                 1435                 1440

Ala Lys  Tyr Thr Leu Asn Asp  Thr Gly Leu Leu Gly  Asp Asp Val
    1445                 1450                 1455

Glu Tyr  Ala Pro Leu Thr Val  Ser Val Ile Val Gln  Asp Glu Gly
    1460                 1465                 1470

Val Asp  Ala Ile Pro Val Lys  Val Leu Asn Cys Asp  Thr Ile Ser
    1475                 1480                 1485
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```
Gln Val  Lys Glu Lys Ile Ile  Asp Gln Val Tyr Arg  Gly Gln Pro
    1490                 1495                 1500

Cys Ser  Cys Trp Pro Arg Pro  Asp Ser Val Val Leu  Glu Trp Arg
    1505                 1510                 1515

Pro Gly  Ser Thr Ala Gln Ile  Leu Ser Asp Leu Asp  Leu Thr Ser
    1520                 1525                 1530

Gln Arg  Glu Gly Arg Trp Lys  Arg Val Asn Thr Leu  Met His Tyr
    1535                 1540                 1545

Asn Val  Arg Asp Gly Ala Thr  Leu Ile Leu Ser Lys  Val Gly Val
    1550                 1555                 1560

Ser Gln  Gln Pro Glu Asp Ser  Gln Gln Asp Leu Pro  Gly Glu Arg
    1565                 1570                 1575

His Ala  Leu Leu Glu Glu Glu  Asn Arg Val Trp His  Leu Val Arg
    1580                 1585                 1590

Pro Thr  Asp Glu Val Asp Glu  Gly Lys Ser Lys Arg  Gly Ser Val
    1595                 1600                 1605

Lys Glu  Lys Glu Arg Thr Lys  Ala Ile Thr Glu Ile  Tyr Leu Thr
    1610                 1615                 1620

Arg Leu  Leu Ser Val Lys Gly  Thr Leu Gln Gln Phe  Val Asp Asn
    1625                 1630                 1635

Phe Phe  Gln Ser Val Leu Ala  Pro Gly His Ala Val  Pro Pro Ala
    1640                 1645                 1650

Val Lys  Tyr Phe Phe Asp Phe  Leu Asp Glu Gln Ala  Glu Lys His
    1655                 1660                 1665

Asn Ile  Gln Asp Glu Asp Thr  Ile His Ile Trp Lys  Thr Asn Ser
    1670                 1675                 1680

Leu Pro  Leu Arg Phe Trp Val  Asn Ile Leu Lys Asn  Pro His Phe
    1685                 1690                 1695

Ile Phe  Asp Val His Val His  Glu Val Val Asp Ala  Ser Leu Ser
    1700                 1705                 1710

Val Ile  Ala Gln Thr Phe Met  Asp Ala Cys Thr Arg  Thr Glu His
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1715 1720 1725

Lys Leu Ser Arg Asp Ser Pro Ser Asn Lys Leu Leu Tyr Ala Lys
1730 1735 1740

Glu Ile Ser Thr Tyr Lys Lys Met Val Glu Asp Tyr Tyr Lys Gly
1745 1750 1755

Ile Arg Gln Met Val Gln Val Ser Asp Gln Asp Met Asn Thr His
1760 1765 1770

Leu Ala Glu Ile Ser Arg Ala His Thr Asp Ser Leu Asn Thr Leu
1775 1780 1785

Val Ala Leu His Gln Leu Tyr Gln Tyr Thr Gln Lys Tyr Tyr Asp
1790 1795 1800

Glu Ile Ile Asn Ala Leu Glu Glu Asp Pro Ala Ala Gln Lys Met
1805 1810 1815

Gln Leu Ala Phe Arg Leu Gln Gln Ile Ala Ala Ala Leu Glu Asn
1820 1825 1830

Lys Val Thr Asp Leu
1835

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<211> 1496
<212> DNA
<213> Homo sapiens

<400> 165
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ggcagtcggc ggctgcctcc ggcggaggtg cctcgcggcg cccgggccgg cccgcgcctc 180

ggcggcgtgc tccatgcatc cggagcccgc cccgcccccg agccgcagca gtcccgagct 240

tcccccaagc ggcggcagca ccaccagcgg cagccgccgg agccgccgcc gcagcgggga 300

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gtgccagtgc cacctgggtg cctcctcctg tcctgtccgt ctcaacctcc ctcccgtcca 1440

gcattgagtg tgtacatgtg tgtgtgacac ataaatatac tcataaggac acctcc 1496

<210> 166
<211> 301
<212> PRT
<213> Homo sapiens

<400> 166

Met His Pro Glu Pro Ala Pro Pro Pro Ser Arg Ser Ser Pro Glu Leu
1 5 10 15

Pro Pro Ser Gly Gly Ser Thr Thr Ser Gly Ser Arg Arg Ser Arg Arg
20 25 30

Arg Ser Gly Asp Gly Glu Pro Pro Gly Ala Pro Pro Pro Pro Pro Ser
35 40 45

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

Ser Leu Asn Glu His Ser Met Gln Ala Leu Ser Trp Arg Lys Leu Tyr
65 70 75 80

Leu Ser Arg Ala Lys Leu Lys Ala Ser Ser Arg Thr Ser Ala Leu Leu
85 90 95

Ser Gly Phe Ala Met Val Ala Met Val Glu Val Gln Leu Asp Ala Asp
100 105 110

```
His Asp Tyr Pro Pro Gly Leu Leu Ile Ala Phe Ser Ala Cys Thr Thr
        115                 120                 125

Val Leu Val Ala Val His Leu Phe Ala Leu Met Ile Ser Thr Cys Ile
    130                 135                 140

Leu Pro Asn Ile Glu Ala Val Ser Asn Val His Asn Leu Asn Ser Val
145                 150                 155                 160

Lys Glu Ser Pro His Glu Arg Met His Arg His Ile Glu Leu Ala Trp
                165                 170                 175

Ala Phe Ser Thr Val Ile Gly Thr Leu Leu Phe Leu Ala Glu Val Val
            180                 185                 190

Leu Leu Cys Trp Val Lys Phe Leu Pro Leu Lys Lys Gln Pro Gly Gln
        195                 200                 205

Pro Arg Pro Thr Ser Lys Pro Pro Ala Ser Gly Ala Ala Ala Asn Val
    210                 215                 220

Ser Thr Ser Gly Ile Thr Pro Gly Gln Ala Ala Ala Ile Ala Ser Thr
225                 230                 235                 240

Thr Ile Met Val Pro Phe Gly Leu Ile Phe Ile Val Phe Ala Val His
                245                 250                 255

Phe Tyr Arg Ser Leu Val Ser His Lys Thr Asp Arg Gln Phe Gln Glu
            260                 265                 270

Leu Asn Glu Leu Ala Glu Phe Ala Arg Leu Gln Asp Gln Leu Asp His
        275                 280                 285

Arg Gly Asp His Pro Leu Thr Pro Gly Ser His Tyr Ala
    290                 295                 300
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<210> 167
<211> 5883
<212> DNA
<213> Homo sapiens

<400> 167

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gcctcttagg cttggcggtg gcggcggcgg cagcttcgcg ccgaatcccc ggggagcggc      240
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caa 5883

<210> 168
<211> 895
<212> PRT
<213> Homo sapiens

<400> 168

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Thr Phe Leu Leu Leu Leu Ser Val Val Met Ala Gln Ser His Trp Pro
20 25 30

Ser Glu Pro Ser Glu Ala Val Arg Asp Trp Glu Asn Gln Leu Glu Ala
35 40 45

Ser Met His Ser Val Leu Ser Asp Leu His Glu Ala Val Pro Thr Val
50 55 60

Val Gly Ile Pro Asp Gly Thr Ala Val Val Gly Arg Ser Phe Arg Val
65 70 75 80

Thr Ile Pro Thr Asp Leu Ile Ala Ser Ser Gly Asp Ile Ile Lys Val
85 90 95

Ser Ala Ala Gly Lys Glu Ala Leu Pro Ser Trp Leu His Trp Asp Ser
100 105 110

Gln Ser His Thr Leu Glu Gly Leu Pro Leu Asp Thr Asp Lys Gly Val
115 120 125

His Tyr Ile Ser Val Ser Ala Thr Arg Leu Gly Ala Asn Gly Ser His
130 135 140

Ile Pro Gln Thr Ser Ser Val Phe Ser Ile Glu Val Tyr Pro Glu Asp
145 150 155 160

His Ser Glu Leu Gln Ser Val Arg Thr Ala Ser Pro Asp Pro Gly Glu
165 170 175

Val Val Ser Ser Ala Cys Ala Ala Asp Glu Pro Val Thr Val Leu Thr
180 185 190

Val Ile Leu Asp Ala Asp Leu Thr Lys Met Thr Pro Lys Gln Arg Ile
195 200 205

Asp Leu Leu His Arg Met Arg Ser Phe Ser Glu Val Glu Leu His Asn
210 215 220

```
Met Lys Leu Val Pro Val Val Asn Asn Arg Leu Phe Asp Met Ser Ala
225                 230                 235                 240

Phe Met Ala Gly Pro Gly Asn Ala Lys Lys Val Val Glu Asn Gly Ala
                245                 250                 255

Leu Leu Ser Trp Lys Leu Gly Cys Ser Leu Asn Gln Asn Ser Val Pro
            260                 265                 270

Asp Ile His Gly Val Glu Ala Pro Ala Arg Glu Gly Ala Met Ser Ala
        275                 280                 285

Gln Leu Gly Tyr Pro Val Val Gly Trp His Ile Ala Asn Lys Lys Pro
    290                 295                 300

Pro Leu Pro Lys Arg Val Arg Arg Gln Ile His Ala Thr Pro Thr Pro
305                 310                 315                 320

Val Thr Ala Ile Gly Pro Pro Thr Thr Ala Ile Gln Glu Pro Pro Ser
                325                 330                 335

Arg Ile Val Pro Thr Pro Thr Ser Pro Ala Ile Ala Pro Pro Thr Glu
            340                 345                 350

Thr Met Ala Pro Pro Val Arg Asp Pro Val Pro Gly Lys Pro Thr Val
        355                 360                 365

Thr Ile Arg Thr Arg Gly Ala Ile Ile Gln Thr Pro Thr Leu Gly Pro
    370                 375                 380

Ile Gln Pro Thr Arg Val Ser Glu Ala Gly Thr Thr Val Pro Gly Gln
385                 390                 395                 400

Ile Arg Pro Thr Met Thr Ile Pro Gly Tyr Val Glu Pro Thr Ala Val
                405                 410                 415

Ala Thr Pro Pro Thr Thr Thr Thr Lys Lys Pro Arg Val Ser Thr Pro
            420                 425                 430

Lys Pro Ala Thr Pro Ser Thr Asp Ser Thr Thr Thr Thr Thr Arg Arg
        435                 440                 445

Pro Thr Lys Lys Pro Arg Thr Pro Arg Pro Val Pro Arg Val Thr Thr
    450                 455                 460

Lys Val Ser Ile Thr Arg Leu Glu Thr Ala Ser Pro Pro Thr Arg Ile
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465                 470                 475                 480

Arg Thr Thr Thr Ser Gly Val Pro Arg Gly Gly Glu Pro Asn Gln Arg
                485                 490                 495

Pro Glu Leu Lys Asn His Ile Asp Arg Val Asp Ala Trp Val Gly Thr
            500                 505                 510

Tyr Phe Glu Val Lys Ile Pro Ser Asp Thr Phe Tyr Asp His Glu Asp
        515                 520                 525

Thr Thr Thr Asp Lys Leu Lys Leu Thr Leu Lys Leu Arg Glu Gln Gln
    530                 535                 540

Leu Val Gly Glu Lys Ser Trp Val Gln Phe Asn Ser Asn Ser Gln Leu
545                 550                 555                 560

Met Tyr Gly Leu Pro Asp Ser Ser His Val Gly Lys His Glu Tyr Phe
                565                 570                 575

Met His Ala Thr Asp Lys Gly Gly Leu Ser Ala Val Asp Ala Phe Glu
            580                 585                 590

Ile His Val His Arg Arg Pro Gln Gly Asp Arg Ala Pro Ala Arg Phe
        595                 600                 605

Lys Ala Lys Phe Val Gly Asp Pro Ala Leu Val Leu Asn Asp Ile His
    610                 615                 620

Lys Lys Ile Ala Leu Val Lys Lys Leu Ala Phe Ala Phe Gly Asp Arg
625                 630                 635                 640

Asn Cys Ser Thr Ile Thr Leu Gln Asn Ile Thr Arg Gly Ser Ile Val
                645                 650                 655

Val Glu Trp Thr Asn Asn Thr Leu Pro Leu Glu Pro Cys Pro Lys Glu
            660                 665                 670

Gln Ile Ala Gly Leu Ser Arg Arg Ile Ala Glu Asp Asp Gly Lys Pro
        675                 680                 685

Arg Pro Ala Phe Ser Asn Ala Leu Glu Pro Asp Phe Lys Ala Thr Ser
    690                 695                 700

Ile Thr Val Thr Gly Ser Gly Ser Cys Arg His Leu Gln Phe Ile Pro
705                 710                 715                 720
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Val Val Pro Pro Arg Arg Val Pro Ser Glu Ala Pro Pro Thr Glu Val
                725                 730                 735

Pro Asp Arg Asp Pro Glu Lys Ser Ser Glu Asp Asp Val Tyr Leu His
            740                 745                 750

Thr Val Ile Pro Ala Val Val Val Ala Ala Ile Leu Leu Ile Ala Gly
        755                 760                 765

Ile Ile Ala Met Ile Cys Tyr Arg Lys Lys Arg Lys Gly Lys Leu Thr
    770                 775                 780

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

Ala Asp Glu Leu Asp Asp Ser Lys Pro Pro Pro Ser Ser Ser Met Pro
                805                 810                 815

Leu Ile Leu Gln Glu Glu Lys Ala Pro Leu Pro Pro Pro Glu Tyr Pro
            820                 825                 830

Asn Gln Ser Val Pro Glu Thr Thr Pro Leu Asn Gln Asp Thr Met Gly
        835                 840                 845

Glu Tyr Thr Pro Leu Arg Asp Glu Asp Pro Asn Ala Pro Pro Tyr Gln
    850                 855                 860

Pro Pro Pro Pro Phe Thr Ala Pro Met Glu Gly Lys Gly Ser Arg Pro
865                 870                 875                 880

Lys Asn Met Thr Pro Tyr Arg Ser Pro Pro Pro Tyr Val Pro Pro
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<210> 169
<211> 1526
<212> DNA
<213> Homo sapiens

<400> 169

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aaataaagag ccttctctcc gcggta 1526

<210> 170
<211> 217
<212> PRT
<213> Homo sapiens

<400> 170

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Leu Glu Lys Leu Gln His Trp Ala Arg His Arg Gln Ser Gly His Leu
20 25 30

Leu Val Leu Ala Val Ser Gln Leu Trp Leu Ala Val Val Val Val Pro
35 40 45

Leu Ala Val Ser Val Ala Cys Leu Asn Ser Asp Cys His Met Ala Thr
50 55 60

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Ala Leu Pro Leu Gly Pro Gly Ala Ser Gly Leu Leu Thr Gly Thr Val
65                  70                  75                  80

Thr Leu Glu Leu Arg Arg Ala Pro Arg Leu Trp Lys Val Arg Ala Met
                85                  90                  95

Met Ile Phe Asn Thr Phe Asn Leu Ile Leu Gly Phe Ile Val Val Val
            100                 105                 110

Val Glu Val Met Lys Thr Ala Leu Gly Pro Ala Pro Thr Ala Ser Ser
        115                 120                 125

Gln His Ala Gly Leu Leu Val Leu Glu Leu Ser Ala Glu Ala Phe Thr
    130                 135                 140

Leu Gly Gly Val Leu Val Ser Val His Ala Leu Phe Leu Leu Ser Gln
145                 150                 155                 160

Arg Lys Pro Gly Cys Cys Arg Ser Gln Ser Leu His Tyr Gln Glu Leu
                165                 170                 175

Gln Glu Gly Phe Ser Glu Leu Glu Glu Val Pro Gly Leu Glu Asn Gly
            180                 185                 190

Pro Thr Val Ala Ser Thr Gly Ala Asn Glu Arg Val Gly Gln Arg Glu
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Gln Thr Arg Ala Ala Leu Leu Pro Pro
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<210> 171
<211> 5026
<212> DNA
<213> Homo sapiens

<400> 171

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cccagacagc cggcgctggc tgtggtcggt gctggcggcg gcgcttgggc tcttgacagc      300

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gcaagtgtac cttgggaatt atccaccatt taaagacaga atcagctggg ctggagacct      540
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<210> 172
<211> 269
<212> PRT
<213> Homo sapiens

<400> 172

Met Ala Ala Ser Ala Gly Ala Gly Ala Val Ile Ala Ala Pro Asp Ser
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Arg Arg Trp Leu Trp Ser Val Leu Ala Ala Ala Leu Gly Leu Leu Thr
20 25 30

Ala Gly Val Ser Ala Leu Glu Val Tyr Thr Pro Lys Glu Ile Phe Val
35 40 45

Ala Asn Gly Thr Gln Gly Lys Leu Thr Cys Lys Phe Lys Ser Thr Ser
50 55 60

Thr Thr Gly Gly Leu Thr Ser Val Ser Trp Ser Phe Gln Pro Glu Gly
65 70 75 80

Ala Asp Thr Thr Val Ser Phe Phe His Tyr Ser Gln Gly Gln Val Tyr
85 90 95

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

Leu Asp Lys Lys Asp Ala Ser Ile Asn Ile Glu Asn Met Gln Phe Ile
115 120 125

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His Asn Gly Thr Tyr Ile Cys Asp Val Lys Asn Pro Pro Asp Ile Val
    130                 135                 140

Val Gln Pro Gly His Ile Arg Leu Tyr Val Val Glu Lys Glu Asn Leu
145                 150                 155                 160

Pro Val Phe Pro Val Trp Val Val Val Gly Ile Val Thr Ala Val Val
                165                 170                 175

Leu Gly Leu Thr Leu Leu Ile Ser Met Ile Leu Ala Val Leu Tyr Arg
            180                 185                 190

Arg Lys Asn Ser Lys Arg Asp Tyr Thr Gly Cys Ser Thr Ser Glu Ser
        195                 200                 205

Leu Ser Pro Val Lys Gln Ala Pro Arg Lys Ser Pro Ser Asp Thr Glu
    210                 215                 220

Gly Leu Val Lys Ser Leu Pro Ser Gly Ser His Gln Gly Pro Val Ile
225                 230                 235                 240

Tyr Ala Gln Leu Asp His Ser Gly Gly His His Ser Asp Lys Ile Asn
                245                 250                 255

Lys Ser Glu Ser Val Val Tyr Ala Asp Ile Arg Lys Asn
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<211> 731
<212> DNA
<213> Homo sapiens

<400> 173

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cagtggagag tatcagcttt tgttggcagc aacattattg tctttgagag gctctgggaa      180

gggctctgga tgaattgcat ccgacaagcc agggtccggt tgcaatgcaa gttctatagc      240

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<210> 174
<211> 224
<212> PRT
<213> Homo sapiens

<400> 174

Met Ala Phe Tyr Pro Leu Gln Ile Ala Gly Leu Val Leu Gly Phe Leu
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Gly Met Val Gly Thr Leu Ala Thr Thr Leu Leu Pro Gln Trp Arg Val
20 25 30

Ser Ala Phe Val Gly Ser Asn Ile Ile Val Phe Glu Arg Leu Trp Glu
35 40 45

Gly Leu Trp Met Asn Cys Ile Arg Gln Ala Arg Val Arg Leu Gln Cys
50 55 60

Lys Phe Tyr Ser Ser Leu Leu Ala Leu Pro Pro Ala Leu Glu Thr Ala
65 70 75 80

Arg Ala Leu Met Cys Val Ala Val Ala Leu Ser Leu Ile Ala Leu Leu
85 90 95

Ile Gly Ile Cys Gly Met Lys Gln Val Gln Cys Thr Gly Ser Asn Glu
100 105 110

Arg Ala Lys Ala Tyr Leu Leu Gly Thr Ser Gly Val Leu Phe Ile Leu
115 120 125

Thr Gly Ile Phe Val Leu Ile Pro Val Ser Trp Thr Ala Asn Ile Ile
130 135 140

Ile Arg Asp Phe Tyr Asn Pro Ala Ile His Ile Gly Gln Lys Arg Glu
145 150 155 160

Leu Gly Ala Ala Leu Phe Leu Gly Trp Ala Ser Ala Ala Val Leu Phe
165 170 175

Ile Gly Gly Gly Leu Leu Cys Gly Phe Cys Cys Cys Asn Arg Lys Lys
180 185 190

Gln Gly Tyr Arg Tyr Pro Val Pro Gly Tyr Arg Val Pro His Thr Asp
195 200 205

Lys Arg Arg Asn Thr Thr Met Leu Ser Lys Thr Ser Thr Ser Tyr Val
210 215 220

<210> 175
<211> 4576
<212> DNA
<213> Homo sapiens

<400> 175
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aaaaaaaaaa aaaaaa 4576

<210> 176
<211> 1321
<212> PRT
<213> Homo sapiens

<400> 176

Met Glu Pro Pro Gly Arg Arg Arg Gly Arg Ala Gln Pro Pro Leu Leu
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Leu Pro Leu Ser Leu Leu Ala Leu Leu Ala Leu Leu Gly Gly Gly Gly
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Gly Gly Gly Ala Ala Ala Leu Pro Ala Gly Cys Lys His Asp Gly Arg
35 40 45

Pro Arg Gly Ala Gly Arg Ala Ala Gly Ala Ala Glu Gly Lys Val Val

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    50                  55                  60

Cys Ser Ser Leu Glu Leu Ala Gln Val Leu Pro Pro Asp Thr Leu Pro
65                  70                  75                  80

Asn Arg Thr Val Thr Leu Ile Leu Ser Asn Asn Lys Ile Ser Glu Leu
                85                  90                  95

Lys Asn Gly Ser Phe Ser Gly Leu Ser Leu Leu Glu Arg Leu Asp Leu
            100                 105                 110

Arg Asn Asn Leu Ile Ser Ser Ile Asp Pro Gly Ala Phe Trp Gly Leu
        115                 120                 125

Ser Ser Leu Lys Arg Leu Asp Leu Thr Asn Asn Arg Ile Gly Cys Leu
    130                 135                 140

Asn Ala Asp Ile Phe Arg Gly Leu Thr Asn Leu Val Arg Leu Asn Leu
145                 150                 155                 160

Ser Gly Asn Leu Phe Ser Ser Leu Ser Gln Gly Thr Phe Asp Tyr Leu
                165                 170                 175

Ala Ser Leu Arg Ser Leu Glu Phe Gln Thr Glu Tyr Leu Leu Cys Asp
            180                 185                 190

Cys Asn Ile Leu Trp Met His Arg Trp Val Lys Glu Lys Asn Ile Thr
        195                 200                 205

Val Arg Asp Thr Arg Cys Val Tyr Pro Lys Ser Leu Gln Ala Gln Pro
    210                 215                 220

Val Thr Gly Val Lys Gln Glu Leu Leu Thr Cys Asp Pro Pro Leu Glu
225                 230                 235                 240

Leu Pro Ser Phe Tyr Met Thr Pro Ser His Arg Gln Val Val Phe Glu
                245                 250                 255

Gly Asp Ser Leu Pro Phe Gln Cys Met Ala Ser Tyr Ile Asp Gln Asp
            260                 265                 270

Met Gln Val Leu Trp Tyr Gln Asp Gly Arg Ile Val Glu Thr Asp Glu
        275                 280                 285

Ser Gln Gly Ile Phe Val Glu Lys Asn Met Ile His Asn Cys Ser Leu
    290                 295                 300
```

```
Ile Ala Ser Ala Leu Thr Ile Ser Asn Ile Gln Ala Gly Ser Thr Gly
305                 310                 315                 320

Asn Trp Gly Cys His Val Gln Thr Lys Arg Gly Asn Asn Thr Arg Thr
                325                 330                 335

Val Asp Ile Val Val Leu Glu Ser Ser Ala Gln Tyr Cys Pro Pro Glu
            340                 345                 350

Arg Val Val Asn Asn Lys Gly Asp Phe Arg Trp Pro Arg Thr Leu Ala
        355                 360                 365

Gly Ile Thr Ala Tyr Leu Gln Cys Thr Arg Asn Thr His Gly Ser Gly
    370                 375                 380

Ile Tyr Pro Gly Asn Pro Gln Asp Glu Arg Lys Ala Trp Arg Arg Cys
385                 390                 395                 400

Asp Arg Gly Gly Phe Trp Ala Asp Asp Asp Tyr Ser Arg Cys Gln Tyr
                405                 410                 415

Ala Asn Asp Val Thr Arg Val Leu Tyr Met Phe Asn Gln Met Pro Leu
            420                 425                 430

Asn Leu Thr Asn Ala Val Ala Thr Ala Arg Gln Leu Leu Ala Tyr Thr
        435                 440                 445

Val Glu Ala Ala Asn Phe Ser Asp Lys Met Asp Val Ile Phe Val Ala
    450                 455                 460

Glu Met Ile Glu Lys Phe Gly Arg Phe Thr Lys Glu Glu Lys Ser Lys
465                 470                 475                 480

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

Asp Glu Arg Val Leu Trp Leu Ala Gln Arg Glu Ala Lys Ala Cys Ser
            500                 505                 510

Arg Ile Val Gln Cys Leu Gln Arg Ile Ala Thr Tyr Arg Leu Ala Gly
        515                 520                 525

Gly Ala His Val Tyr Ser Thr Tyr Ser Pro Asn Ile Ala Leu Glu Ala
    530                 535                 540

Tyr Val Ile Lys Ser Thr Gly Phe Thr Gly Met Thr Cys Thr Val Phe
545                 550                 555                 560
```

```
Gln Lys Val Ala Ala Ser Asp Arg Thr Gly Leu Ser Asp Tyr Gly Arg
                565                 570                 575

Arg Asp Pro Glu Gly Asn Leu Asp Lys Gln Leu Ser Phe Lys Cys Asn
            580                 585                 590

Val Ser Asn Thr Phe Ser Ser Leu Ala Leu Lys Asn Thr Ile Val Glu
        595                 600                 605

Ala Ser Ile Gln Leu Pro Pro Ser Leu Phe Ser Pro Lys Gln Lys Arg
    610                 615                 620

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

Phe Arg Asn Gly Lys Leu Phe Pro Ala Thr Gly Asn Ser Thr Asn Leu
                645                 650                 655

Ala Asp Asp Gly Lys Arg Arg Thr Val Val Thr Pro Val Ile Leu Thr
            660                 665                 670

Lys Ile Asp Gly Val Asn Val Asp Thr His His Ile Pro Val Asn Val
        675                 680                 685

Thr Leu Arg Arg Ile Ala His Gly Ala Asp Ala Val Ala Ala Arg Trp
    690                 695                 700

Asp Phe Asp Leu Leu Asn Gly Gln Gly Gly Trp Lys Ser Asp Gly Cys
705                 710                 715                 720

His Ile Leu Tyr Ser Asp Glu Asn Ile Thr Thr Ile Gln Cys Tyr Ser
                725                 730                 735

Leu Ser Asn Tyr Ala Val Leu Met Asp Leu Thr Gly Ser Glu Leu Tyr
            740                 745                 750

Thr Gln Ala Ala Ser Leu Leu His Pro Val Val Tyr Thr Thr Ala Ile
        755                 760                 765

Ile Leu Leu Leu Cys Leu Leu Ala Val Ile Val Ser Tyr Ile Tyr His
    770                 775                 780

His Ser Leu Ile Arg Ile Ser Leu Lys Ser Trp His Met Leu Val Asn
785                 790                 795                 800

Leu Cys Phe His Ile Phe Leu Thr Cys Val Val Phe Val Gly Gly Ile
                805                 810                 815
```

```
Thr Gln Thr Arg Asn Ala Ser Ile Cys Gln Ala Val Gly Ile Ile Leu
            820                 825                 830

His Tyr Ser Thr Leu Ala Thr Val Leu Trp Val Gly Val Thr Ala Arg
        835                 840                 845

Asn Ile Tyr Lys Gln Val Thr Lys Lys Ala Lys Arg Cys Gln Asp Pro
    850                 855                 860

Asp Glu Pro Pro Pro Pro Pro Arg Pro Met Leu Arg Phe Tyr Leu Ile
865                 870                 875                 880

Gly Gly Gly Ile Pro Ile Ile Val Cys Gly Ile Thr Ala Ala Ala Asn
                885                 890                 895

Ile Lys Asn Tyr Gly Ser Arg Pro Asn Ala Pro Tyr Cys Trp Met Ala
            900                 905                 910

Trp Glu Pro Ser Leu Gly Ala Phe Tyr Gly Pro Ala Ser Phe Ile Thr
        915                 920                 925

Phe Val Asn Cys Met Tyr Phe Leu Ser Ile Phe Ile Gln Leu Lys Arg
    930                 935                 940

His Pro Glu Arg Lys Tyr Glu Leu Lys Glu Pro Thr Glu Glu Gln Gln
945                 950                 955                 960

Arg Leu Ala Ala Asn Glu Asn Gly Glu Ile Asn His Gln Asp Ser Met
                965                 970                 975

Ser Leu Ser Leu Ile Ser Thr Ser Ala Leu Glu Asn Glu His Thr Phe
            980                 985                 990

His Ser Gln Leu Leu Gly Ala Ser  Leu Thr Leu Leu Leu  Tyr Val Ala
        995                 1000                1005

Leu Trp  Met Phe Gly Ala Leu  Ala Val Ser Leu Tyr  Tyr Pro Leu
    1010                1015                1020

Asp Leu  Val Phe Ser Phe Val  Phe Gly Ala Thr Ser  Leu Ser Phe
    1025                1030                1035

Ser Ala  Phe Phe Val Val His  His Cys Val Asn Arg  Glu Asp Val
    1040                1045                1050

Arg Leu  Ala Trp Ile Met Thr  Cys Cys Pro Gly Arg  Ser Ser Tyr
```

```
    1055                1060                1065

Ser Val  Gln Val Asn Val Gln  Pro Pro Asn Ser Asn  Gly Thr Asn
    1070                1075                1080

Gly Glu  Ala Pro Lys Cys Pro  Asn Ser Ser Ala Glu  Ser Ser Cys
    1085                1090                1095

Thr Asn  Lys Ser Ala Ser Ser  Phe Lys Asn Ser Ser  Gln Gly Cys
    1100                1105                1110

Lys Leu  Thr Asn Leu Gln Ala  Ala Ala Ala Gln Cys  His Ala Asn
    1115                1120                1125

Ser Leu  Pro Leu Asn Ser Thr  Pro Gln Leu Asp Asn  Ser Leu Thr
    1130                1135                1140

Glu His  Ser Met Asp Asn Asp  Ile Lys Met His Val  Ala Pro Leu
    1145                1150                1155

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

Asn Arg  Ser Lys Gly His Arg  Ala Ser Arg Leu Thr  Val Leu Arg
    1175                1180                1185

Glu Tyr  Ala Tyr Asp Val Pro  Thr Ser Val Glu Gly  Ser Val Gln
    1190                1195                1200

Asn Gly  Leu Pro Lys Ser Arg  Leu Gly Asn Asn Glu  Gly His Ser
    1205                1210                1215

Arg Ser  Arg Arg Ala Tyr Leu  Ala Tyr Arg Glu Arg  Gln Tyr Asn
    1220                1225                1230

Pro Pro  Gln Gln Asp Ser Ser  Asp Ala Cys Ser Thr  Leu Pro Lys
    1235                1240                1245

Ser Ser  Arg Asn Phe Glu Lys  Pro Val Ser Thr Thr  Ser Lys Lys
    1250                1255                1260

Asp Ala  Leu Arg Lys Pro Ala  Val Val Glu Leu Glu  Asn Gln Gln
    1265                1270                1275

Lys Ser  Tyr Gly Leu Asn Leu  Ala Ile Gln Asn Gly  Pro Ile Lys
    1280                1285                1290
```

Ser Asn Gly Gln Glu Gly Pro Leu Leu Gly Thr Asp Ser Thr Gly
1295 1300 1305

Asn Val Arg Thr Gly Leu Trp Lys His Glu Thr Thr Val
1310 1315 1320

<210> 177
<211> 2944
<212> DNA
<213> Homo sapiens

<400> 177
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tagcctagag aggccgctaa cagacaggag ccgaacgggg gcttccgctc agcagagagg 120

caagatggct acggcagggg gtggctctgg ggctgacccg ggaagtcggg gtctccttcg 180

ccttctgtct ttctgcgtcc tactagcagg tttgtgcagg ggaaactcag tggagaggaa 240

gatatatatc cccttaaata aaacagctcc ctgtgttcgc ctgctcaacg ccactcatca 300

gattggctgc cagtcttcaa ttagtggaga cacaggggtt atccacgtag tagagaaaga 360

ggaggaccta cagtgggtat tgactgatgg ccccaacccc ccttacatgg ttctgctgga 420

gagcaagcat tttaccaggg atttaatgga gaagctgaaa gggagaacca gccgaattgc 480

tggtcttgca gtgtccttga ccaagcccag tcctgcctca ggcttctctc ctagtgtaca 540

gtgcccaaat gatgggtttg gtgtttactc caattcctat gggccagagt ttgctcactg 600

cagagaaata cagtggaatt cgctgggcaa tggtttggct tatgaagact ttagtttccc 660

catctttctt cttgaagatg aaaatgaaac caaagtcatc aagcagtgct atcaagatca 720

caacctgagt cagaatggct cagcaccaac cttcccacta tgtgccatgc agctcttttc 780

acacatgcat gctgtcatca gcactgccac ctgcatgcgg cgcagctcca tccaaagcac 840

cttcagcatc aacccagaaa tcgtctgtga ccccctgtct gattacaatg tgtggagcat 900

gctaaagcct ataaatacaa ctgggacatt aaagcctgac gacagggttg tggttgctgc 960

cacccggctg gatagtcgtt ccttttctg gaatgtggcc ccaggggctg aaagcgcagt 1020

ggcttccttt gtcacccagc tggctgctgc tgaagctttg caaaaggcac ctgatgtgac 1080

caccctgccc cgcaatgtca tgtttgtctt ctttcaaggg gaaacttttg actacattgg 1140

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tgactcattt gtggagctgg gacaggtggc cttaagaact tcattagagc tttggatgca 1260

cacagatcct gtttctcaga aaaatgagtc tgtacggaac caggtggagg atctcctggc 1320

cacattggag aagagtggtg ctggtgtccc tgctgtcatc ctcaggaggc caaatcagtc 1380

ccagcctctc ccaccatctt ccctgcagcg atttcttcga gctcgaaaca tctctggcgt 1440

tgttctggct gaccactctg gtgccttcca taacaaatat taccagagta tttacgacac 1500

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gcaggaccta aggtcctact tgggtgacgg gcctcttcaa cattacatcg ctgtctccag 1800

ccccaccaac accacttatg ttgtacagta tgccttggca aatttgactg gcacagtggt 1860

caacctcacc cgagagcagt gccaggatcc aagtaaagtc ccaagtgaaa acaaggatct 1920

gtatgagtac tcatgggtcc agggcccttt gcattctaat gagacggacc gactcccccg 1980

gtgtgtgcgt tctactgcac gattagccag ggccttgtct cctgcctttg aactgagtca 2040

gtggagctct actgaatact ctacatggac tgagagccgc tggaaagata tccgtgcccg 2100

gatatttctc atcgccagca aagagcttga gttgatcacc ctgacagtgg gcttcggcat 2160

cctcatcttc tccctcatcg tcacctactg catcaatgcc aaagctgatg tccttttcat 2220

tgctccccgg gagccaggag ctgtgtcata ctgaggagga ccccagcttt tcttgccagc 2280

tcagcagttc acttcctaga gcatctgtcc cactgggaca caaccactaa tttgtcactg 2340

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tgctcctgtt taactcccta gttacccacc ctaatttgcc cttcaggacc cttctacttt 2580

ttccttcctg ccctgtacct ctctctgctc ctcaccccca cccctgtacc cagccacctt 2640

cctgactggg aaggacataa aaggtttaat gtcagggtca aactacattg agcccctgag 2700

gacaggggca tctctgggct gagcctactg tctccttccc actgtccttt ctccaggccc 2760

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ctcagttgta ctttttatta agctgtaata tctatttttg tttttgtctt tttcctttat 2880

tctttttgta aatatatata taatgagttt cattaaaata gattatccca cacgaaaaaa 2940

aaaa 2944

<210> 178
<211> 709
<212> PRT
<213> Homo sapiens

<400> 178

Met Ala Thr Ala Gly Gly Gly Ser Gly Ala Asp Pro Gly Ser Arg Gly
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Leu Leu Arg Leu Leu Ser Phe Cys Val Leu Leu Ala Gly Leu Cys Arg
            20                  25                  30

Gly Asn Ser Val Glu Arg Lys Ile Tyr Ile Pro Leu Asn Lys Thr Ala
        35                  40                  45

Pro Cys Val Arg Leu Leu Asn Ala Thr His Gln Ile Gly Cys Gln Ser
    50                  55                  60

Ser Ile Ser Gly Asp Thr Gly Val Ile His Val Val Glu Lys Glu Glu
65                  70                  75                  80

Asp Leu Gln Trp Val Leu Thr Asp Gly Pro Asn Pro Pro Tyr Met Val
                85                  90                  95

Leu Leu Glu Ser Lys His Phe Thr Arg Asp Leu Met Glu Lys Leu Lys
            100                 105                 110

Gly Arg Thr Ser Arg Ile Ala Gly Leu Ala Val Ser Leu Thr Lys Pro
        115                 120                 125

Ser Pro Ala Ser Gly Phe Ser Pro Ser Val Gln Cys Pro Asn Asp Gly
    130                 135                 140

Phe Gly Val Tyr Ser Asn Ser Tyr Gly Pro Glu Phe Ala His Cys Arg
145                 150                 155                 160

Glu Ile Gln Trp Asn Ser Leu Gly Asn Gly Leu Ala Tyr Glu Asp Phe
                165                 170                 175

Ser Phe Pro Ile Phe Leu Leu Glu Asp Glu Asn Glu Thr Lys Val Ile
            180                 185                 190

Lys Gln Cys Tyr Gln Asp His Asn Leu Ser Gln Asn Gly Ser Ala Pro
        195                 200                 205

Thr Phe Pro Leu Cys Ala Met Gln Leu Phe Ser His Met His Ala Val
    210                 215                 220

Ile Ser Thr Ala Thr Cys Met Arg Arg Ser Ser Ile Gln Ser Thr Phe
225                 230                 235                 240

Ser Ile Asn Pro Glu Ile Val Cys Asp Pro Leu Ser Asp Tyr Asn Val
                245                 250                 255

Trp Ser Met Leu Lys Pro Ile Asn Thr Thr Gly Thr Leu Lys Pro Asp
            260                 265                 270
```

```
Asp Arg Val Val Val Ala Ala Thr Arg Leu Asp Ser Arg Ser Phe Phe
        275                 280                 285

Trp Asn Val Ala Pro Gly Ala Glu Ser Ala Val Ala Ser Phe Val Thr
    290                 295                 300

Gln Leu Ala Ala Ala Glu Ala Leu Gln Lys Ala Pro Asp Val Thr Thr
305                 310                 315                 320

Leu Pro Arg Asn Val Met Phe Val Phe Phe Gln Gly Glu Thr Phe Asp
                325                 330                 335

Tyr Ile Gly Ser Ser Arg Met Val Tyr Asp Met Glu Lys Gly Lys Phe
            340                 345                 350

Pro Val Gln Leu Glu Asn Val Asp Ser Phe Val Glu Leu Gly Gln Val
        355                 360                 365

Ala Leu Arg Thr Ser Leu Glu Leu Trp Met His Thr Asp Pro Val Ser
    370                 375                 380

Gln Lys Asn Glu Ser Val Arg Asn Gln Val Glu Asp Leu Leu Ala Thr
385                 390                 395                 400

Leu Glu Lys Ser Gly Ala Gly Val Pro Ala Val Ile Leu Arg Arg Pro
                405                 410                 415

Asn Gln Ser Gln Pro Leu Pro Pro Ser Ser Leu Gln Arg Phe Leu Arg
            420                 425                 430

Ala Arg Asn Ile Ser Gly Val Val Leu Ala Asp His Ser Gly Ala Phe
        435                 440                 445

His Asn Lys Tyr Tyr Gln Ser Ile Tyr Asp Thr Ala Glu Asn Ile Asn
    450                 455                 460

Val Ser Tyr Pro Glu Trp Leu Ser Pro Glu Glu Asp Leu Asn Phe Val
465                 470                 475                 480

Thr Asp Thr Ala Lys Ala Leu Ala Asp Val Ala Thr Val Leu Gly Arg
                485                 490                 495

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

Ala Asp Pro Gln Thr Val Thr Arg Leu Leu Tyr Gly Phe Leu Ile Lys
        515                 520                 525
```

```
Ala Asn Asn Ser Trp Phe Gln Ser Ile Leu Arg Gln Asp Leu Arg Ser
    530                 535                 540

Tyr Leu Gly Asp Gly Pro Leu Gln His Tyr Ile Ala Val Ser Ser Pro
545                 550                 555                 560

Thr Asn Thr Thr Tyr Val Val Gln Tyr Ala Leu Ala Asn Leu Thr Gly
                565                 570                 575

Thr Val Val Asn Leu Thr Arg Glu Gln Cys Gln Asp Pro Ser Lys Val
            580                 585                 590

Pro Ser Glu Asn Lys Asp Leu Tyr Glu Tyr Ser Trp Val Gln Gly Pro
        595                 600                 605

Leu His Ser Asn Glu Thr Asp Arg Leu Pro Arg Cys Val Arg Ser Thr
    610                 615                 620

Ala Arg Leu Ala Arg Ala Leu Ser Pro Ala Phe Glu Leu Ser Gln Trp
625                 630                 635                 640

Ser Ser Thr Glu Tyr Ser Thr Trp Thr Glu Ser Arg Trp Lys Asp Ile
                645                 650                 655

Arg Ala Arg Ile Phe Leu Ile Ala Ser Lys Glu Leu Glu Leu Ile Thr
            660                 665                 670

Leu Thr Val Gly Phe Gly Ile Leu Ile Phe Ser Leu Ile Val Thr Tyr
        675                 680                 685

Cys Ile Asn Ala Lys Ala Asp Val Leu Phe Ile Ala Pro Arg Glu Pro
    690                 695                 700

Gly Ala Val Ser Tyr
705
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<210> 179
<211> 1223
<212> DNA
<213> Homo sapiens

<400> 179
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gttgtgggca atatcattat tctgctgtca ggcctgtccc tgtttgctga gaccatatgg 120

gtgacagccg accagtaccg tgtataccca ctgatgggag tctcaggcaa ggatgacgtc 180

ttcgctggtg cctggattgc catcttctgc ggcttctcct tcttcatggt agccagtttt 240

ggtgtgggtg ccgcactctg ccgccgccgg tccatggtcc tcacgtacct ggtgctcatg 300

ctcatcgtct acatcttcga gtgcgcctcc tgcatcacgt cctacaccca ccgtgactac 360

atggtgtcca acccatccct gatcaccaag cagatgctga ccttctacag cgcggacacc 420

gaccagggcc aggagctgac ccgcctctgg gaccgcgtca tgattgagca agaatgctgt 480

ggcacatctg gtcccatgga ctgggtgaac ttcacgtcag ccttccgggc ggccactccg 540

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aacgaggagg gctgccgcct ggggcacatg gactacctgt tcaccaaggg ctgcttcgaa 660

cacatcggcc acgccatcga cagctacacg tggggtatct cgtggtttgg gtttgccatc 720

ctgatgtgga cgctcccggt catgctgata gccatgtatt tctacaccat gctctgaggg 780

acaggagggg aaggcaacat acacaccccg gactcctccg catcctcctc ctgcttcctc 840

cgctgggcct ggatggctgc ctcacctctc acctcccaac gtccctagcc cttacgtcct 900

tccacttcca agatcttttt ccaggttcct gagccctact gtgtctcagg tgtgccctga 960

aaccccaggg cttgtgtgca catatcctta gcccatcttt caagggacct ctccatgatc 1020

ccacctccca ttcacagata cctctcttgt agctctctga cctcctcctt catggcaggc 1080

atcgccattc ttgctgaacc gtttgtgatt gccatttgag ctctggaagc ctctattgcc 1140

atgagagttc tgtcacggtc actttactgt ccccatcatc acccagcacg gggctaagca 1200

tatactagat agtcaataaa taa 1223

<210> 180
<211> 258
<212> PRT
<213> Homo sapiens

<400> 180

Met Ala Ser Ala Ala Ala Ala Glu Ala Glu Lys Gly Ser Pro Val Val
1 5 10 15

Val Gly Leu Leu Val Val Gly Asn Ile Ile Ile Leu Leu Ser Gly Leu
20 25 30

Ser Leu Phe Ala Glu Thr Ile Trp Val Thr Ala Asp Gln Tyr Arg Val
35 40 45

Tyr Pro Leu Met Gly Val Ser Gly Lys Asp Asp Val Phe Ala Gly Ala
50 55 60

Trp Ile Ala Ile Phe Cys Gly Phe Ser Phe Phe Met Val Ala Ser Phe
65 70 75 80

```
Gly Val Gly Ala Ala Leu Cys Arg Arg Arg Ser Met Val Leu Thr Tyr
                85                  90                  95

Leu Val Leu Met Leu Ile Val Tyr Ile Phe Glu Cys Ala Ser Cys Ile
            100                 105                 110

Thr Ser Tyr Thr His Arg Asp Tyr Met Val Ser Asn Pro Ser Leu Ile
        115                 120                 125

Thr Lys Gln Met Leu Thr Phe Tyr Ser Ala Asp Thr Asp Gln Gly Gln
    130                 135                 140

Glu Leu Thr Arg Leu Trp Asp Arg Val Met Ile Glu Gln Glu Cys Cys
145                 150                 155                 160

Gly Thr Ser Gly Pro Met Asp Trp Val Asn Phe Thr Ser Ala Phe Arg
                165                 170                 175

Ala Ala Thr Pro Glu Val Val Phe Pro Trp Pro Pro Leu Cys Cys Arg
            180                 185                 190

Arg Thr Gly Asn Phe Ile Pro Leu Asn Glu Glu Gly Cys Arg Leu Gly
        195                 200                 205

His Met Asp Tyr Leu Phe Thr Lys Gly Cys Phe Glu His Ile Gly His
    210                 215                 220

Ala Ile Asp Ser Tyr Thr Trp Gly Ile Ser Trp Phe Gly Phe Ala Ile
225                 230                 235                 240

Leu Met Trp Thr Leu Pro Val Met Leu Ile Ala Met Tyr Phe Tyr Thr
                245                 250                 255

Met Leu
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<210> 181
<211> 10810
<212> DNA
<213> Homo sapiens

<400> 181

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ttactgctcc ctgaccaaga gcagacgaga gaaggaacgg cgctacacaa attcctccgc      120

agacaatgag gagtgccggg tacccacaca gaagtcctac agttccagcg agacattgaa      180

agcttttgat catgattcct cgcggctgct ttacggcaac agagtgaagg atttggttca      240

cagagaagca gacgagttca ctagacaagg acagaatttt accctaaggc agttaggagt      300
```

ttgtgaacca gcaactcgaa gaggactggc attttgtgcg gaaatggggc tccctcacag 360

aggttactct atcagtgcag ggtcagatgc tgatactgaa aatgaagcag tgatgtcccc 420

agagcatgcc atgagacttt ggggcagggg ggtcaaatca ggccgcagct cctgcctgtc 480

aagtcggtcc aactcagccc tcaccctgac agatacggag cacgaaaaca agtccgacag 540

tgagaatgag caacctgcaa gcaatcaagg ccagtctacc ctgcagccct tgccgccttc 600

ccataagcag cactctgcac agcatcatcc atccatcact tctctcaaca gaaactccct 660

gaccaataga aggaaccaga gtccggcccc gccggctgct ttgcccgccg agctgcaaac 720

cacacccgag tccgtccagc tgcaggacag ctgggtcctt ggcagtaatg taccactgga 780

aagcaggcat ttcctattca aaacaggaac aggtacaacg ccactgttca gtactgcaac 840

cccaggatac acaatggcat ctggctctgt ttattcacca cctactcggc cactacctag 900

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tgagaatgga aaagtgaatt ctgataccat gccaacaaac actgtgtcat taccttctgg 1140

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tggagtatat ggccggaaag gcttaccgcc ttcccatact cagtatgact tcgtggagct 1380

cctggatggc agcaggctga ttgccagaga gcagcggagc ctgcttgaga cggagagagc 1440

cgggcggcag gcgagatccg tcagccttca tgaggccggc tttatccagt acttggattc 1500

tggaatctgg catctggctt tttataatga tgggaaaaat gcagagcagg tgtcttttaa 1560

taccattgtt atagagtctg tggtggaatg tccccgaaat tgccatggaa atggagaatg 1620

cgtttctgga acttgccatt gttttccagg atttctgggt ccggattgtt caagagccgc 1680

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Cys Arg Val Pro Thr Gln Lys Ser Tyr Ser Ser Ser Glu Thr Leu Lys
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Ala Phe Asp His Asp Ser Ser Arg Leu Leu Tyr Gly Asn Arg Val Lys
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Asp Leu Val His Arg Glu Ala Asp Glu Phe Thr Arg Gln Gly Gln Asn

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Phe Thr Leu Arg Gln Leu Gly Val Cys Glu Pro Ala Thr Arg Arg Gly
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Leu Ala Phe Cys Ala Glu Met Gly Leu Pro His Arg Gly Tyr Ser Ile
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Glu His Ala Met Arg Leu Trp Gly Arg Gly Val Lys Ser Gly Arg Ser
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Ser Cys Leu Ser Ser Arg Ser Asn Ser Ala Leu Thr Leu Thr Asp Thr
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Glu His Glu Asn Lys Ser Asp Ser Glu Asn Glu Gln Pro Ala Ser Asn
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275 280 285

Asn Thr Leu Ser Arg Ser Ala Phe Lys Phe Lys Lys Ser Ser Lys Tyr
290 295 300

Cys Ser Trp Lys Cys Thr Ala Leu Cys Ala Val Gly Val Ser Val Leu
305 310 315 320

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Val Asn Ser Asp Thr Met Pro Thr Asn Thr Val Ser Leu Pro Ser Gly
        355                 360                 365

Asp Asn Gly Lys Leu Gly Gly Phe Thr Gln Glu Asn Asn Thr Ile Asp
    370                 375                 380

Ser Gly Glu Leu Asp Ile Gly Arg Arg Ala Ile Gln Glu Ile Pro Pro
385                 390                 395                 400

Gly Ile Phe Trp Arg Ser Gln Leu Phe Ile Asp Gln Pro Gln Phe Leu
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Lys Phe Asn Ile Ser Leu Gln Lys Asp Ala Leu Ile Gly Val Tyr Gly
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Arg Lys Gly Leu Pro Pro Ser His Thr Gln Tyr Asp Phe Val Glu Leu
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Leu Asp Gly Ser Arg Leu Ile Ala Arg Glu Gln Arg Ser Leu Leu Glu
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Thr Glu Arg Ala Gly Arg Gln Ala Arg Ser Val Ser Leu His Glu Ala
465                 470                 475                 480

Gly Phe Ile Gln Tyr Leu Asp Ser Gly Ile Trp His Leu Ala Phe Tyr
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Asn Asp Gly Lys Asn Ala Glu Gln Val Ser Phe Asn Thr Ile Val Ile
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Glu Ser Val Val Glu Cys Pro Arg Asn Cys His Gly Asn Gly Glu Cys
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Val Ser Gly Thr Cys His Cys Phe Pro Gly Phe Leu Gly Pro Asp Cys
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Ser Arg Ala Ala Cys Pro Val Leu Cys Ser Gly Asn Gly Gln Tyr Ser
545                 550                 555                 560

Lys Gly Arg Cys Leu Cys Phe Ser Gly Trp Lys Gly Thr Glu Cys Asp
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Val Pro Thr Thr Gln Cys Ile Asp Pro Gln Cys Gly Gly Arg Gly Ile
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Cys Ile Met Gly Ser Cys Ala Cys Asn Ser Gly Tyr Lys Gly Glu Ser
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Cys Glu Glu Ala Asp Cys Ile Asp Pro Gly Cys Ser Asn His Gly Val
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Cys Ile His Gly Glu Cys His Cys Ser Pro Gly Trp Gly Gly Ser Asn
625                 630                 635                 640

Cys Glu Ile Leu Lys Thr Met Cys Pro Asp Gln Cys Ser Gly His Gly
                645                 650                 655

Thr Tyr Leu Gln Glu Ser Gly Ser Cys Thr Cys Asp Pro Asn Trp Thr
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Gly Pro Asp Cys Ser Asn Glu Ile Cys Ser Val Asp Cys Gly Ser His
        675                 680                 685

Gly Val Cys Met Gly Gly Thr Cys Arg Cys Glu Glu Gly Trp Thr Gly
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Pro Ala Cys Asn Gln Arg Ala Cys His Pro Arg Cys Ala Glu His Gly
705                 710                 715                 720

Thr Cys Lys Asp Gly Lys Cys Glu Cys Ser Gln Gly Trp Asn Gly Glu
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His Cys Thr Ile Glu Gly Cys Pro Gly Leu Cys Asn Ser Asn Gly Arg
            740                 745                 750

Cys Thr Leu Asp Gln Asn Gly Trp His Cys Val Cys Gln Pro Gly Trp
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Arg Gly Ala Gly Cys Asp Val Ala Met Glu Thr Leu Cys Thr Asp Ser
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Lys Asp Asn Glu Gly Asp Gly Leu Ile Asp Cys Met Asp Pro Asp Cys
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Cys Leu Gln Ser Ser Cys Gln Asn Gln Pro Tyr Cys Arg Gly Leu Pro
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Asp Pro Gln Asp Ile Ile Ser Gln Ser Leu Gln Ser Pro Ser Gln Gln
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Ser Val Ile Arg Gly Gln Val Leu Thr Ala Asp Gly Thr Pro Leu Ile
865                 870                 875                 880

Gly Val Asn Val Ser Phe Phe His Tyr Pro Glu Tyr Gly Tyr Thr Ile
                885                 890                 895

Thr Arg Gln Asp Gly Met Phe Asp Leu Val Ala Asn Gly Gly Ala Ser
            900                 905                 910

Leu Thr Leu Val Phe Glu Arg Ser Pro Phe Leu Thr Gln Tyr His Thr
        915                 920                 925

Val Trp Ile Pro Trp Asn Val Phe Tyr Val Met Asp Thr Leu Val Met
    930                 935                 940

Lys Lys Glu Glu Asn Asp Ile Pro Ser Cys Asp Leu Ser Gly Phe Val
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Arg Pro Asn Pro Ile Ile Val Ser Ser Pro Leu Ser Thr Phe Phe Arg
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Ser Ser Pro Glu Asp Ser Pro Ile Ile Pro Glu Thr Gln Val Leu His
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Glu Glu Thr Thr Ile Pro Gly Thr  Asp Leu Lys Leu Ser  Tyr Leu Ser
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Ser Arg  Ala Ala Gly Tyr Lys  Ser Val Leu Lys Ile  Thr Met Thr
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Ala Val  Val Gly Arg Leu Phe  Gln Lys Trp Phe Pro  Ala Ser Pro
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Gln Lys  Val Tyr Gly Leu Ser  Glu Ala Val Val Ser  Val Gly Tyr
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Trp Thr  Leu Asp Lys His His  Val Leu Asp Val Gln  Asn Gly Ile
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Leu Tyr  Lys Gly Asn Gly Glu  Asn Gln Phe Ile Ser  Gln Gln Pro
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Ser Cys  Pro Ser Cys Asn Gly  Gln Ala Asp Gly Asn  Lys Leu Leu
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Ala Pro  Val Ala Leu Ala Cys  Gly Ile Asp Gly Ser  Leu Tyr Val
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Gly Asp  Phe Asn Tyr Val Arg  Arg Ile Phe Pro Ser  Gly Asn Val
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Leu Ala  Thr Asp Pro Val Thr  Gly Asp Leu Tyr Val  Ser Asp Thr
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Cys Leu  Pro Phe Asp Glu Ala  Arg Cys Gly Asp Gly  Gly Lys Ala
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Val Glu  Ala Thr Leu Met Ser  Pro Lys Gly Met Ala  Val Asp Lys
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Gln Val  Arg Leu Glu Trp Pro  Thr Asp Leu Ala Ile  Asn Pro Met
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Asp Asn  Ser Ile Tyr Val Leu  Asp Asn Asn Val Val  Leu Gln Ile
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Thr Glu  Asn Arg Gln Val Arg  Ile Ala Ala Gly Arg  Pro Met His
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Cys Gln  Val Pro Gly Val Glu  Tyr Pro Val Gly Lys  His Ala Val
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Gln Thr  Thr Leu Glu Ser Ala  Thr Ala Ile Ala Val  Ser Tyr Ser
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Gly Val  Leu Tyr Ile Thr Glu  Thr Asp Glu Lys Lys  Ile Asn Arg
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Ile Arg  Gln Val Thr Thr Asp  Gly Glu Ile Ser Leu  Val Ala Gly
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Ile Pro  Ser Glu Cys Asp Cys  Lys Asn Asp Ala Asn  Cys Asp Cys
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Tyr Gln  Ser Gly Asp Gly Tyr  Ala Lys Asp Ala Lys  Leu Ser Ala
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Pro Ser  Ser Leu Ala Ala Ser  Pro Asp Gly Thr Leu  Tyr Ile Ala
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Asp Leu  Gly Asn Ile Arg Ile  Arg Ala Val Ser Lys  Asn Lys Pro
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Leu Leu  Asn Ser Met Asn Phe  Tyr Glu Val Ala Ser  Pro Thr Asp
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Gln Glu  Leu Tyr Ile Phe Asp  Ile Asn Gly Thr His  Gln Tyr Thr
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Val Ser  Leu Val Thr Gly Asp  Tyr Leu Tyr Asn Phe  Ser Tyr Ser
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Ser Pro  Asp Asn Gln Val Ile  Trp Leu Thr Ile Gly  Thr Asn Gly
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Cys Leu  Lys Ser Met Thr Ala  Gln Gly Leu Glu Leu  Val Leu Phe
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Thr Tyr  His Gly Asn Ser Gly  Leu Leu Ala Thr Lys  Ser Asp Glu
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Thr Gly  Trp Thr Thr Phe Phe  Asp Tyr Asp Ser Glu  Gly Arg Leu
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Thr Asn  Val Thr Phe Pro Thr  Gly Val Val Thr Asn  Leu His Gly
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Asp Met  Asp Lys Ala Ile Thr  Val Asp Ile Glu Ser  Ser Ser Arg
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Glu Glu  Asp Val Ser Ile Thr  Ser Asn Leu Ser Ser  Ile Asp Ser
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Phe Tyr  Thr Met Val Gln Asp  Gln Leu Arg Asn Ser  Tyr Gln Ile
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Gly Tyr  Asp Gly Ser Leu Arg  Ile Ile Tyr Ala Ser  Gly Leu Asp
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Ser His  Tyr Gln Thr Glu Pro  His Val Leu Ala Gly  Thr Ala Asn
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Pro Thr  Val Ala Lys Arg Asn  Met Thr Leu Pro Gly  Glu Asn Gly
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Gln Asn  Leu Val Glu Trp Arg  Phe Arg Lys Glu Gln  Ala Gln Gly
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Lys Val  Asn Val Phe Gly Arg  Lys Leu Arg Val Asn  Gly Arg Asn
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Leu Leu  Ser Val Asp Phe Asp  Arg Thr Thr Lys Thr  Glu Lys Ile
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Tyr Asp  Asp His Arg Lys Phe  Leu Leu Arg Ile Ala  Tyr Asp Thr
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Ser Gly  His Pro Thr Leu Trp  Leu Pro Ser Ser Lys  Leu Met Ala
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Val Asn  Val Thr Tyr Ser Ser  Thr Gly Gln Ile Ala  Ser Ile Gln
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Arg Gly  Thr Thr Ser Glu Lys  Val Asp Tyr Asp Gly  Gln Gly Arg
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Ile Val  Ser Arg Val Phe Ala  Asp Gly Lys Thr Trp  Ser Tyr Thr
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Tyr Leu  Glu Lys Ser Met Val  Leu Leu Leu His Ser  Gln Arg Gln
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Tyr Ile  Phe Glu Tyr Asp Met  Trp Asp Arg Leu Ser  Ala Ile Thr
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Met Pro  Ser Val Ala Arg His  Thr Met Gln Thr Ile  Arg Ser Ile
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Gly Tyr  Tyr Arg Asn Ile Tyr  Asn Pro Pro Glu Ser  Asn Ala Ser
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Ile Ile  Thr Asp Tyr Asn Glu  Glu Gly Leu Leu Leu  Gln Thr Ala
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Phe Leu  Gly Thr Ser Arg Arg  Val Leu Phe Lys Tyr  Arg Arg Gln
    1940                 1945                 1950

Thr Arg  Leu Ser Glu Ile Leu  Tyr Asp Ser Thr Arg  Val Ser Phe
    1955                 1960                 1965

Thr Tyr  Asp Glu Thr Ala Gly  Val Leu Lys Thr Val  Asn Leu Gln
    1970                 1975                 1980

Ser Asp  Gly Phe Ile Cys Thr  Ile Arg Tyr Arg Gln  Ile Gly Pro
    1985                 1990                 1995

Leu Ile  Asp Arg Gln Ile Phe  Arg Phe Ser Glu Asp  Gly Met Val
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Asn Ala  Arg Phe Asp Tyr Ser  Tyr Asp Asn Ser Phe  Arg Val Thr
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Tyr Gln Phe Asp Asp Ile Ser Gly Lys Val Glu Gln Phe Gly Lys
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Phe Gly Val Ile Tyr Tyr Asp Ile Asn Gln Ile Ile Ser Thr Ala
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Val Met Thr Tyr Thr Lys His Phe Asp Ala His Gly Arg Ile Lys
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Met Glu  Ile Ser Ser Gly Asp  Glu Phe Tyr Ile Ala  Ser Asp Asn
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Thr Gly  Thr Pro Leu Ala Val  Phe Ser Ser Asn Gly  Leu Met Leu
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Lys Gln  Ile Gln Tyr Thr Ala  Tyr Gly Glu Ile Tyr  Phe Asp Ser
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Asp Pro  Leu Thr Lys Leu Ile  His Phe Gly Glu Arg  Asp Tyr Asp
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Ile Leu  Ala Gly Arg Trp Thr  Thr Pro Asp Ile Glu  Ile Trp Lys
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Arg Ile  Gly Lys Asp Pro Ala  Pro Phe Asn Leu Tyr  Met Phe Arg
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Asn Asn  Asn Pro Ala Ser Lys  Ile His Asp Val Lys  Asp Tyr Ile
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Thr Asp  Val Asn Ser Trp Leu  Val Thr Phe Gly Phe  His Leu His
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Asn Ala  Ile Pro Gly Phe Pro  Val Pro Lys Phe Asp  Leu Thr Glu
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Pro Ser  Tyr Glu Leu Val Lys  Ser Gln Gln Trp Asp  Asp Ile Pro
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Pro Ile  Phe Gly Val Gln Gln  Gln Val Ala Arg Gln  Ala Lys Ala
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Phe Leu  Ser Leu Gly Lys Met  Ala Glu Val Gln Val  Ser Arg Arg
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Arg Ala  Gly Gly Ala Gln Ser  Trp Leu Trp Phe Ala  Thr Val Lys
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Ser Leu  Ile Gly Lys Gly Val  Met Leu Ala Val Ser  Gln Gly Arg
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Val Ala  Ala Val Leu Asn Asn  Ala Phe Tyr Leu Glu  Asn Leu His
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Phe Thr  Ile Glu Gly Lys Asp  Thr His Tyr Phe Ile  Lys Thr Thr
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Thr Pro  Glu Ser Asp Leu Gly  Thr Leu Arg Leu Thr  Ser Gly Arg
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Lys Ala  Leu Glu Asn Gly Ile  Asn Val Thr Val Ser  Gln Ser Thr
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Thr Val  Val Asn Gly Arg Thr  Arg Arg Phe Ala Asp  Val Glu Met
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Gln Phe  Gly Ala Leu Ala Leu  His Val Arg Tyr Gly  Met Thr Leu
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Leu Ser  Ala Gly Lys Val Gln  Gly Tyr Asp Gly Tyr  Tyr Val Leu
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Ser Val  Glu Gln Tyr Pro Glu  Leu Ala Asp Ser Ala  Asn Asn Ile
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Gln Ile Lys Ala Phe Thr Ala Leu Arg Phe Leu Ser Glu Pro Ser Asp
35 40 45

Ala Val Thr Met Arg Gly Gly Asn Val Leu Leu Asp Cys Ser Ala Glu
50 55 60

Ser Asp Arg Gly Val Pro Val Ile Lys Trp Lys Lys Asp Gly Ile His
65 70 75 80

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

Leu Leu Ile Gln Asn Ile Leu His Ser Arg His His Lys Pro Asp Glu
100 105 110

```
Gly Leu Tyr Gln Cys Glu Ala Ser Leu Gly Asp Ser Gly Ser Ile Ile
        115                 120                 125

Ser Arg Thr Ala Lys Val Ala Val Ala Gly Pro Leu Arg Phe Leu Ser
    130                 135                 140

Gln Thr Glu Ser Val Thr Ala Phe Met Gly Asp Thr Val Leu Leu Lys
145                 150                 155                 160

Cys Glu Val Ile Gly Glu Pro Met Pro Thr Ile His Trp Gln Lys Asn
                165                 170                 175

Gln Gln Asp Leu Thr Pro Ile Pro Gly Asp Ser Arg Val Val Val Leu
            180                 185                 190

Pro Ser Gly Ala Leu Gln Ile Ser Arg Leu Gln Pro Gly Asp Ile Gly
        195                 200                 205

Ile Tyr Arg Cys Ser Ala Arg Asn Pro Ala Ser Ser Arg Thr Gly Asn
    210                 215                 220

Glu Ala Glu Val Arg Ile Leu Ser Asp Pro Gly Leu His Arg Gln Leu
225                 230                 235                 240

Tyr Phe Leu Gln Arg Pro Ser Asn Val Val Ala Ile Glu Gly Lys Asp
                245                 250                 255

Ala Val Leu Glu Cys Cys Val Ser Gly Tyr Pro Pro Pro Ser Phe Thr
            260                 265                 270

Trp Leu Arg Gly Glu Glu Val Ile Gln Leu Arg Ser Lys Lys Tyr Ser
        275                 280                 285

Leu Leu Gly Gly Ser Asn Leu Leu Ile Ser Asn Val Thr Asp Asp Asp
    290                 295                 300

Ser Gly Met Tyr Thr Cys Val Val Thr Tyr Lys Asn Glu Asn Ile Ser
305                 310                 315                 320

Ala Ser Ala Glu Leu Thr Val Leu Val Pro Pro Trp Phe Leu Asn His
                325                 330                 335

Pro Ser Asn Leu Tyr Ala Tyr Glu Ser Met Asp Ile Glu Phe Glu Cys
            340                 345                 350

Thr Val Ser Gly Lys Pro Val Pro Thr Val Asn Trp Met Lys Asn Gly
        355                 360                 365
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Asp Val Val Ile Pro Ser Asp Tyr Phe Gln Ile Val Gly Gly Ser Asn
    370                 375                 380

Leu Arg Ile Leu Gly Val Val Lys Ser Asp Glu Gly Phe Tyr Gln Cys
385                 390                 395                 400

Val Ala Glu Asn Glu Ala Gly Asn Ala Gln Thr Ser Ala Gln Leu Ile
                405                 410                 415

Val Pro Lys Pro Ala Ile Pro Ser Ser Ser Val Leu Pro Ser Ala Pro
            420                 425                 430

Arg Asp Val Val Pro Val Leu Val Ser Ser Arg Phe Val Arg Leu Ser
        435                 440                 445

Trp Arg Pro Pro Ala Glu Ala Lys Gly Asn Ile Gln Thr Phe Thr Val
    450                 455                 460

Phe Phe Ser Arg Glu Gly Asp Asn Arg Glu Arg Ala Leu Asn Thr Thr
465                 470                 475                 480

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

Met Tyr Thr Phe Arg Val Val Ala Tyr Asn Glu Trp Gly Pro Gly Glu
            500                 505                 510

Ser Ser Gln Pro Ile Lys Val Ala Thr Gln Pro Glu Leu Gln Val Pro
        515                 520                 525

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

Leu Ile Thr Trp Glu Pro Pro Ala Tyr Ala Asn Gly Pro Val Gln Gly
545                 550                 555                 560

Tyr Arg Leu Phe Cys Thr Glu Val Ser Thr Gly Lys Glu Gln Asn Ile
                565                 570                 575

Glu Val Asp Gly Leu Ser Tyr Lys Leu Glu Gly Leu Lys Lys Phe Thr
            580                 585                 590

Glu Tyr Ser Leu Arg Phe Leu Ala Tyr Asn Arg Tyr Gly Pro Gly Val
        595                 600                 605

Ser Thr Asp Asp Ile Thr Val Val Thr Leu Ser Asp Val Pro Ser Ala
    610                 615                 620
```

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Pro Pro Gln Asn Val Ser Leu Glu Val Val Asn Ser Arg Ser Ile Lys
625                 630                 635                 640

Val Ser Trp Leu Pro Pro Pro Ser Gly Thr Gln Asn Gly Phe Ile Thr
                645                 650                 655

Gly Tyr Lys Ile Arg His Arg Lys Thr Thr Arg Arg Gly Glu Met Glu
            660                 665                 670

Thr Leu Glu Pro Asn Asn Leu Trp Tyr Leu Phe Thr Gly Leu Glu Lys
        675                 680                 685

Gly Ser Gln Tyr Ser Phe Gln Val Ser Ala Met Thr Val Asn Gly Thr
    690                 695                 700

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

Asp Glu Ser Gln Val Pro Asp Gln Pro Ser Ser Leu His Val Arg Pro
                725                 730                 735

Gln Thr Asn Cys Ile Ile Met Ser Trp Thr Pro Pro Leu Asn Pro Asn
            740                 745                 750

Ile Val Val Arg Gly Tyr Ile Ile Gly Tyr Gly Val Gly Ser Pro Tyr
        755                 760                 765

Ala Glu Thr Val Arg Val Asp Ser Lys Gln Arg Tyr Tyr Ser Ile Glu
    770                 775                 780

Arg Leu Glu Ser Ser Ser His Tyr Val Ile Ser Leu Lys Ala Phe Asn
785                 790                 795                 800

Asn Ala Gly Glu Gly Val Pro Leu Tyr Glu Ser Ala Thr Thr Arg Ser
                805                 810                 815

Ile Thr Asp Pro Thr Asp Pro Val Asp Tyr Tyr Pro Leu Leu Asp Asp
            820                 825                 830

Phe Pro Thr Ser Val Pro Asp Leu Ser Thr Pro Met Leu Pro Pro Val
        835                 840                 845

Gly Val Gln Ala Val Ala Leu Thr His Asp Ala Val Arg Val Ser Trp
    850                 855                 860

Ala Asp Asn Ser Val Pro Lys Asn Gln Lys Thr Ser Glu Val Arg Leu
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Tyr Thr Val Arg Trp Arg Thr Ser Phe Ser Ala Ser Ala Lys Tyr Lys
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Ser Glu Asp Thr Thr Ser Leu Ser Tyr Thr Ala Thr Gly Leu Lys Pro
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Asn Thr Met Tyr Glu Phe Ser Val Met Val Thr Lys Asn Arg Arg Ser
915 920 925

Ser Thr Trp Ser Met Thr Ala His Ala Thr Thr Tyr Glu Ala Ala Pro
930 935 940

Thr Ser Ala Pro Lys Asp Leu Thr Val Ile Thr Arg Glu Gly Lys Pro
945 950 955 960

Arg Ala Val Ile Val Ser Trp Gln Pro Pro Leu Glu Ala Asn Gly Lys
965 970 975

Ile Thr Ala Tyr Ile Leu Phe Tyr Thr Leu Asp Lys Asn Ile Pro Ile
980 985 990

Asp Asp Trp Ile Met Glu Thr Ile Ser Gly Asp Arg Leu Thr His Gln
995 1000 1005

Ile Met Asp Leu Asn Leu Asp Thr Met Tyr Tyr Phe Arg Ile Gln
1010 1015 1020

Ala Arg Asn Ser Lys Gly Val Gly Pro Leu Ser Asp Pro Ile Leu
1025 1030 1035

Phe Arg Thr Leu Lys Val Glu His Pro Asp Lys Met Ala Asn Asp
1040 1045 1050

Gln Gly Arg His Gly Asp Gly Gly Tyr Trp Pro Val Asp Thr Asn
1055 1060 1065

Leu Ile Asp Arg Ser Thr Leu Asn Glu Pro Pro Ile Gly Gln Met
1070 1075 1080

His Pro Pro His Gly Ser Val Thr Pro Gln Lys Asn Ser Asn Leu
1085 1090 1095

Leu Val Ile Ile Val Val Thr Val Gly Val Ile Thr Val Leu Val
1100 1105 1110

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Val Val  Ile Val Ala Val Ile  Cys Thr Arg Arg Ser  Ser Ala Gln
    1115                 1120                 1125

Gln Arg  Lys Lys Arg Ala Thr  His Ser Ala Gly Lys  Arg Lys Gly
    1130                 1135                 1140

Ser Gln  Lys Asp Leu Arg Pro  Pro Asp Leu Trp Ile  His His Glu
    1145                 1150                 1155

Glu Met  Glu Met Lys Asn Ile  Glu Lys Pro Ser Gly  Thr Asp Pro
    1160                 1165                 1170

Ala Gly  Arg Asp Ser Pro Ile  Gln Ser Cys Gln Asp  Leu Thr Pro
    1175                 1180                 1185

Val Ser  His Ser Gln Ser Glu  Thr Gln Leu Gly Ser  Lys Ser Thr
    1190                 1195                 1200

Ser His  Ser Gly Gln Asp Thr  Glu Glu Ala Gly Ser  Ser Met Ser
    1205                 1210                 1215

Thr Leu  Glu Arg Ser Leu Ala  Ala Arg Arg Ala Pro  Arg Ala Lys
    1220                 1225                 1230

Leu Met  Ile Pro Met Asp Ala  Gln Ser Asn Asn Pro  Ala Val Val
    1235                 1240                 1245

Ser Ala  Ile Pro Val Pro Thr  Leu Glu Ser Ala Gln  Tyr Pro Gly
    1250                 1255                 1260

Ile Leu  Pro Ser Pro Thr Cys  Gly Tyr Pro His Pro  Gln Phe Thr
    1265                 1270                 1275

Leu Arg  Pro Val Pro Phe Pro  Thr Leu Ser Val Asp  Arg Gly Phe
    1280                 1285                 1290

Gly Ala  Gly Arg Ser Gln Ser  Val Ser Glu Gly Pro  Thr Thr Gln
    1295                 1300                 1305

Gln Pro  Pro Met Leu Pro Pro  Ser Gln Pro Glu His  Ser Ser Ser
    1310                 1315                 1320

Glu Glu  Ala Pro Ser Arg Thr  Ile Pro Thr Ala Cys  Val Arg Pro
    1325                 1330                 1335

Thr His  Pro Leu Arg Ser Phe  Ala Asn Pro Leu Leu  Pro Pro Pro
    1340                 1345                 1350
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Met Ser Ala Ile Glu Pro Lys Val Pro Tyr Thr Pro Leu Leu Ser
1355 1360 1365

Gln Pro Gly Pro Thr Leu Pro Lys Thr His Val Lys Thr Ala Ser
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Leu Gly Leu Ala Gly Lys Ala Arg Ser Pro Leu Leu Pro Val Ser
1385 1390 1395

Val Pro Thr Ala Pro Glu Val Ser Glu Glu Ser His Lys Pro Thr
1400 1405 1410

Glu Asp Ser Ala Asn Val Tyr Glu Gln Asp Asp Leu Ser Glu Gln
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Met Ala Ser Leu Glu Gly Leu Met Lys Gln Leu Asn Ala Ile Thr
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Arg Gln Gln Tyr Val Gly Lys Val Lys Phe Ala Ser Leu Glu Phe Ser
        35                  40                  45

Pro Gly Ser Lys Lys Leu Val Val Ala Thr Glu Lys Asn Val Ile Ala
    50                  55                  60

Ala Leu Asn Ser Arg Thr Gly Glu Ile Leu Trp Arg His Val Asp Lys
65                  70                  75                  80

Gly Thr Ala Glu Gly Ala Val Asp Ala Met Leu Leu His Gly Gln Asp
                85                  90                  95

Val Ile Thr Val Ser Asn Gly Gly Arg Ile Met Arg Ser Trp Glu Thr
            100                 105                 110

Asn Ile Gly Gly Leu Asn Trp Glu Ile Thr Leu Asp Ser Gly Ser Phe
        115                 120                 125

Gln Ala Leu Gly Leu Val Gly Leu Gln Glu Ser Val Arg Tyr Ile Ala
    130                 135                 140

Val Leu Lys Lys Thr Thr Leu Ala Leu His His Leu Ser Ser Gly His
145                 150                 155                 160

Leu Lys Trp Val Glu His Leu Pro Glu Ser Asp Ser Ile His Tyr Gln
                165                 170                 175

Met Val Tyr Ser Tyr Gly Ser Gly Val Val Trp Ala Leu Gly Val Val
            180                 185                 190

Pro Phe Ser His Val Asn Ile Val Lys Phe Asn Val Glu Asp Gly Glu
        195                 200                 205

Ile Val Gln Gln Val Arg Val Ser Thr Pro Trp Leu Gln His Leu Ser
    210                 215                 220

Gly Ala Cys Gly Val Val Asp Glu Ala Val Leu Val Cys Pro Asp Pro
225                 230                 235                 240

Ser Ser Arg Ser Leu Gln Thr Leu Ala Leu Glu Thr Glu Trp Glu Leu
                245                 250                 255

Arg Gln Ile Pro Leu Gln Ser Leu Asp Leu Glu Phe Gly Ser Gly Phe
            260                 265                 270
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Gln Pro Arg Val Leu Pro Thr Gln Pro Asn Pro Val Asp Ala Ser Arg
        275                 280                 285

Ala Gln Phe Phe Leu His Leu Ser Pro Ser His Tyr Ala Leu Leu Gln
    290                 295                 300

Tyr His Tyr Gly Thr Leu Ser Leu Leu Lys Asn Phe Pro Gln Thr Ala
305                 310                 315                 320

Leu Val Ser Phe Ala Thr Thr Gly Glu Lys Thr Val Ala Ala Val Met
                325                 330                 335

Ala Cys Arg Asn Glu Val Gln Lys Ser Ser Ser Ser Glu Asp Gly Ser
            340                 345                 350

Met Gly Ser Phe Ser Glu Lys Ser Ser Ser Lys Asp Ser Leu Ala Cys
        355                 360                 365

Phe Asn Gln Thr Tyr Thr Ile Asn Leu Tyr Leu Val Glu Thr Gly Arg
    370                 375                 380

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

Arg Pro Glu Arg Leu Tyr Ile Gln Val Phe Leu Lys Lys Asp Asp Ser
                405                 410                 415

Val Gly Tyr Arg Ala Leu Val Gln Thr Glu Asp His Leu Leu Leu Phe
            420                 425                 430

Leu Gln Gln Leu Ala Gly Lys Val Val Leu Trp Ser Arg Glu Glu Ser
        435                 440                 445

Leu Ala Glu Val Val Cys Leu Glu Met Val Asp Leu Pro Leu Thr Gly
    450                 455                 460

Ala Gln Ala Glu Leu Glu Gly Glu Phe Gly Lys Lys Ala Asp Gly Leu
465                 470                 475                 480

Leu Gly Met Phe Leu Lys Arg Leu Ser Ser Gln Leu Ile Leu Leu Gln
                485                 490                 495

Ala Trp Thr Ser His Leu Trp Lys Met Phe Tyr Asp Ala Arg Lys Pro
            500                 505                 510

Arg Ser Gln Ile Lys Asn Glu Ile Asn Ile Asp Thr Leu Ala Arg Asp
        515                 520                 525
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Glu Phe Asn Leu Gln Lys Met Met Val Met Val Thr Ala Ser Gly Lys
    530                 535                 540

Leu Phe Gly Ile Glu Ser Ser Ser Gly Thr Ile Leu Trp Lys Gln Tyr
545                 550                 555                 560

Leu Pro Asn Val Lys Pro Asp Ser Ser Phe Lys Leu Met Val Gln Arg
                565                 570                 575

Thr Thr Ala His Phe Pro His Pro Pro Gln Cys Thr Leu Leu Val Lys
            580                 585                 590

Asp Lys Glu Ser Gly Met Ser Ser Leu Tyr Val Phe Asn Pro Ile Phe
        595                 600                 605

Gly Lys Trp Ser Gln Val Ala Pro Pro Val Leu Lys Arg Pro Ile Leu
    610                 615                 620

Gln Ser Leu Leu Leu Pro Val Met Asp Gln Asp Tyr Ala Lys Val Leu
625                 630                 635                 640

Leu Leu Ile Asp Asp Glu Tyr Lys Val Thr Ala Phe Pro Ala Thr Arg
                645                 650                 655

Asn Val Leu Arg Gln Leu His Glu Leu Ala Pro Ser Ile Phe Phe Tyr
            660                 665                 670

Leu Val Asp Ala Glu Gln Gly Arg Leu Cys Gly Tyr Arg Leu Arg Lys
        675                 680                 685

Asp Leu Thr Thr Glu Leu Ser Trp Glu Leu Thr Ile Pro Pro Glu Val
    690                 695                 700

Gln Arg Ile Val Lys Val Lys Gly Lys Arg Ser Ser Glu His Val His
705                 710                 715                 720

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

Asn Pro Asn Leu Leu Ala Val Val Thr Glu Ser Thr Asp Ala His His
            740                 745                 750

Glu Arg Thr Phe Ile Gly Ile Phe Leu Ile Asp Gly Val Thr Gly Arg
        755                 760                 765

Ile Ile His Ser Ser Val Gln Lys Lys Ala Lys Gly Pro Val His Ile
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    770                 775                 780

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Tyr Asn Ala Thr Ala Phe Ser Ser Leu Asp Arg Pro Gln Leu Pro Gln
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Val Leu Gln Gln Ser Tyr Ile Phe Pro Ser Ser Ile Ser Ala Met Glu
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Ala Thr Ile Thr Glu Arg Gly Ile Thr Ser Arg His Leu Leu Ile Gly
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Leu Pro Ser Gly Ala Ile Leu Ser Leu Pro Lys Ala Leu Leu Asp Pro
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Arg Arg Pro Glu Ile Pro Thr Glu Gln Ser Arg Glu Glu Asn Leu Ile
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Pro Tyr Ser Pro Asp Val Gln Ile His Ala Glu Arg Phe Ile Asn Tyr
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Asn Gln Thr Val Ser Arg Met Arg Gly Ile Tyr Thr Ala Pro Ser Gly
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Leu Glu Ser Thr Cys Leu Val Val Ala Tyr Gly Leu Asp Ile Tyr Gln
    930                 935                 940

Thr Arg Val Tyr Pro Ser Lys Gln Phe Asp Val Leu Lys Asp Asp Tyr
945                 950                 955                 960

Asp Tyr Val Leu Ile Ser Ser Val Leu Phe Gly Leu Val Phe Ala Thr
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Arg Asp Lys Arg Gln Gln Arg Gln Gln Arg Gln Arg Gln His Gln Gly
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Cys Gly Ala Ala Gly Ser Gly Ser Asp Ser Pro Thr Ser Gly Pro His
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Leu Pro Pro Leu Pro Leu Gly Arg Ala Pro Gly Leu Leu Ala Arg Glu
            100                 105                 110

Gly Gln Gly Arg Glu Ala Leu Ala Ser Pro Ser Ser Arg Gly Gln Met
        115                 120                 125

Pro Ile Glu Ile Val Cys Lys Ile Lys Phe Ala Glu Glu Asp Ala Lys
    130                 135                 140

Pro Lys Glu Lys Glu Ala Gly Asp Glu Gln Ser Leu Leu Gly Ala Val
145                 150                 155                 160

Ala Pro Gly Ala Ala Pro Arg Asp Leu Ala Thr Phe Ala Ser Thr Ser
                165                 170                 175

Thr Leu His Gly Leu Gly Arg Ala Cys Gly Pro Gly Pro His Gly Leu
            180                 185                 190

Arg Arg Thr Leu Trp Ala Leu Ala Leu Leu Thr Ser Leu Ala Ala Phe
        195                 200                 205

Leu Tyr Gln Ala Ala Gly Leu Ala Arg Gly Tyr Leu Thr Arg Pro His
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Leu Val Ala Met Asp Pro Ala Ala Pro Ala Pro Val Ala Gly Phe Pro
225                 230                 235                 240

Ala Val Thr Leu Cys Asn Ile Asn Arg Phe Arg His Ser Ala Leu Ser
                245                 250                 255

Asp Ala Asp Ile Phe His Leu Ala Asn Leu Thr Gly Leu Pro Pro Lys
            260                 265                 270

Asp Arg Asp Gly His Arg Ala Ala Gly Leu Arg Tyr Pro Glu Pro Asp
        275                 280                 285

Met Val Asp Ile Leu Asn Arg Thr Gly His Gln Leu Ala Asp Met Leu
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Lys Ser Cys Asn Phe Ser Gly His His Cys Ser Ala Ser Asn Phe Ser
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Val Val Tyr Thr Arg Tyr Gly Lys Cys Tyr Thr Phe Asn Ala Asp Pro
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Gln Glu Glu Pro Pro Tyr Ile His Gln Leu Gly Phe Gly Val Ser Pro
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Gly Phe Gln Thr Phe Val Ser Cys Gln Glu Gln Arg Leu Thr Tyr Leu
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Ser Gln Arg Lys Arg Gln Gln Tyr Ala Lys Ser Lys Lys Gln Gly Asn
85 90 95

Ser Ser Asn Ser Arg Pro Ala Arg Ala Leu Phe Cys Leu Ser Leu Asn

```
            100                 105                 110

Asn Pro Ile Arg Arg Ala Cys Ile Ser Ile Val Glu Trp Lys Pro Phe
        115                 120                 125

Asp Ile Phe Ile Leu Leu Ala Ile Phe Ala Asn Cys Val Ala Leu Ala
    130                 135                 140

Ile Tyr Ile Pro Phe Pro Glu Asp Asp Ser Asn Ser Thr Asn His Asn
145                 150                 155                 160

Leu Glu Lys Val Glu Tyr Ala Phe Leu Ile Ile Phe Thr Val Glu Thr
                165                 170                 175

Phe Leu Lys Ile Ile Ala Tyr Gly Leu Leu Leu His Pro Asn Ala Tyr
            180                 185                 190

Val Arg Asn Gly Trp Asn Leu Leu Asp Phe Val Ile Val Ile Val Gly
        195                 200                 205

Leu Phe Ser Val Ile Leu Glu Gln Leu Thr Lys Glu Thr Glu Gly Gly
    210                 215                 220

Asn His Ser Ser Gly Lys Ser Gly Gly Phe Asp Val Lys Ala Leu Arg
225                 230                 235                 240

Ala Phe Arg Val Leu Arg Pro Leu Arg Leu Val Ser Gly Val Pro Ser
                245                 250                 255

Leu Gln Val Val Leu Asn Ser Ile Ile Lys Ala Met Val Pro Leu Leu
            260                 265                 270

His Ile Ala Leu Leu Val Leu Phe Val Ile Ile Ile Tyr Ala Ile Ile
        275                 280                 285

Gly Leu Glu Leu Phe Ile Gly Lys Met His Lys Thr Cys Phe Phe Ala
    290                 295                 300

Asp Ser Asp Ile Val Ala Glu Glu Asp Pro Ala Pro Cys Ala Phe Ser
305                 310                 315                 320

Gly Asn Gly Arg Gln Cys Thr Ala Asn Gly Thr Glu Cys Arg Ser Gly
                325                 330                 335

Trp Val Gly Pro Asn Gly Gly Ile Thr Asn Phe Asp Asn Phe Ala Phe
            340                 345                 350
```

```
Ala Met Leu Thr Val Phe Gln Cys Ile Thr Met Glu Gly Trp Thr Asp
        355                 360                 365

Val Leu Tyr Trp Met Asn Asp Ala Met Gly Phe Glu Leu Pro Trp Val
    370                 375                 380

Tyr Phe Val Ser Leu Val Ile Phe Gly Ser Phe Phe Val Leu Asn Leu
385                 390                 395                 400

Val Leu Gly Val Leu Ser Gly Glu Phe Ser Lys Glu Arg Glu Lys Ala
                405                 410                 415

Lys Ala Arg Gly Asp Phe Gln Lys Leu Arg Glu Lys Gln Gln Leu Glu
            420                 425                 430

Glu Asp Leu Lys Gly Tyr Leu Asp Trp Ile Thr Gln Ala Glu Asp Ile
        435                 440                 445

Asp Pro Glu Asn Glu Glu Glu Gly Gly Glu Glu Gly Lys Arg Asn Thr
    450                 455                 460

Ser Met Pro Thr Ser Glu Thr Glu Ser Val Asn Thr Glu Asn Val Ser
465                 470                 475                 480

Gly Glu Gly Glu Asn Arg Gly Cys Cys Gly Ser Leu Cys Gln Ala Ile
                485                 490                 495

Ser Lys Ser Lys Leu Ser Arg Arg Trp Arg Arg Trp Asn Arg Phe Asn
            500                 505                 510

Arg Arg Arg Cys Arg Ala Ala Val Lys Ser Val Thr Phe Tyr Trp Leu
        515                 520                 525

Val Ile Val Leu Val Phe Leu Asn Thr Leu Thr Ile Ser Ser Glu His
    530                 535                 540

Tyr Asn Gln Pro Asp Trp Leu Thr Gln Ile Gln Asp Ile Ala Asn Lys
545                 550                 555                 560

Val Leu Leu Ala Leu Phe Thr Cys Glu Met Leu Val Lys Met Tyr Ser
                565                 570                 575

Leu Gly Leu Gln Ala Tyr Phe Val Ser Leu Phe Asn Arg Phe Asp Cys
            580                 585                 590

Phe Val Val Cys Gly Gly Ile Thr Glu Thr Ile Leu Val Glu Leu Glu
        595                 600                 605
```

```
Ile Met Ser Pro Leu Gly Ile Ser Val Phe Arg Cys Val Arg Leu Leu
    610                 615                 620

Arg Ile Phe Lys Val Thr Arg His Trp Thr Ser Leu Ser Asn Leu Val
625                 630                 635                 640

Ala Ser Leu Leu Asn Ser Met Lys Ser Ile Ala Ser Leu Leu Leu Leu
                645                 650                 655

Leu Phe Leu Phe Ile Ile Ile Phe Ser Leu Leu Gly Met Gln Leu Phe
            660                 665                 670

Gly Gly Lys Phe Asn Phe Asp Glu Thr Gln Thr Lys Arg Ser Thr Phe
        675                 680                 685

Asp Asn Phe Pro Gln Ala Leu Leu Thr Val Phe Gln Ile Leu Thr Gly
    690                 695                 700

Glu Asp Trp Asn Ala Val Met Tyr Asp Gly Ile Met Ala Tyr Gly Gly
705                 710                 715                 720

Pro Ser Ser Ser Gly Met Ile Val Cys Ile Tyr Phe Ile Ile Leu Phe
                725                 730                 735

Ile Cys Gly Asn Tyr Ile Leu Leu Asn Val Phe Leu Ala Ile Ala Val
            740                 745                 750

Asp Asn Leu Ala Asp Ala Glu Ser Leu Asn Thr Ala Gln Lys Glu Glu
        755                 760                 765

Ala Glu Glu Lys Glu Arg Lys Lys Ile Ala Arg Lys Glu Ser Leu Glu
    770                 775                 780

Asn Lys Lys Asn Asn Lys Pro Glu Val Asn Gln Ile Ala Asn Ser Asp
785                 790                 795                 800

Asn Lys Val Thr Ile Asp Asp Tyr Arg Glu Glu Asp Glu Asp Lys Asp
                805                 810                 815

Pro Tyr Pro Pro Cys Asp Val Pro Val Gly Glu Glu Glu Glu Glu Glu
            820                 825                 830

Glu Glu Asp Glu Pro Glu Val Pro Ala Gly Pro Arg Pro Arg Arg Ile
        835                 840                 845

Ser Glu Leu Asn Met Lys Glu Lys Ile Ala Pro Ile Pro Glu Gly Ser
    850                 855                 860
```

```
Ala Phe Phe Ile Leu Ser Lys Thr Asn Pro Ile Arg Val Gly Cys His
865                 870                 875                 880

Lys Leu Ile Asn His His Ile Phe Thr Asn Leu Ile Leu Val Phe Ile
                885                 890                 895

Met Leu Ser Ser Ala Ala Leu Ala Ala Glu Asp Pro Ile Arg Ser His
            900                 905                 910

Ser Phe Arg Asn Thr Ile Leu Gly Tyr Phe Asp Tyr Ala Phe Thr Ala
        915                 920                 925

Ile Phe Thr Val Glu Ile Leu Leu Lys Met Thr Thr Phe Gly Ala Phe
    930                 935                 940

Leu His Lys Gly Ala Phe Cys Arg Asn Tyr Phe Asn Leu Leu Asp Met
945                 950                 955                 960

Leu Val Val Gly Val Ser Leu Val Ser Phe Gly Ile Gln Ser Ser Ala
                965                 970                 975

Ile Ser Val Val Lys Ile Leu Arg Val Leu Arg Val Leu Arg Pro Leu
            980                 985                 990

Arg Ala Ile Asn Arg Ala Lys Gly  Leu Lys His Val Val  Gln Cys Val
        995                 1000                1005

Phe Val  Ala Ile Arg Thr Ile  Gly Asn Ile Met Ile  Val Thr Thr
    1010                1015                1020

Leu Leu  Gln Phe Met Phe Ala  Cys Ile Gly Val Gln  Leu Phe Lys
    1025                1030                1035

Gly Lys  Phe Tyr Arg Cys Thr  Asp Glu Ala Lys Ser  Asn Pro Glu
    1040                1045                1050

Glu Cys  Arg Gly Leu Phe Ile  Leu Tyr Lys Asp Gly  Asp Val Asp
    1055                1060                1065

Ser Pro  Val Val Arg Glu Arg  Ile Trp Gln Asn Ser  Asp Phe Asn
    1070                1075                1080

Phe Asp  Asn Val Leu Ser Ala  Met Met Ala Leu Phe  Thr Val Ser
    1085                1090                1095

Thr Phe  Glu Gly Trp Pro Ala  Leu Leu Tyr Lys Ala  Ile Asp Ser
```

```
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Asn Gly  Glu Asn Ile Gly Pro  Ile Tyr Asn His Arg  Val Glu Ile
    1115                1120                1125

Ser Ile  Phe Phe Ile Ile Tyr  Ile Ile Ile Val Ala  Phe Phe Met
    1130                1135                1140

Met Asn  Ile Phe Val Gly Phe  Val Ile Val Thr Phe  Gln Glu Gln
    1145                1150                1155

Gly Glu  Lys Glu Tyr Lys Asn  Cys Glu Leu Asp Lys  Asn Gln Arg
    1160                1165                1170

Gln Cys  Val Glu Tyr Ala Leu  Lys Ala Arg Pro Leu  Arg Arg Tyr
    1175                1180                1185

Ile Pro  Lys Asn Pro Tyr Gln  Tyr Lys Phe Trp Tyr  Val Val Asn
    1190                1195                1200

Ser Ser  Pro Phe Glu Tyr Met  Met Phe Val Leu Ile  Met Leu Asn
    1205                1210                1215

Thr Leu  Cys Leu Ala Met Gln  His Tyr Glu Gln Ser  Lys Met Phe
    1220                1225                1230

Asn Asp  Ala Met Asp Ile Leu  Asn Met Val Phe Thr  Gly Val Phe
    1235                1240                1245

Thr Val  Glu Met Val Leu Lys  Val Ile Ala Phe Lys  Pro Lys Gly
    1250                1255                1260

Tyr Phe  Ser Asp Ala Trp Asn  Thr Phe Asp Ser Leu  Ile Val Ile
    1265                1270                1275

Gly Ser  Ile Ile Asp Val Ala  Leu Ser Glu Ala Asp  Pro Thr Glu
    1280                1285                1290

Ser Glu  Asn Val Pro Val Pro  Thr Ala Thr Pro Gly  Asn Ser Glu
    1295                1300                1305

Glu Ser  Asn Arg Ile Ser Ile  Thr Phe Phe Arg Leu  Phe Arg Val
    1310                1315                1320

Met Arg  Leu Val Lys Leu Leu  Ser Arg Gly Glu Gly  Ile Arg Thr
    1325                1330                1335
```

```
Leu Leu  Trp Thr Phe Ile Lys  Ser Phe Gln Ala Leu  Pro Tyr Val
    1340                 1345                 1350

Ala Leu  Leu Ile Ala Met Leu  Phe Phe Ile Tyr Ala  Val Ile Gly
    1355                 1360                 1365

Met Gln  Met Phe Gly Lys Val  Ala Met Arg Asp Asn  Asn Gln Ile
    1370                 1375                 1380

Asn Arg  Asn Asn Asn Phe Gln  Thr Phe Pro Gln Ala  Val Leu Leu
    1385                 1390                 1395

Leu Phe  Arg Cys Ala Thr Gly  Glu Ala Trp Gln Glu  Ile Met Leu
    1400                 1405                 1410

Ala Cys  Leu Pro Gly Lys Leu  Cys Asp Pro Glu Ser  Asp Tyr Asn
    1415                 1420                 1425

Pro Gly  Glu Glu Tyr Thr Cys  Gly Ser Asn Phe Ala  Ile Val Tyr
    1430                 1435                 1440

Phe Ile  Ser Phe Tyr Met Leu  Cys Ala Phe Leu Ile  Ile Asn Leu
    1445                 1450                 1455

Phe Val  Ala Val Ile Met Asp  Asn Phe Asp Tyr Leu  Thr Arg Asp
    1460                 1465                 1470

Trp Ser  Ile Leu Gly Pro His  His Leu Asp Glu Phe  Lys Arg Ile
    1475                 1480                 1485

Trp Ser  Glu Tyr Asp Pro Glu  Ala Lys Gly Arg Ile  Lys His Leu
    1490                 1495                 1500

Asp Val  Val Thr Leu Leu Arg  Arg Ile Gln Pro Pro  Leu Gly Phe
    1505                 1510                 1515

Gly Lys  Leu Cys Pro His Arg  Val Ala Cys Lys Arg  Leu Val Ala
    1520                 1525                 1530

Met Asn  Met Pro Leu Asn Ser  Asp Gly Thr Val Met  Phe Asn Ala
    1535                 1540                 1545

Thr Leu  Phe Ala Leu Val Arg  Thr Ala Leu Lys Ile  Lys Thr Glu
    1550                 1555                 1560

Gly Asn  Leu Glu Gln Ala Asn  Glu Glu Leu Arg Ala  Val Ile Lys
    1565                 1570                 1575
```

```
Lys Ile  Trp Lys Lys Thr Ser  Met Lys Leu Leu Asp  Gln Val Val
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Pro Pro  Ala Gly Asp Asp Glu  Val Thr Val Gly Lys  Phe Tyr Ala
    1595                1600                1605

Thr Phe  Leu Ile Gln Asp Tyr  Phe Arg Lys Phe Lys  Lys Arg Lys
    1610                1615                1620

Glu Gln  Gly Leu Val Gly Lys  Tyr Pro Ala Lys Asn  Thr Thr Ile
    1625                1630                1635

Ala Leu  Gln Ala Gly Leu Arg  Thr Leu His Asp Ile  Gly Pro Glu
    1640                1645                1650

Ile Arg  Arg Ala Ile Ser Cys  Asp Leu Gln Asp Asp  Glu Pro Glu
    1655                1660                1665

Glu Thr  Lys Arg Glu Glu Glu  Asp Asp Val Phe Lys  Arg Asn Gly
    1670                1675                1680

Ala Leu  Leu Gly Asn His Val  Asn His Val Asn Ser  Asp Arg Arg
    1685                1690                1695

Asp Ser  Leu Gln Gln Thr Asn  Thr Thr His Arg Pro  Leu His Val
    1700                1705                1710

Gln Arg  Pro Ser Ile Pro Pro  Ala Ser Asp Thr Glu  Lys Pro Leu
    1715                1720                1725

Phe Pro  Pro Ala Gly Asn Ser  Val Cys His Asn His  His Asn His
    1730                1735                1740

Asn Ser  Ile Gly Lys Gln Val  Pro Thr Ser Thr Asn  Ala Asn Leu
    1745                1750                1755

Asn Asn  Ala Asn Met Ser Lys  Ala Ala His Gly Lys  Arg Pro Ser
    1760                1765                1770

Ile Gly  Asn Leu Glu His Val  Ser Glu Asn Gly His  His Ser Ser
    1775                1780                1785

His Lys  His Asp Arg Glu Pro  Gln Arg Arg Ser Ser  Val Lys Arg
    1790                1795                1800

Thr Arg  Tyr Tyr Glu Thr Tyr  Ile Arg Ser Asp Ser  Gly Asp Glu
    1805                1810                1815
```

```
Gln Leu  Pro Thr Ile Cys Arg  Glu Asp Pro Glu Ile  His Gly Tyr
    1820                 1825                 1830

Phe Arg  Asp Pro His Cys Leu  Gly Glu Gln Glu Tyr  Phe Ser Ser
    1835                 1840                 1845

Glu Glu  Cys Tyr Glu Asp Asp  Ser Ser Pro Thr Trp  Ser Arg Gln
    1850                 1855                 1860

Asn Tyr  Gly Tyr Tyr Ser Arg  Tyr Pro Gly Arg Asn  Ile Asp Ser
    1865                 1870                 1875

Glu Arg  Pro Arg Gly Tyr His  His Pro Gln Gly Phe  Leu Glu Asp
    1880                 1885                 1890

Asp Asp  Ser Pro Val Cys Tyr  Asp Ser Arg Arg Ser  Pro Arg Arg
    1895                 1900                 1905

Arg Leu  Leu Pro Pro Thr Pro  Ala Ser His Arg Arg  Ser Ser Phe
    1910                 1915                 1920

Asn Phe  Glu Cys Leu Arg Arg  Gln Ser Ser Gln Glu  Glu Val Pro
    1925                 1930                 1935

Ser Ser  Pro Ile Phe Pro His  Arg Thr Ala Leu Pro  Leu His Leu
    1940                 1945                 1950

Met Gln  Gln Gln Ile Met Ala  Val Ala Gly Leu Asp  Ser Ser Lys
    1955                 1960                 1965

Ala Gln  Lys Tyr Ser Pro Ser  His Ser Thr Arg Ser  Trp Ala Thr
    1970                 1975                 1980

Pro Pro  Ala Thr Pro Pro Tyr  Arg Asp Trp Thr Pro  Cys Tyr Thr
    1985                 1990                 1995

Pro Leu  Ile Gln Val Glu Gln  Ser Glu Ala Leu Asp  Gln Val Asn
    2000                 2005                 2010

Gly Ser  Leu Pro Ser Leu His  Arg Ser Ser Trp Tyr  Thr Asp Glu
    2015                 2020                 2025

Pro Asp  Ile Ser Tyr Arg Thr  Phe Thr Pro Ala Ser  Leu Thr Val
    2030                 2035                 2040

Pro Ser  Ser Phe Arg Asn Lys  Asn Ser Asp Lys Gln  Arg Ser Ala
```

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Asp Ser Leu Val Glu Ala Val Leu Ile Ser Glu Gly Leu Gly Arg
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Tyr Ala Arg Asp Pro Lys Phe Val Ser Ala Thr Lys His Glu Ile
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Ala Asp Ala Cys Asp Leu Thr Ile Asp Glu Met Glu Ser Ala Ala
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Ser Thr Leu Leu Asn Gly Asn Val Arg Pro Arg Ala Asn Gly Asp
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Ile Asp Leu Gln Leu Gln Phe Ser Thr Ser Gln Pro Glu Ala Leu Leu
50 55 60

Leu Leu Ala Ala Gly Pro Ala Asp His Leu Leu Leu Gln Leu Tyr Ser
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Gly Arg Leu Gln Val Arg Leu Val Leu Gly Gln Glu Glu Leu Arg Leu
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Gln Thr Pro Ala Glu Thr Leu Leu Ser Asp Ser Ile Pro His Thr Val
100 105 110

Val Leu Thr Val Val Glu Gly Trp Ala Thr Leu Ser Val Asp Gly Phe
115 120 125

Leu Asn Ala Ser Ser Ala Val Pro Gly Ala Pro Leu Glu Val Pro Tyr
130 135 140

Gly Leu Phe Val Gly Gly Thr Gly Thr Leu Gly Leu Pro Tyr Leu Arg
145 150 155 160

Gly Thr Ser Arg Pro Leu Arg Gly Cys Leu His Ala Ala Thr Leu Asn
165 170 175

Gly Arg Ser Leu Leu Arg Pro Leu Thr Pro Asp Val His Glu Gly Cys
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Ala Glu Glu Phe Ser Ala Ser Asp Asp Val Ala Leu Gly Phe Ser Gly
195 200 205

Pro His Ser Leu Ala Ala Phe Pro Ala Trp Gly Thr Gln Asp Glu Gly
210 215 220

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Thr Leu Glu Phe Thr Leu Thr Thr Gln Ser Arg Gln Ala Pro Leu Ala
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Phe Gln Ala Gly Gly Arg Arg Gly Asp Phe Ile Tyr Val Asp Ile Phe
                245                 250                 255

Glu Gly His Leu Arg Ala Val Val Glu Lys Gly Gln Gly Thr Val Leu
            260                 265                 270

Leu His Asn Ser Val Pro Val Ala Asp Gly Gln Pro His Glu Val Ser
        275                 280                 285

Val His Ile Asn Ala His Arg Leu Glu Ile Ser Val Asp Gln Tyr Pro
    290                 295                 300

Thr His Thr Ser Asn Arg Gly Val Leu Ser Tyr Leu Glu Pro Arg Gly
305                 310                 315                 320

Ser Leu Leu Leu Gly Gly Leu Asp Ala Glu Ala Ser Arg His Leu Gln
                325                 330                 335

Glu His Arg Leu Gly Leu Thr Pro Glu Ala Thr Asn Ala Ser Leu Leu
            340                 345                 350

Gly Cys Met Glu Asp Leu Ser Val Asn Gly Gln Arg Arg Gly Leu Arg
        355                 360                 365

Glu Ala Leu Leu Thr Arg Asn Met Ala Ala Gly Cys Arg Leu Glu Glu
    370                 375                 380

Glu Glu Tyr Glu Asp Asp Ala Tyr Gly His Tyr Glu Ala Phe Ser Thr
385                 390                 395                 400

Leu Ala Pro Glu Ala Trp Pro Ala Met Glu Leu Pro Glu Pro Cys Val
                405                 410                 415

Pro Glu Pro Gly Leu Pro Pro Val Phe Ala Asn Phe Thr Gln Leu Leu
            420                 425                 430

Thr Ile Ser Pro Leu Val Val Ala Glu Gly Gly Thr Ala Trp Leu Glu
        435                 440                 445

Trp Arg His Val Gln Pro Thr Leu Asp Leu Met Glu Ala Glu Leu Arg
    450                 455                 460

Lys Ser Gln Val Leu Phe Ser Val Thr Arg Gly Ala Arg His Gly Glu
465                 470                 475                 480
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Leu Glu Leu Asp Ile Pro Gly Ala Gln Ala Arg Lys Met Phe Thr Leu
                485                 490                 495

Leu Asp Val Val Asn Arg Lys Ala Arg Phe Ile His Asp Gly Ser Glu
            500                 505                 510

Asp Thr Ser Asp Gln Leu Val Leu Glu Val Ser Val Thr Ala Arg Val
        515                 520                 525

Pro Met Pro Ser Cys Leu Arg Arg Gly Gln Thr Tyr Leu Leu Pro Ile
    530                 535                 540

Gln Val Asn Pro Val Asn Asp Pro Pro His Ile Ile Phe Pro His Gly
545                 550                 555                 560

Ser Leu Met Val Ile Leu Glu His Thr Gln Lys Pro Leu Gly Pro Glu
                565                 570                 575

Val Phe Gln Ala Tyr Asp Pro Asp Ser Ala Cys Glu Gly Leu Thr Phe
            580                 585                 590

Gln Val Leu Gly Thr Ser Ser Gly Leu Pro Val Glu Arg Arg Asp Gln
        595                 600                 605

Pro Gly Glu Pro Ala Thr Glu Phe Ser Cys Arg Glu Leu Glu Ala Gly
    610                 615                 620

Ser Leu Val Tyr Val His Arg Gly Gly Pro Ala Gln Asp Leu Thr Phe
625                 630                 635                 640

Arg Val Ser Asp Gly Leu Gln Ala Ser Pro Pro Ala Thr Leu Lys Val
                645                 650                 655

Val Ala Ile Arg Pro Ala Ile Gln Ile His Arg Ser Thr Gly Leu Arg
            660                 665                 670

Leu Ala Gln Gly Ser Ala Met Pro Ile Leu Pro Ala Asn Leu Ser Val
        675                 680                 685

Glu Thr Asn Ala Val Gly Gln Asp Val Ser Val Leu Phe Arg Val Thr
    690                 695                 700

Gly Ala Leu Gln Phe Gly Glu Leu Gln Lys Gln Gly Ala Gly Gly Val
705                 710                 715                 720

Glu Gly Ala Glu Trp Trp Ala Thr Gln Ala Phe His Gln Arg Asp Val
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Glu Gln Gly Arg Val Arg Tyr Leu Ser Thr Asp Pro Gln His His Ala
740 745 750

Tyr Asp Thr Val Glu Asn Leu Ala Leu Glu Val Gln Val Gly Gln Glu
755 760 765

Ile Leu Ser Asn Leu Ser Phe Pro Val Thr Ile Gln Arg Ala Thr Val
770 775 780

Trp Met Leu Arg Leu Glu Pro Leu His Thr Gln Asn Thr Gln Gln Glu
785 790 795 800

Thr Leu Thr Thr Ala His Leu Glu Ala Thr Leu Glu Glu Ala Gly Pro
805 810 815

Ser Pro Pro Thr Phe His Tyr Glu Val Val Gln Ala Pro Arg Lys Gly
820 825 830

Asn Leu Gln Leu Gln Gly Thr Arg Leu Ser Asp Gly Gln Gly Phe Thr
835 840 845

Gln Asp Asp Ile Gln Ala Gly Arg Val Thr Tyr Gly Ala Thr Ala Arg
850 855 860

Ala Ser Glu Ala Val Glu Asp Thr Phe Arg Phe Arg Val Thr Ala Pro
865 870 875 880

Pro Tyr Phe Ser Pro Leu Tyr Thr Phe Pro Ile His Ile Gly Gly Asp
885 890 895

Pro Asp Ala Pro Val Leu Thr Asn Val Leu Leu Val Val Pro Glu Gly
900 905 910

Gly Glu Gly Val Leu Ser Ala Asp His Leu Phe Val Lys Ser Leu Asn
915 920 925

Ser Ala Ser Tyr Leu Tyr Glu Val Met Glu Arg Pro Arg His Gly Arg
930 935 940

Leu Ala Trp Arg Gly Thr Gln Asp Lys Thr Thr Met Val Thr Ser Phe
945 950 955 960

Thr Asn Glu Asp Leu Leu Arg Gly Arg Leu Val Tyr Gln His Asp Asp
965 970 975

```
Ser Glu Thr Thr Glu Asp Asp Ile Pro Phe Val Ala Thr Arg Gln Gly
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Glu Ser Ser Gly Asp Met Ala Trp  Glu Glu Val Arg Gly  Val Phe Arg
        995                 1000                1005

Val Ala  Ile Gln Pro Val Asn  Asp His Ala Pro Val  Gln Thr Ile
    1010                1015                1020

Ser Arg  Ile Phe His Val Ala  Arg Gly Gly Arg Arg  Leu Leu Thr
    1025                1030                1035

Thr Asp  Asp Val Ala Phe Ser  Asp Ala Asp Ser Gly  Phe Ala Asp
    1040                1045                1050

Ala Gln  Leu Val Leu Thr Arg  Lys Asp Leu Leu Phe  Gly Ser Ile
    1055                1060                1065

Val Ala  Val Asp Glu Pro Thr  Arg Pro Ile Tyr Arg  Phe Thr Gln
    1070                1075                1080

Glu Asp  Leu Arg Lys Arg Arg  Val Leu Phe Val His  Ser Gly Ala
    1085                1090                1095

Asp Arg  Gly Trp Ile Gln Leu  Gln Val Ser Asp Gly  Gln His Gln
    1100                1105                1110

Ala Thr  Ala Leu Leu Glu Val  Gln Ala Ser Glu Pro  Tyr Leu Arg
    1115                1120                1125

Val Ala  Asn Gly Ser Ser Leu  Val Val Pro Gln Gly  Gly Gln Gly
    1130                1135                1140

Thr Ile  Asp Thr Ala Val Leu  His Leu Asp Thr Asn  Leu Asp Ile
    1145                1150                1155

Arg Ser  Gly Asp Glu Val His  Tyr His Val Thr Ala  Gly Pro Arg
    1160                1165                1170

Trp Gly  Gln Leu Val Arg Ala  Gly Gln Pro Ala Thr  Ala Phe Ser
    1175                1180                1185

Gln Gln  Asp Leu Leu Asp Gly  Ala Val Leu Tyr Ser  His Asn Gly
    1190                1195                1200

Ser Leu  Ser Pro Arg Asp Thr  Met Ala Phe Ser Val  Glu Ala Gly
    1205                1210                1215
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Pro Val  His Thr Asp Ala Thr  Leu Gln Val Thr Ile  Ala Leu Glu
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Gly Pro  Leu Ala Pro Leu Lys  Leu Val Arg His Lys  Lys Ile Tyr
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Val Phe  Gln Gly Glu Ala Ala  Glu Ile Arg Arg Asp  Gln Leu Glu
    1250                 1255                 1260

Ala Ala  Gln Glu Ala Val Pro  Pro Ala Asp Ile Val  Phe Ser Val
    1265                 1270                 1275

Lys Ser  Pro Pro Ser Ala Gly  Tyr Leu Val Met Val  Ser Arg Gly
    1280                 1285                 1290

Ala Leu  Ala Asp Glu Pro Pro  Ser Leu Asp Pro Val  Gln Ser Phe
    1295                 1300                 1305

Ser Gln  Glu Ala Val Asp Thr  Gly Arg Val Leu Tyr  Leu His Ser
    1310                 1315                 1320

Arg Pro  Glu Ala Trp Ser Asp  Ala Phe Ser Leu Asp  Val Ala Ser
    1325                 1330                 1335

Gly Leu  Gly Ala Pro Leu Glu  Gly Val Leu Val Glu  Leu Glu Val
    1340                 1345                 1350

Leu Pro  Ala Ala Ile Pro Leu  Glu Ala Gln Asn Phe  Ser Val Pro
    1355                 1360                 1365

Glu Gly  Gly Ser Leu Thr Leu  Ala Pro Pro Leu Leu  Arg Val Ser
    1370                 1375                 1380

Gly Pro  Tyr Phe Pro Thr Leu  Leu Gly Leu Ser Leu  Gln Val Leu
    1385                 1390                 1395

Glu Pro  Pro Gln His Gly Ala  Leu Gln Lys Glu Asp  Gly Pro Gln
    1400                 1405                 1410

Ala Arg  Thr Leu Ser Ala Phe  Ser Trp Arg Met Val  Glu Glu Gln
    1415                 1420                 1425

Leu Ile  Arg Tyr Val His Asp  Gly Ser Glu Thr Leu  Thr Asp Ser
    1430                 1435                 1440

Phe Val  Leu Met Ala Asn Ala  Ser Glu Met Asp Arg  Gln Ser His
    1445                 1450                 1455
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Pro Val  Ala Phe Thr Val Thr  Val Leu Pro Val Asn  Asp Gln Pro
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Pro Ile  Leu Thr Thr Asn Thr  Gly Leu Gln Met Trp  Glu Gly Ala
    1475                1480                1485

Thr Ala  Pro Ile Pro Ala Glu  Ala Leu Arg Ser Thr  Asp Gly Asp
    1490                1495                1500

Ser Gly  Ser Glu Asp Leu Val  Tyr Thr Ile Glu Gln  Pro Ser Asn
    1505                1510                1515

Gly Arg  Val Val Leu Arg Gly  Ala Pro Gly Thr Glu  Val Arg Ser
    1520                1525                1530

Phe Thr  Gln Ala Gln Leu Asp  Gly Gly Leu Val Leu  Phe Ser His
    1535                1540                1545

Arg Gly  Thr Leu Asp Gly Gly  Phe Arg Phe Arg Leu  Ser Asp Gly
    1550                1555                1560

Glu His  Thr Ser Pro Gly His  Phe Phe Arg Val Thr  Ala Gln Lys
    1565                1570                1575

Gln Val  Leu Leu Ser Leu Lys  Gly Ser Gln Thr Leu  Thr Val Cys
    1580                1585                1590

Pro Gly  Ser Val Gln Pro Leu  Ser Ser Gln Thr Leu  Arg Ala Ser
    1595                1600                1605

Ser Ser  Ala Gly Thr Asp Pro  Gln Leu Leu Leu Tyr  Arg Val Val
    1610                1615                1620

Arg Gly  Pro Gln Leu Gly Arg  Leu Phe His Ala Gln  Gln Asp Ser
    1625                1630                1635

Thr Gly  Glu Ala Leu Val Asn  Phe Thr Gln Ala Glu  Val Tyr Ala
    1640                1645                1650

Gly Asn  Ile Leu Tyr Glu His  Glu Met Pro Pro Glu  Pro Phe Trp
    1655                1660                1665

Glu Ala  His Asp Thr Leu Glu  Leu Gln Leu Ser Ser  Pro Pro Ala
    1670                1675                1680

Arg Asp  Val Ala Ala Thr Leu  Ala Val Ala Val Ser  Phe Glu Ala
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Ala Cys  Pro Gln Arg Pro Ser  His Leu Trp Lys Asn  Lys Gly Leu
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Trp Val  Pro Glu Gly Gln Arg  Ala Arg Ile Thr Val  Ala Ala Leu
    1715                1720                1725

Asp Ala  Ser Asn Leu Leu Ala  Ser Val Pro Ser Pro  Gln Arg Ser
    1730                1735                1740

Glu His  Asp Val Leu Phe Gln  Val Thr Gln Phe Pro  Ser Arg Gly
    1745                1750                1755

Gln Leu  Leu Val Ser Glu Glu  Pro Leu His Ala Gly  Gln Pro His
    1760                1765                1770

Phe Leu  Gln Ser Gln Leu Ala  Ala Gly Gln Leu Val  Tyr Ala His
    1775                1780                1785

Gly Gly  Gly Gly Thr Gln Gln  Asp Gly Phe His Phe  Arg Ala His
    1790                1795                1800

Leu Gln  Gly Pro Ala Gly Ala  Ser Val Ala Gly Pro  Gln Thr Ser
    1805                1810                1815

Glu Ala  Phe Ala Ile Thr Val  Arg Asp Val Asn Glu  Arg Pro Pro
    1820                1825                1830

Gln Pro  Gln Ala Ser Val Pro  Leu Arg Leu Thr Arg  Gly Ser Arg
    1835                1840                1845

Ala Pro  Ile Ser Arg Ala Gln  Leu Ser Val Val Asp  Pro Asp Ser
    1850                1855                1860

Ala Pro  Gly Glu Ile Glu Tyr  Glu Val Gln Arg Ala  Pro His Asn
    1865                1870                1875

Gly Phe  Leu Ser Leu Val Gly  Gly Gly Leu Gly Pro  Val Thr Arg
    1880                1885                1890

Phe Thr  Gln Ala Asp Val Asp  Ser Gly Arg Leu Ala  Phe Val Ala
    1895                1900                1905

Asn Gly  Ser Ser Val Ala Gly  Ile Phe Gln Leu Ser  Met Ser Asp
    1910                1915                1920
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Gly Ala  Ser Pro Pro Leu Pro  Met Ser Leu Ala Val  Asp Ile Leu
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Pro Ser  Ala Ile Glu Val Gln  Leu Arg Ala Pro Leu  Glu Val Pro
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Gln Ala  Leu Gly Arg Ser Ser  Leu Ser Gln Gln Gln  Leu Arg Val
    1955                 1960                 1965

Val Ser  Asp Arg Glu Glu Pro  Glu Ala Ala Tyr Arg  Leu Ile Gln
    1970                 1975                 1980

Gly Pro  Gln Tyr Gly His Leu  Leu Val Gly Gly Arg  Pro Thr Ser
    1985                 1990                 1995

Ala Phe  Ser Gln Phe Gln Ile  Asp Gln Gly Glu Val  Val Phe Ala
    2000                 2005                 2010

Phe Thr  Asn Phe Ser Ser Ser  His Asp His Phe Arg  Val Leu Ala
    2015                 2020                 2025

Leu Ala  Arg Gly Val Asn Ala  Ser Ala Val Val Asn  Val Thr Val
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Arg Ala  Leu Leu His Val Trp  Ala Gly Gly Pro Trp  Pro Gln Gly
    2045                 2050                 2055

Ala Thr  Leu Arg Leu Asp Pro  Thr Val Leu Asp Ala  Gly Glu Leu
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Ala Asn  Arg Thr Gly Ser Val  Pro Arg Phe Arg Leu  Leu Glu Gly
    2075                 2080                 2085

Pro Arg  His Gly Arg Val Val  Arg Val Pro Arg Ala  Arg Thr Glu
    2090                 2095                 2100

Pro Gly  Gly Ser Gln Leu Val  Glu Gln Phe Thr Gln  Gln Asp Leu
    2105                 2110                 2115

Glu Asp  Gly Arg Leu Gly Leu  Glu Val Gly Arg Pro  Glu Gly Arg
    2120                 2125                 2130

Ala Pro  Gly Pro Ala Gly Asp  Ser Leu Thr Leu Glu  Leu Trp Ala
    2135                 2140                 2145

Gln Gly  Val Pro Pro Ala Val  Ala Ser Leu Asp Phe  Ala Thr Glu
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Pro Tyr  Asn Ala Ala Arg Pro  Tyr Ser Val Ala Leu  Leu Ser Val
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Pro Glu  Ala Ala Arg Thr Glu  Ala Gly Lys Pro Glu  Ser Ser Thr
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Pro Thr  Gly Glu Pro Gly Pro  Met Ala Ser Ser Pro  Glu Pro Ala
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Val Ala  Lys Gly Gly Phe Leu  Ser Phe Leu Glu Ala  Asn Met Phe
    2210                 2215                 2220

Ser Val  Ile Ile Pro Met Cys  Leu Val Leu Leu Leu  Leu Ala Leu
    2225                 2230                 2235

Ile Leu  Pro Leu Leu Phe Tyr  Leu Arg Lys Arg Asn  Lys Thr Gly
    2240                 2245                 2250

Lys His  Asp Val Gln Val Leu  Thr Ala Lys Pro Arg  Asn Gly Leu
    2255                 2260                 2265

Ala Gly  Asp Thr Glu Thr Phe  Arg Lys Val Glu Pro  Gly Gln Ala
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Ile Pro  Leu Thr Ala Val Pro  Gly Gln Gly Pro Pro  Pro Gly Gly
    2285                 2290                 2295

Gln Pro  Asp Pro Glu Leu Leu  Gln Phe Cys Arg Thr  Pro Asn Pro
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Ala Leu  Lys Asn Gly Gln Tyr  Trp Val
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<212> PRT
<213> Homo sapiens

<400> 196

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Thr Cys Glu Lys Pro Leu Glu Gly Ile Leu Ser Ser Ser Ala Trp His
20 25 30

Phe Thr His Ser His Tyr Asn Ala Thr Ile Tyr Glu Asn Ser Ser Pro
35 40 45

```
Lys Thr Tyr Val Glu Ser Phe Glu Lys Met Gly Ile Tyr Leu Ala Glu
    50                  55                  60

Pro Gln Trp Ala Val Arg Tyr Arg Ile Ile Ser Gly Asp Val Ala Asn
65                  70                  75                  80

Val Phe Lys Thr Glu Glu Tyr Val Val Gly Asn Phe Cys Phe Leu Arg
                85                  90                  95

Ile Arg Thr Lys Ser Ser Asn Thr Ala Leu Leu Asn Arg Glu Val Arg
            100                 105                 110

Asp Ser Tyr Thr Leu Ile Ile Gln Ala Thr Glu Lys Thr Leu Glu Leu
        115                 120                 125

Glu Ala Leu Thr Arg Val Val Val His Ile Leu Asp Gln Asn Asp Leu
    130                 135                 140

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

Met Pro Leu Lys Ser Pro Ile Cys Lys Val Thr Ala Thr Asp Ala Asp
                165                 170                 175

Leu Gly Gln Asn Ala Glu Phe Tyr Tyr Ala Phe Asn Thr Arg Ser Glu
            180                 185                 190

Met Phe Ala Ile His Pro Thr Ser Gly Val Val Thr Val Ala Gly Lys
        195                 200                 205

Leu Asn Val Thr Trp Arg Gly Lys His Glu Leu Gln Val Leu Ala Val
    210                 215                 220

Asp Arg Met Arg Lys Ile Ser Glu Gly Asn Gly Phe Gly Ser Leu Ala
225                 230                 235                 240

Ala Leu Val Val His Val Glu Pro Ala Leu Arg Lys Pro Pro Ala Ile
                245                 250                 255

Ala Ser Val Val Val Thr Pro Pro Asp Ser Asn Asp Gly Thr Thr Tyr
            260                 265                 270

Ala Thr Val Leu Val Asp Ala Asn Ser Ser Gly Ala Glu Val Glu Ser
        275                 280                 285

Val Glu Val Val Gly Gly Asp Pro Gly Lys His Phe Lys Ala Ile Lys
    290                 295                 300
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Ser Tyr Ala Arg Ser Asn Glu Phe Ser Leu Val Ser Val Lys Asp Ile
305                 310                 315                 320

Asn Trp Met Glu Tyr Leu His Gly Phe Asn Leu Ser Leu Gln Ala Arg
                325                 330                 335

Ser Gly Ser Gly Pro Tyr Phe Tyr Ser Gln Ile Arg Gly Phe His Leu
            340                 345                 350

Pro Pro Ser Lys Leu Ser Ser Leu Lys Phe Glu Lys Ala Val Tyr Arg
        355                 360                 365

Val Gln Leu Ser Glu Phe Ser Pro Pro Gly Ser Arg Val Val Met Val
    370                 375                 380

Arg Val Thr Pro Ala Phe Pro Asn Leu Gln Tyr Val Leu Lys Pro Ser
385                 390                 395                 400

Ser Glu Asn Val Gly Phe Lys Leu Asn Ala Arg Thr Gly Leu Ile Thr
                405                 410                 415

Thr Thr Lys Leu Met Asp Phe His Asp Arg Ala His Tyr Gln Leu His
            420                 425                 430

Ile Arg Thr Ser Pro Gly Gln Ala Ser Thr Val Val Val Ile Asp Ile
        435                 440                 445

Val Asp Cys Asn Asn His Ala Pro Leu Phe Asn Arg Ser Ser Tyr Asp
    450                 455                 460

Gly Thr Leu Asp Glu Asn Ile Pro Pro Gly Thr Ser Val Leu Ala Val
465                 470                 475                 480

Thr Ala Thr Asp Arg Asp His Gly Glu Asn Gly Tyr Val Thr Tyr Ser
                485                 490                 495

Ile Ala Gly Pro Lys Ala Leu Pro Phe Ser Ile Asp Pro Tyr Leu Gly
            500                 505                 510

Ile Ile Ser Thr Ser Lys Pro Met Asp Tyr Glu Leu Met Lys Arg Ile
        515                 520                 525

Tyr Thr Phe Arg Val Arg Ala Ser Asp Trp Gly Ser Pro Phe Arg Arg
    530                 535                 540

Glu Lys Glu Val Ser Ile Phe Leu Gln Leu Arg Asn Leu Asn Asp Asn
545                 550                 555                 560
```

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Gln Pro Met Phe Glu Glu Val Asn Cys Thr Gly Ser Ile Arg Gln Asp
                565                 570                 575

Trp Pro Val Gly Lys Ser Ile Met Thr Met Ser Ala Ile Asp Val Asp
            580                 585                 590

Glu Leu Gln Asn Leu Lys Tyr Glu Ile Val Ser Gly Asn Glu Leu Glu
        595                 600                 605

Tyr Phe Asp Leu Asn His Phe Ser Gly Val Ile Ser Leu Lys Arg Pro
    610                 615                 620

Phe Ile Asn Leu Thr Ala Gly Gln Pro Thr Ser Tyr Ser Leu Lys Ile
625                 630                 635                 640

Thr Ala Ser Asp Gly Lys Asn Tyr Ala Ser Pro Thr Thr Leu Asn Ile
                645                 650                 655

Thr Val Val Lys Asp Pro His Phe Glu Val Pro Val Thr Cys Asp Lys
            660                 665                 670

Thr Gly Val Leu Thr Gln Phe Thr Lys Thr Ile Leu His Phe Ile Gly
        675                 680                 685

Leu Gln Asn Gln Glu Ser Ser Asp Glu Glu Phe Thr Ser Leu Ser Thr
    690                 695                 700

Tyr Gln Ile Asn His Tyr Thr Pro Gln Phe Glu Asp His Phe Pro Gln
705                 710                 715                 720

Ser Ile Asp Val Leu Glu Ser Val Pro Ile Asn Thr Pro Leu Ala Arg
                725                 730                 735

Leu Ala Ala Thr Asp Pro Asp Ala Gly Phe Asn Gly Lys Leu Val Tyr
            740                 745                 750

Val Ile Ala Asp Gly Asn Glu Glu Gly Cys Phe Asp Ile Glu Leu Glu
        755                 760                 765

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

Phe Tyr Ile Leu Asn Val Thr Val Tyr Asp Leu Gly Thr Pro Gln Lys
785                 790                 795                 800

Ser Ser Trp Lys Leu Leu Thr Val Asn Val Lys Asp Trp Asn Asp Asn
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Ala Pro Arg Phe Pro Pro Gly Gly Tyr Gln Leu Thr Ile Ser Glu Asp
820 825 830

Thr Glu Val Gly Thr Thr Ile Ala Glu Leu Thr Thr Lys Asp Ala Asp
835 840 845

Ser Glu Asp Asn Gly Arg Val Arg Tyr Thr Leu Leu Ser Pro Thr Glu
850 855 860

Lys Phe Ser Leu His Pro Leu Thr Gly Glu Leu Val Val Thr Gly His
865 870 875 880

Leu Asp Arg Glu Ser Glu Pro Arg Tyr Ile Leu Lys Val Glu Ala Arg
885 890 895

Asp Gln Pro Ser Lys Gly His Gln Leu Phe Ser Val Thr Asp Leu Ile
900 905 910

Ile Thr Leu Glu Asp Val Asn Asp Asn Ser Pro Gln Cys Ile Thr Glu
915 920 925

His Asn Arg Leu Lys Val Pro Glu Asp Leu Pro Pro Gly Thr Val Leu
930 935 940

Thr Phe Leu Asp Ala Ser Asp Pro Asp Leu Gly Pro Ala Gly Glu Val
945 950 955 960

Arg Tyr Val Leu Met Asp Gly Ala His Gly Thr Phe Arg Val Asp Leu
965 970 975

Met Thr Gly Ala Leu Ile Leu Glu Arg Glu Leu Asp Phe Glu Arg Arg
980 985 990

Ala Gly Tyr Asn Leu Ser Leu Trp Ala Ser Asp Gly Gly Arg Pro Leu
995 1000 1005

Ala Arg Arg Thr Leu Cys His Val Glu Val Ile Val Leu Asp Val
1010 1015 1020

Asn Glu Asn Leu His Pro Pro His Phe Ala Ser Phe Val His Gln
1025 1030 1035

Gly Gln Val Gln Glu Asn Ser Pro Ser Gly Thr Gln Val Ile Val
1040 1045 1050

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Val Ala  Ala Gln Asp Asp Asp  Ser Gly Leu Asp Gly  Glu Leu Gln
    1055                 1060                 1065

Tyr Phe  Leu Arg Ala Gly Thr  Gly Leu Ala Ala Phe  Ser Ile Asn
    1070                 1075                 1080

Gln Asp  Thr Gly Met Ile Gln  Thr Leu Ala Pro Leu  Asp Arg Glu
    1085                 1090                 1095

Phe Ala  Ser Tyr Tyr Trp Leu  Thr Val Leu Ala Val  Asp Arg Gly
    1100                 1105                 1110

Ser Val  Pro Leu Ser Ser Val  Thr Glu Val Tyr Ile  Glu Val Thr
    1115                 1120                 1125

Asp Ala  Asn Asp Asn Pro Pro  Gln Met Ser Gln Ala  Val Phe Tyr
    1130                 1135                 1140

Pro Ser  Ile Gln Glu Asp Ala  Pro Val Gly Thr Ser  Val Leu Gln
    1145                 1150                 1155

Leu Asp  Ala Trp Asp Pro Asp  Ser Ser Ser Lys Gly  Lys Leu Thr
    1160                 1165                 1170

Phe Asn  Ile Thr Ser Gly Asn  Tyr Met Gly Phe Phe  Met Ile His
    1175                 1180                 1185

Pro Val  Thr Gly Leu Leu Ser  Thr Ala Gln Gln Leu  Asp Arg Glu
    1190                 1195                 1200

Asn Lys  Asp Glu His Ile Leu  Glu Val Thr Val Leu  Asp Asn Gly
    1205                 1210                 1215

Glu Pro  Ser Leu Lys Ser Thr  Ser Arg Val Val Val  Gly Ile Leu
    1220                 1225                 1230

Asp Val  Asn Asp Asn Pro Pro  Ile Phe Ser His Lys  Leu Phe Asn
    1235                 1240                 1245

Val Arg  Leu Pro Glu Arg Leu  Ser Pro Val Ser Pro  Gly Pro Val
    1250                 1255                 1260

Tyr Arg  Leu Val Ala Ser Asp  Leu Asp Glu Gly Leu  Asn Gly Arg
    1265                 1270                 1275

Val Thr  Tyr Ser Ile Glu Asp  Ser Asp Glu Glu Ala  Phe Ser Ile
    1280                 1285                 1290
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Asp Leu  Val Thr Gly Val Val  Ser Ser Ser Ser Thr  Phe Thr Ala
    1295                 1300                 1305

Gly Glu  Tyr Asn Ile Leu Thr  Ile Lys Ala Thr Asp  Ser Gly Gln
    1310                 1315                 1320

Pro Pro  Leu Ser Ala Ser Val  Arg Leu His Ile Glu  Trp Ile Pro
    1325                 1330                 1335

Trp Pro  Arg Pro Ser Ser Ile  Pro Leu Ala Phe Asp  Glu Thr Tyr
    1340                 1345                 1350

Tyr Ser  Phe Thr Val Met Glu  Thr Asp Pro Val Asn  His Met Val
    1355                 1360                 1365

Gly Val  Ile Ser Val Glu Gly  Arg Pro Gly Leu Phe  Trp Phe Asn
    1370                 1375                 1380

Ile Ser  Gly Gly Asp Lys Asp  Met Asp Phe Asp Ile  Glu Lys Thr
    1385                 1390                 1395

Thr Gly  Ser Ile Val Ile Ala  Arg Pro Leu Asp Thr  Arg Arg Arg
    1400                 1405                 1410

Ser Asn  Tyr Asn Leu Thr Val  Glu Val Thr Asp Gly  Ser Arg Thr
    1415                 1420                 1425

Ile Ala  Thr Gln Val His Ile  Phe Met Ile Ala Asn  Ile Asn His
    1430                 1435                 1440

His Arg  Pro Gln Phe Leu Glu  Thr Arg Tyr Glu Val  Arg Val Pro
    1445                 1450                 1455

Gln Asp  Thr Val Pro Gly Val  Glu Leu Leu Arg Val  Gln Ala Ile
    1460                 1465                 1470

Asp Gln  Asp Lys Gly Lys Ser  Leu Ile Tyr Thr Ile  His Gly Ser
    1475                 1480                 1485

Gln Asp  Pro Gly Ser Ala Ser  Leu Phe Gln Leu Asp  Pro Ser Ser
    1490                 1495                 1500

Gly Val  Leu Val Thr Val Gly  Lys Leu Asp Leu Gly  Ser Gly Pro
    1505                 1510                 1515

Ser Gln  His Thr Leu Thr Val  Met Val Arg Asp Gln  Glu Ile Pro
    1520                 1525                 1530
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Ile Lys  Arg Asn Phe Val Trp  Val Thr Ile His Val  Glu Asp Gly
    1535                 1540                 1545

Asn Leu  His Pro Pro Arg Phe  Thr Gln Leu His Tyr  Glu Ala Ser
    1550                 1555                 1560

Val Pro  Asp Thr Ile Ala Pro  Gly Thr Glu Leu Leu  Gln Val Arg
    1565                 1570                 1575

Ala Met  Asp Ala Asp Arg Gly  Val Asn Ala Glu Val  His Tyr Ser
    1580                 1585                 1590

Leu Leu  Lys Gly Asn Ser Glu  Gly Phe Phe Asn Ile  Asn Ala Leu
    1595                 1600                 1605

Leu Gly  Ile Ile Thr Leu Ala  Gln Lys Leu Asp Gln  Ala Asn His
    1610                 1615                 1620

Ala Pro  His Thr Leu Thr Val  Lys Ala Glu Asp Gln  Gly Ser Pro
    1625                 1630                 1635

Gln Trp  His Asp Leu Ala Thr  Val Ile Ile His Val  Tyr Pro Ser
    1640                 1645                 1650

Asp Arg  Ser Ala Pro Ile Phe  Ser Lys Ser Glu Tyr  Phe Val Glu
    1655                 1660                 1665

Ile Pro  Glu Ser Ile Pro Val  Gly Ser Pro Ile Leu  Leu Val Ser
    1670                 1675                 1680

Ala Met  Ser Pro Ser Glu Val  Thr Tyr Glu Leu Arg  Glu Gly Asn
    1685                 1690                 1695

Lys Asp  Gly Val Phe Ser Met  Asn Ser Tyr Ser Gly  Leu Ile Ser
    1700                 1705                 1710

Thr Gln  Lys Lys Leu Asp His  Glu Lys Ile Ser Ser  Tyr Gln Leu
    1715                 1720                 1725

Lys Ile  Arg Gly Ser Asn Met  Ala Gly Ala Phe Thr  Asp Val Met
    1730                 1735                 1740

Val Val  Val Asp Ile Ile Asp  Glu Asn Asp Asn Ala  Pro Met Phe
    1745                 1750                 1755

Leu Lys  Ser Thr Phe Val Gly  Gln Ile Ser Glu Ala  Ala Pro Leu
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    1760                1765                1770

Tyr Ser  Met Ile Met Asp Lys  Asn Asn Asn Pro Phe  Val Ile His
    1775                1780                1785

Ala Ser  Asp Ser Asp Lys Glu  Ala Asn Ser Leu Leu  Val Tyr Lys
    1790                1795                1800

Ile Leu  Glu Pro Glu Ala Leu  Lys Phe Phe Lys Ile  Asp Pro Ser
    1805                1810                1815

Met Gly  Thr Leu Thr Ile Val  Ser Glu Met Asp Tyr  Glu Ser Met
    1820                1825                1830

Pro Ser  Phe Gln Phe Cys Val  Tyr Val His Asp Gln  Gly Ser Pro
    1835                1840                1845

Val Leu  Phe Ala Pro Arg Pro  Ala Gln Val Ile Ile  His Val Arg
    1850                1855                1860

Asp Val  Asn Asp Ser Pro Pro  Arg Phe Ser Glu Gln  Ile Tyr Glu
    1865                1870                1875

Val Ala  Ile Val Gly Pro Ile  His Pro Gly Met Glu  Leu Leu Met
    1880                1885                1890

Val Arg  Ala Ser Asp Glu Asp  Ser Glu Val Asn Tyr  Ser Ile Lys
    1895                1900                1905

Thr Gly  Asn Ala Asp Glu Ala  Val Thr Ile His Pro  Val Thr Gly
    1910                1915                1920

Ser Ile  Ser Val Leu Asn Pro  Ala Phe Leu Gly Leu  Ser Arg Lys
    1925                1930                1935

Leu Thr  Ile Arg Ala Ser Asp  Gly Leu Tyr Gln Asp  Thr Ala Leu
    1940                1945                1950

Val Lys  Ile Ser Leu Thr Gln  Val Leu Asp Lys Ser  Leu Gln Phe
    1955                1960                1965

Asp Gln  Asp Val Tyr Trp Ala  Ala Val Lys Glu Asn  Leu Gln Asp
    1970                1975                1980

Arg Lys  Ala Leu Val Ile Leu  Gly Ala Gln Gly Asn  His Leu Asn
    1985                1990                1995
```

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Asp Thr  Leu Ser Tyr Phe Leu  Leu Asn Gly Thr Asp  Met Phe His
    2000                2005                2010

Met Val  Gln Ser Ala Gly Val  Leu Gln Thr Arg Gly  Val Ala Phe
    2015                2020                2025

Asp Arg  Glu Gln Gln Asp Thr  His Glu Leu Ala Val  Glu Val Arg
    2030                2035                2040

Asp Asn  Arg Thr Pro Gln Arg  Val Ala Gln Gly Leu  Val Arg Val
    2045                2050                2055

Ser Ile  Glu Asp Val Asn Asp  Asn Pro Pro Lys Phe  Lys His Leu
    2060                2065                2070

Pro Tyr  Tyr Thr Ile Ile Gln  Asp Gly Thr Glu Pro  Gly Asp Val
    2075                2080                2085

Leu Phe  Gln Val Ser Ala Thr  Asp Glu Asp Leu Gly  Thr Asn Gly
    2090                2095                2100

Ala Val  Thr Tyr Glu Phe Ala  Glu Asp Tyr Thr Tyr  Phe Arg Ile
    2105                2110                2115

Asp Pro  Tyr Leu Gly Asp Ile  Ser Leu Lys Lys Pro  Phe Asp Tyr
    2120                2125                2130

Gln Ala  Leu Asn Lys Tyr His  Leu Lys Val Ile Ala  Arg Asp Gly
    2135                2140                2145

Gly Thr  Pro Ser Leu Gln Ser  Glu Glu Glu Val Leu  Val Thr Val
    2150                2155                2160

Arg Asn  Lys Ser Asn Pro Leu  Phe Gln Ser Pro Tyr  Tyr Lys Val
    2165                2170                2175

Arg Val  Pro Glu Asn Ile Thr  Leu Tyr Thr Pro Ile  Leu His Thr
    2180                2185                2190

Gln Ala  Arg Ser Pro Glu Gly  Leu Arg Leu Ile Tyr  Asn Ile Val
    2195                2200                2205

Glu Glu  Glu Pro Leu Met Leu  Phe Thr Thr Asp Phe  Lys Thr Gly
    2210                2215                2220

Val Leu  Thr Val Thr Gly Pro  Leu Asp Tyr Glu Ser  Lys Thr Lys
    2225                2230                2235
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His Val  Phe Thr Val Arg Ala  Thr Asp Thr Ala Leu  Gly Ser Phe
    2240                2245                2250

Ser Glu  Ala Thr Val Glu Val  Leu Val Glu Asp Val  Asn Asp Asn
    2255                2260                2265

Pro Pro  Thr Phe Ser Gln Leu  Val Tyr Thr Thr Ser  Ile Ser Glu
    2270                2275                2280

Gly Leu  Pro Ala Gln Thr Pro  Val Ile Gln Leu Leu  Ala Ser Asp
    2285                2290                2295

Gln Asp  Ser Gly Arg Asn Arg  Asp Val Ser Tyr Gln  Ile Val Glu
    2300                2305                2310

Asp Gly  Ser Asp Val Ser Lys  Phe Phe Gln Ile Asn  Gly Ser Thr
    2315                2320                2325

Gly Glu  Met Ser Thr Val Gln  Glu Leu Asp Tyr Glu  Ala Gln Gln
    2330                2335                2340

His Phe  His Val Lys Val Arg  Ala Met Asp Lys Gly  Asp Pro Pro
    2345                2350                2355

Leu Thr  Gly Glu Thr Leu Val  Val Val Asn Val Ser  Asp Ile Asn
    2360                2365                2370

Asp Asn  Pro Pro Glu Phe Arg  Gln Pro Gln Tyr Glu  Ala Asn Val
    2375                2380                2385

Ser Glu  Leu Ala Thr Cys Gly  His Leu Val Leu Lys  Val Gln Ala
    2390                2395                2400

Ile Asp  Pro Asp Ser Arg Asp  Thr Ser Arg Leu Glu  Tyr Leu Ile
    2405                2410                2415

Leu Ser  Gly Asn Gln Asp Arg  His Phe Phe Ile Asn  Ser Ser Ser
    2420                2425                2430

Gly Ile  Ile Ser Met Phe Asn  Leu Cys Lys Lys His  Leu Asp Ser
    2435                2440                2445

Ser Tyr  Asn Leu Arg Val Gly  Ala Ser Asp Gly Val  Phe Arg Ala
    2450                2455                2460

Thr Val  Pro Val Tyr Ile Asn  Thr Thr Asn Ala Asn  Lys Tyr Ser
    2465                2470                2475
```

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Pro Glu  Phe Gln Gln His Leu  Tyr Glu Ala Glu Leu  Ala Glu Asn
    2480                 2485                 2490

Ala Met  Val Gly Thr Lys Val  Ile Asp Leu Leu Ala  Ile Asp Lys
    2495                 2500                 2505

Asp Ser  Gly Pro Tyr Gly Thr  Ile Asp Tyr Thr Ile  Ile Asn Lys
    2510                 2515                 2520

Leu Ala  Ser Glu Lys Phe Ser  Ile Asn Pro Asn Gly  Gln Ile Ala
    2525                 2530                 2535

Thr Leu  Gln Lys Leu Asp Arg  Glu Asn Ser Thr Glu  Arg Val Ile
    2540                 2545                 2550

Ala Ile  Lys Val Met Ala Arg  Asp Gly Gly Gly Arg  Val Ala Phe
    2555                 2560                 2565

Cys Thr  Val Lys Ile Ile Leu  Thr Asp Glu Asn Asp  Asn Pro Pro
    2570                 2575                 2580

Gln Phe  Lys Ala Ser Glu Tyr  Thr Val Ser Ile Gln  Ser Asn Val
    2585                 2590                 2595

Ser Lys  Asp Ser Pro Val Ile  Gln Val Leu Ala Tyr  Asp Ala Asp
    2600                 2605                 2610

Glu Gly  Gln Asn Ala Asp Val  Thr Tyr Ser Val Asn  Pro Glu Asp
    2615                 2620                 2625

Leu Val  Lys Asp Val Ile Glu  Ile Asn Pro Val Thr  Gly Val Val
    2630                 2635                 2640

Lys Val  Lys Asp Ser Leu Val  Gly Leu Glu Asn Gln  Thr Leu Asp
    2645                 2650                 2655

Phe Phe  Ile Lys Ala Gln Asp  Gly Gly Pro Pro His  Trp Asn Ser
    2660                 2665                 2670

Leu Val  Pro Val Arg Leu Gln  Val Val Pro Lys Lys  Val Ser Leu
    2675                 2680                 2685

Pro Lys  Phe Ser Glu Pro Leu  Tyr Thr Phe Ser Ala  Pro Glu Asp
    2690                 2695                 2700

Leu Pro  Glu Gly Ser Glu Ile  Gly Ile Val Lys Ala  Val Ala Ala
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    2705                2710                2715

Gln Asp  Pro Val Ile Tyr Ser  Leu Val Arg Gly Thr  Thr Pro Glu
    2720                2725                2730

Ser Asn  Lys Asp Gly Val Phe  Ser Leu Asp Pro Asp  Thr Gly Val
    2735                2740                2745

Ile Lys  Val Arg Lys Pro Met  Asp His Glu Ser Thr  Lys Leu Tyr
    2750                2755                2760

Gln Ile  Asp Val Met Ala His  Cys Leu Gln Asn Thr  Asp Val Val
    2765                2770                2775

Ser Leu  Val Ser Val Asn Ile  Gln Val Gly Asp Val  Asn Asp Asn
    2780                2785                2790

Arg Pro  Val Phe Glu Ala Asp  Pro Tyr Lys Ala Val  Leu Thr Glu
    2795                2800                2805

Asn Met  Pro Val Gly Thr Ser  Val Ile Gln Val Thr  Ala Ile Asp
    2810                2815                2820

Lys Asp  Thr Gly Arg Asp Gly  Gln Val Ser Tyr Arg  Leu Ser Ala
    2825                2830                2835

Asp Pro  Gly Ser Asn Val His  Glu Leu Phe Ala Ile  Asp Ser Glu
    2840                2845                2850

Ser Gly  Trp Ile Thr Thr Leu  Gln Glu Leu Asp Cys  Glu Thr Cys
    2855                2860                2865

Gln Thr  Tyr His Phe His Val  Val Ala Tyr Asp His  Gly Gln Thr
    2870                2875                2880

Ile Gln  Leu Ser Ser Gln Ala  Leu Val Gln Val Ser  Ile Thr Asp
    2885                2890                2895

Glu Asn  Asp Asn Ala Pro Arg  Phe Ala Ser Glu Glu  Tyr Arg Gly
    2900                2905                2910

Ser Val  Val Glu Asn Ser Glu  Pro Gly Glu Leu Val  Ala Thr Leu
    2915                2920                2925

Lys Thr  Leu Asp Ala Asp Ile  Ser Glu Gln Asn Arg  Gln Val Thr
    2930                2935                2940
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Cys Tyr  Ile Thr Glu Gly Asp  Pro Leu Gly Gln Phe  Gly Ile Ser
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Gln Val  Gly Asp Glu Trp Arg  Ile Ser Ser Arg Lys  Thr Leu Asp
    2960                 2965                 2970

Arg Glu  His Thr Ala Lys Tyr  Leu Leu Arg Val Thr  Ala Ser Asp
    2975                 2980                 2985

Gly Lys  Phe Gln Ala Ser Val  Thr Val Glu Ile Phe  Val Leu Asp
    2990                 2995                 3000

Val Asn  Asp Asn Ser Pro Gln  Cys Ser Gln Leu Leu  Tyr Thr Gly
    3005                 3010                 3015

Lys Val  His Glu Asp Val Phe  Pro Gly His Phe Ile  Leu Lys Val
    3020                 3025                 3030

Ser Ala  Thr Asp Leu Asp Thr  Asp Thr Asn Ala Gln  Ile Thr Tyr
    3035                 3040                 3045

Ser Leu  His Gly Pro Gly Ala  His Glu Phe Lys Leu  Asp Pro His
    3050                 3055                 3060

Thr Gly  Glu Leu Thr Thr Leu  Thr Ala Leu Asp Arg  Glu Arg Lys
    3065                 3070                 3075

Asp Val  Phe Asn Leu Val Ala  Lys Ala Thr Asp Gly  Gly Gly Arg
    3080                 3085                 3090

Ser Cys  Gln Ala Asp Ile Thr  Leu His Val Glu Asp  Val Asn Asp
    3095                 3100                 3105

Asn Ala  Pro Arg Phe Phe Pro  Ser His Cys Ala Val  Ala Val Phe
    3110                 3115                 3120

Asp Asn  Thr Thr Val Lys Thr  Pro Val Ala Val Val  Phe Ala Arg
    3125                 3130                 3135

Asp Pro  Asp Gln Gly Ala Asn  Ala Gln Val Val Tyr  Ser Leu Pro
    3140                 3145                 3150

Asp Ser  Ala Glu Gly His Phe  Ser Ile Asp Ala Thr  Thr Gly Val
    3155                 3160                 3165

Ile Arg  Leu Glu Lys Pro Leu  Gln Val Arg Pro Gln  Ala Pro Leu
    3170                 3175                 3180
```

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Glu Leu  Thr Val Arg Ala Ser  Asp Leu Gly Thr Pro  Ile Pro Leu
    3185                 3190                 3195

Ser Thr  Leu Gly Thr Val Thr  Val Ser Val Val Gly  Leu Glu Asp
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Tyr Leu  Pro Val Phe Leu Asn  Thr Glu His Ser Val  Gln Val Pro
    3215                 3220                 3225

Glu Asp  Ala Pro Pro Gly Thr  Glu Val Leu Gln Leu  Ala Thr Leu
    3230                 3235                 3240

Thr Arg  Pro Gly Ala Glu Lys  Thr Gly Tyr Arg Val  Val Ser Gly
    3245                 3250                 3255

Asn Glu  Gln Gly Arg Phe Arg  Leu Asp Ala Arg Thr  Gly Ile Leu
    3260                 3265                 3270

Tyr Val  Asn Ala Ser Leu Asp  Phe Glu Thr Ser Pro  Lys Tyr Phe
    3275                 3280                 3285

Leu Ser  Ile Glu Cys Ser Arg  Lys Ser Ser Ser Ser  Leu Ser Asp
    3290                 3295                 3300

Val Thr  Thr Val Met Val Asn  Ile Thr Asp Val Asn  Glu His Arg
    3305                 3310                 3315

Pro Gln  Phe Pro Gln Asp Pro  Tyr Ser Thr Arg Val  Leu Glu Asn
    3320                 3325                 3330

Ala Leu  Val Gly Asp Val Ile  Leu Thr Val Ser Ala  Thr Asp Glu
    3335                 3340                 3345

Asp Gly  Pro Leu Asn Ser Asp  Ile Thr Tyr Ser Leu  Ile Gly Gly
    3350                 3355                 3360

Asn Gln  Leu Gly His Phe Thr  Ile His Pro Lys Lys  Gly Glu Leu
    3365                 3370                 3375

Gln Val  Ala Lys Ala Leu Asp  Arg Glu Gln Ala Ser  Ser Tyr Ser
    3380                 3385                 3390

Leu Lys  Leu Arg Ala Thr Asp  Ser Gly Gln Pro Pro  Leu His Glu
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Asp Thr  Asp Ile Ala Ile Gln  Val Ala Asp Val Asn  Asp Asn Pro
    3410                 3415                 3420
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Pro Arg  Phe Phe Gln Leu Asn  Tyr Ser Thr Thr Val  Gln Glu Asn
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Ser Pro  Ile Gly Ser Lys Val  Leu Gln Leu Ile Leu  Ser Asp Pro
    3440                 3445                 3450

Asp Ser  Pro Glu Asn Gly Pro  Pro Tyr Ser Phe Arg  Ile Thr Lys
    3455                 3460                 3465

Gly Asn  Asn Gly Ser Ala Phe  Arg Val Thr Pro Asp  Gly Trp Leu
    3470                 3475                 3480

Val Thr  Ala Glu Gly Leu Ser  Arg Arg Ala Gln Glu  Trp Tyr Gln
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Leu Gln  Ile Gln Ala Ser Asp  Ser Gly Ile Pro Pro  Leu Ser Ser
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Leu Thr  Ser Val Arg Val His  Val Thr Glu Gln Ser  His Tyr Ala
    3515                 3520                 3525

Pro Ser  Ala Leu Pro Leu Glu  Ile Phe Ile Thr Val  Gly Glu Asp
    3530                 3535                 3540

Glu Phe  Gln Gly Gly Met Val  Gly Lys Ile His Ala  Thr Asp Arg
    3545                 3550                 3555

Asp Pro  Gln Asp Thr Leu Thr  Tyr Ser Leu Ala Glu  Glu Glu Thr
    3560                 3565                 3570

Leu Gly  Arg His Phe Ser Val  Gly Ala Pro Asp Gly  Lys Ile Ile
    3575                 3580                 3585

Ala Ala  Gln Gly Leu Pro Arg  Gly His Tyr Ser Phe  Asn Val Thr
    3590                 3595                 3600

Val Ser  Asp Gly Thr Phe Thr  Thr Thr Ala Gly Val  His Val Tyr
    3605                 3610                 3615

Val Trp  His Val Gly Gln Glu  Ala Leu Gln Gln Ala  Met Trp Met
    3620                 3625                 3630

Gly Phe  Tyr Gln Leu Thr Pro  Glu Glu Leu Val Ser  Asp His Trp
    3635                 3640                 3645

Arg Asn  Leu Gln Arg Phe Leu  Ser His Lys Leu Asp  Ile Lys Arg
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    3650                3655                3660

Ala Asn  Ile His Leu Ala Ser  Leu Gln Pro Ala Glu  Ala Val Ala
    3665                3670                3675

Gly Val  Asp Val Leu Leu Val  Phe Glu Gly His Ser  Gly Thr Phe
    3680                3685                3690

Tyr Glu  Phe Gln Glu Leu Ala  Ser Ile Ile Thr His  Ser Ala Lys
    3695                3700                3705

Glu Met  Glu His Ser Val Gly  Val Gln Met Arg Ser  Ala Met Pro
    3710                3715                3720

Met Val  Pro Cys Gln Gly Pro  Thr Cys Gln Gly Gln  Ile Cys His
    3725                3730                3735

Asn Thr  Val His Leu Asp Pro  Lys Val Gly Pro Thr  Tyr Ser Thr
    3740                3745                3750

Ala Arg  Leu Ser Ile Leu Thr  Pro Arg His His Leu  Gln Arg Ser
    3755                3760                3765

Cys Ser  Cys Asn Gly Thr Ala  Thr Arg Phe Ser Gly  Gln Ser Tyr
    3770                3775                3780

Val Arg  Tyr Arg Ala Pro Ala  Ala Arg Asn Trp His  Ile His Phe
    3785                3790                3795

Tyr Leu  Lys Thr Leu Gln Pro  Gln Ala Ile Leu Leu  Phe Thr Asn
    3800                3805                3810

Glu Thr  Ala Ser Val Ser Leu  Lys Leu Ala Ser Gly  Val Pro Gln
    3815                3820                3825

Leu Glu  Tyr His Cys Leu Gly  Gly Phe Tyr Gly Asn  Leu Ser Ser
    3830                3835                3840

Gln Arg  His Val Asn Asp His  Glu Trp His Ser Ile  Leu Val Glu
    3845                3850                3855

Glu Met  Asp Ala Ser Ile Arg  Leu Met Val Asp Ser  Met Gly Asn
    3860                3865                3870

Thr Ser  Leu Val Val Pro Glu  Asn Cys Arg Gly Leu  Arg Pro Glu
    3875                3880                3885
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Arg His  Leu Leu Leu Gly Gly  Leu Ile Leu Leu His  Ser Ser Ser
    3890                 3895                 3900

Asn Val  Ser Gln Gly Phe Glu  Gly Cys Leu Asp Ala  Val Val Val
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Asn Glu  Glu Ala Leu Asp Leu  Leu Ala Pro Gly Lys  Thr Val Ala
    3920                 3925                 3930

Gly Leu  Leu Glu Thr Gln Ala  Leu Thr Gln Cys Cys  Leu His Ser
    3935                 3940                 3945

Asp Tyr  Cys Ser Gln Asn Thr  Cys Leu Asn Gly Gly  Lys Cys Ser
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Trp Thr  His Gly Ala Gly Tyr  Val Cys Lys Cys Pro  Pro Gln Phe
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Ser Gly  Lys His Cys Glu Gln  Gly Arg Glu Asn Cys  Thr Phe Ala
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Pro Cys  Leu Glu Gly Gly Thr  Cys Ile Leu Ser Pro  Lys Gly Ala
    3995                 4000                 4005

Ser Cys  Asn Cys Pro His Pro  Tyr Thr Gly Asp Arg  Cys Glu Met
    4010                 4015                 4020

Glu Ala  Arg Gly Cys Ser Glu  Gly His Cys Leu Val  Thr Pro Glu
    4025                 4030                 4035

Ile Gln  Arg Gly Asp Trp Gly  Gln Gln Glu Leu Leu  Ile Ile Thr
    4040                 4045                 4050

Val Ala  Val Ala Phe Ile Ile  Ile Ser Thr Val Gly  Leu Leu Phe
    4055                 4060                 4065

Tyr Cys  Arg Arg Cys Lys Ser  His Lys Pro Val Ala  Met Glu Asp
    4070                 4075                 4080

Pro Asp  Leu Leu Ala Arg Ser  Val Gly Val Asp Thr  Gln Ala Met
    4085                 4090                 4095

Pro Ala  Ile Glu Leu Asn Pro  Leu Ser Ala Ser Ser  Cys Asn Asn
    4100                 4105                 4110

Leu Asn  Gln Pro Glu Pro Ser  Lys Ala Ser Val Pro  Asn Glu Leu
    4115                 4120                 4125
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Val Thr  Phe Gly Pro Asn Ser  Lys Gln Arg Pro Val  Val Cys Ser
    4130                 4135                 4140

Val Pro  Pro Arg Leu Pro Pro  Ala Ala Val Pro Ser  His Ser Asp
    4145                 4150                 4155

Asn Glu  Pro Val Ile Lys Arg  Thr Trp Ser Ser Glu  Glu Met Val
    4160                 4165                 4170

Tyr Pro  Gly Gly Ala Met Val  Trp Pro Pro Thr Tyr  Ser Arg Asn
    4175                 4180                 4185

Glu Arg  Trp Glu Tyr Pro His  Ser Glu Val Thr Gln  Gly Pro Leu
    4190                 4195                 4200

Pro Pro  Ser Ala His Arg His  Ser Thr Pro Val Val  Met Pro Glu
    4205                 4210                 4215

Pro Asn  Gly Leu Tyr Gly Gly  Phe Pro Phe Pro Leu  Glu Met Glu
    4220                 4225                 4230

Asn Lys  Arg Ala Pro Leu Pro  Pro Arg Tyr Ser Asn  Gln Asn Leu
    4235                 4240                 4245

Glu Asp  Leu Met Pro Ser Arg  Pro Pro Ser Pro Arg  Glu Arg Leu
    4250                 4255                 4260

Val Ala  Pro Cys Leu Asn Glu  Tyr Thr Ala Ile Ser  Tyr Tyr His
    4265                 4270                 4275

Ser Gln  Phe Arg Gln Gly Gly  Gly Gly Pro Cys Leu  Ala Asp Gly
    4280                 4285                 4290

Gly Tyr  Lys Gly Val Gly Met  Arg Leu Ser Arg Ala  Gly Pro Ser
    4295                 4300                 4305

Tyr Ala  Val Cys Glu Val Glu  Gly Ala Pro Leu Ala  Gly Gln Gly
    4310                 4315                 4320

Gln Pro  Arg Val Pro Pro Asn  Tyr Glu Gly Ser Asp  Met Val Glu
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Ser Asp  Tyr Gly Ser Cys Glu  Glu Val Met Phe
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Gly Trp Pro Ser Glu Tyr Pro Ala Lys Ile Asn Cys Ser Trp Phe Ile
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Arg Ala Asn Pro Gly Glu Ile Ile Thr Ile Ser Phe Gln Asp Phe Asp
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Ile Gln Gly Ser Arg Arg Cys Asn Leu Asp Trp Leu Thr Ile Glu Thr
100 105 110

Tyr Lys Asn Ile Glu Ser Tyr Arg Ala Cys Gly Ser Thr Ile Pro Pro
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Pro Tyr Ile Ser Ser Gln Asp His Ile Trp Ile Arg Phe His Ser Asp
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Asp Asn Ile Ser Arg Lys Gly Phe Arg Leu Ala Tyr Phe Ser Gly Lys

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Asp Ser Ser Asp Glu Glu Ile Cys Ala Lys Glu Ala Asn Pro Pro Thr
        195                 200                 205

Ala Ala Ala Phe Gln Pro Cys Ala Tyr Asn Gln Phe Gln Cys Leu Ser
    210                 215                 220

Arg Phe Thr Lys Val Tyr Thr Cys Leu Pro Glu Ser Leu Lys Cys Asp
225                 230                 235                 240

Gly Asn Ile Asp Cys Leu Asp Leu Gly Asp Glu Ile Asp Cys Asp Val
                245                 250                 255

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

Pro Asn Tyr Pro Asp Phe Tyr Pro Pro Gly Ser Asn Cys Thr Trp Leu
        275                 280                 285

Ile Asp Thr Gly Asp His Arg Lys Val Ile Leu Arg Phe Thr Asp Phe
    290                 295                 300

Lys Leu Asp Gly Thr Gly Tyr Gly Asp Tyr Val Lys Ile Tyr Asp Gly
305                 310                 315                 320

Leu Glu Glu Asn Pro His Lys Leu Leu Arg Val Leu Thr Ala Phe Asp
                325                 330                 335

Ser His Ala Pro Leu Thr Val Val Ser Ser Ser Gly Gln Ile Arg Val
            340                 345                 350

His Phe Cys Ala Asp Lys Val Asn Ala Ala Arg Gly Phe Asn Ala Thr
        355                 360                 365

Tyr Gln Val Asp Gly Phe Cys Leu Pro Trp Glu Ile Pro Cys Gly Gly
    370                 375                 380

Asn Trp Gly Cys Tyr Thr Glu Gln Gln Arg Cys Asp Gly Tyr Trp His
385                 390                 395                 400
```

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Cys Pro Asn Gly Arg Asp Glu Thr Asn Cys Thr Met Cys Gln Lys Glu
                405                 410                 415

Glu Phe Pro Cys Ser Arg Asn Gly Val Cys Tyr Pro Arg Ser Asp Arg
            420                 425                 430

Cys Asn Tyr Gln Asn His Cys Pro Asn Gly Ser Asp Glu Lys Asn Cys
        435                 440                 445

Phe Phe Cys Gln Pro Gly Asn Phe His Cys Lys Asn Asn Arg Cys Val
    450                 455                 460

Phe Glu Ser Trp Val Cys Asp Ser Gln Asp Asp Cys Gly Asp Gly Ser
465                 470                 475                 480

Asp Glu Glu Asn Cys Pro Val Ile Val Pro Thr Arg Val Ile Thr Ala
                485                 490                 495

Ala Val Ile Gly Ser Leu Ile Cys Gly Leu Leu Leu Val Ile Ala Leu
            500                 505                 510

Gly Cys Thr Cys Lys Leu Tyr Ser Leu Arg Met Phe Glu Arg Arg Ser
        515                 520                 525

Phe Glu Thr Gln Leu Ser Arg Val Glu Ala Glu Leu Leu Arg Arg Glu
    530                 535                 540

Ala Pro Pro Ser Tyr Gly Gln Leu Ile Ala Gln Gly Leu Ile Pro Pro
545                 550                 555                 560

Val Glu Asp Phe Pro Val Cys Ser Pro Asn Gln Ala Ser Val Leu Glu
                565                 570                 575

Asn Leu Arg Leu Ala Val Arg Ser Gln Leu Gly Phe Thr Ser Val Arg
            580                 585                 590

Leu Pro Met Ala Gly Arg Ser Ser Asn Ile Trp Asn Arg Ile Phe Asn
        595                 600                 605

Phe Ala Arg Ser Arg His Ser Gly Ser Leu Ala Leu Val Ser Ala Asp
    610                 615                 620

Gly Asp Glu Val Val Pro Ser Gln Ser Thr Ser Arg Glu Pro Glu Arg
625                 630                 635                 640

Asn His Thr His Arg Ser Leu Phe Ser Val Glu Ser Asp Asp Thr Asp
                645                 650                 655
```

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Thr Glu Asn Glu Arg Arg Asp Met Ala Gly Ala Ser Gly Gly Val Ala
            660                 665                 670

Ala Pro Leu Pro Gln Lys Val Pro Pro Thr Thr Ala Val Glu Ala Thr
        675                 680                 685

Val Gly Ala Cys Ala Ser Ser Ser Thr Gln Ser Thr Arg Gly Gly His
    690                 695                 700

Ala Asp Asn Gly Arg Asp Val Thr Ser Val Glu Pro Pro Ser Val Ser
705                 710                 715                 720

Pro Ala Arg His Gln Leu Thr Ser Ala Leu Ser Arg Met Thr Gln Gly
                725                 730                 735

Leu Arg Trp Val Arg Phe Thr Leu Gly Arg Ser Ser Ser Leu Ser Gln
            740                 745                 750

Asn Gln Ser Pro Leu Arg Gln Leu Asp Asn Gly Val Ser Gly Arg Glu
        755                 760                 765

Asp Asp Asp Asp Val Glu Met Leu Ile Pro Ile Ser Asp Gly Ser Ser
    770                 775                 780

Asp Phe Asp Val Asn Asp Cys Ser Arg Pro Leu Leu Asp Leu Ala Ser
785                 790                 795                 800

Asp Gln Gly Gln Gly Leu Arg Gln Pro Tyr Asn Ala Thr Asn Pro Gly
                805                 810                 815

Val Arg Pro Ser Asn Arg Asp Gly Pro Cys Glu Arg Cys Gly Ile Val
            820                 825                 830

His Thr Ala Gln Ile Pro Asp Thr Cys Leu Glu Val Thr Leu Lys Asn
        835                 840                 845

Glu Thr Ser Asp Asp Glu Ala Leu Leu Leu Cys
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<210> 199
<211> 3747
<212> DNA
<213> Homo sapiens

<400> 199
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taagggtggg gtttgccccc ctccccacgc tcccatctct gatcctccca ccttcacccg 180

cccaccccgc gagtgagtgc ggtgcccagg cgcgcttggc ctgagaggtc ggcagcagac 240

ccggcagcgc caaccgccca gccgctctga ctgctccggc tgcccgcccg cgcggcgcgg 300

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cctgagccag agcttataga tagtaccaag ctgattgagg tacaagttgt tctcatattg 660

gcctactgct ccatcatctt gcttggggta attggcaact ccttggtgat ccatgtggtg 720

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<210> 200
<211> 381
<212> PRT

<213> Homo sapiens

<400> 200

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Met Lys Val Glu Gln Tyr Gly Pro Gln Thr Thr Pro Arg Gly Glu Leu
            20                  25                  30

Val Pro Asp Pro Glu Pro Glu Leu Ile Asp Ser Thr Lys Leu Ile Glu
        35                  40                  45

Val Gln Val Val Leu Ile Leu Ala Tyr Cys Ser Ile Ile Leu Leu Gly
    50                  55                  60

Val Ile Gly Asn Ser Leu Val Ile His Val Val Ile Lys Phe Lys Ser
65                  70                  75                  80

Met Arg Thr Val Thr Asn Phe Phe Ile Ala Asn Leu Ala Val Ala Asp
                85                  90                  95

Leu Leu Val Asn Thr Leu Cys Leu Pro Phe Thr Leu Thr Tyr Thr Leu
            100                 105                 110

Met Gly Glu Trp Lys Met Gly Pro Val Leu Cys His Leu Val Pro Tyr
        115                 120                 125

Ala Gln Gly Leu Ala Val Gln Val Ser Thr Ile Thr Leu Thr Val Ile
    130                 135                 140

Ala Leu Asp Arg His Arg Cys Ile Val Tyr His Leu Glu Ser Lys Ile
145                 150                 155                 160

Ser Lys Arg Ile Ser Phe Leu Ile Ile Gly Leu Ala Trp Gly Ile Ser
                165                 170                 175

Ala Leu Leu Ala Ser Pro Leu Ala Ile Phe Arg Glu Tyr Ser Leu Ile
            180                 185                 190

Glu Ile Ile Pro Asp Phe Glu Ile Val Ala Cys Thr Glu Lys Trp Pro
        195                 200                 205

Gly Glu Glu Lys Ser Ile Tyr Gly Thr Val Tyr Ser Leu Ser Ser Leu
    210                 215                 220

Leu Ile Leu Tyr Val Leu Pro Leu Gly Ile Ile Ser Phe Ser Tyr Thr
225                 230                 235                 240
```

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Arg Ile Trp Ser Lys Leu Lys Asn His Val Ser Pro Gly Ala Ala Asn
                245                 250                 255

Asp His Tyr His Gln Arg Arg Gln Lys Thr Thr Lys Met Leu Val Cys
            260                 265                 270

Val Val Val Val Phe Ala Val Ser Trp Leu Pro Leu His Ala Phe Gln
        275                 280                 285

Leu Ala Val Asp Ile Asp Ser Gln Val Leu Asp Leu Lys Glu Tyr Lys
    290                 295                 300

Leu Ile Phe Thr Val Phe His Ile Ile Ala Met Cys Ser Thr Phe Ala
305                 310                 315                 320

Asn Pro Leu Leu Tyr Gly Trp Met Asn Ser Asn Tyr Arg Lys Ala Phe
                325                 330                 335

Leu Ser Ala Phe Arg Cys Glu Gln Arg Leu Asp Ala Ile His Ser Glu
            340                 345                 350

Val Ser Val Thr Phe Lys Ala Lys Lys Asn Leu Glu Val Arg Lys Asn
        355                 360                 365

Ser Gly Pro Asn Asp Ser Phe Thr Glu Ala Thr Asn Val
    370                 375                 380
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<210> 201
<211> 975
<212> DNA
<213> Homo sapiens

<400> 201

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tttttggtga tttatgtctt gaccttgctg ggaaatggag ccatcatcta tgcagtgaga      180

tgcaacccac tactacacac ccccatgtac tttctgctgg gaaattttgc cttccttgag      240

atctggtatg tgtcctccac tattcctaac atgctagtca acattctctc caagaccaag      300

gccatctcat tttctgggtg cttcctccag ttctatttct tcttttcact gggaacaact      360

gaatgtctct ttctggcagt aatggcttat gatcgatacc tggccatctg ccacccactg      420

cagtaccctg ccatcatgac tgtaaggttc tgtggtaagc tggtgtcttt ctgttggctt      480

attggattcc ttggataccc aattcccatt ttctacatct cccaactccc cttctgtggt      540

cctaatatca ttgatcactt cctgtgtgac atggacccat tgatggctct atcctgtgcc      600
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gcagctggtc ggagaaaagc cttctctacc tgtggttctc atttggttgt ggtatctctt 780

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<210> 202
<211> 324
<212> PRT
<213> Homo sapiens

<400> 202

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

Ile Gln Ile Phe Leu Phe Ser Leu Phe Leu Val Ile Tyr Val Leu Thr
35 40 45

Leu Leu Gly Asn Gly Ala Ile Ile Tyr Ala Val Arg Cys Asn Pro Leu
50 55 60

Leu His Thr Pro Met Tyr Phe Leu Leu Gly Asn Phe Ala Phe Leu Glu
65 70 75 80

Ile Trp Tyr Val Ser Ser Thr Ile Pro Asn Met Leu Val Asn Ile Leu
85 90 95

Ser Lys Thr Lys Ala Ile Ser Phe Ser Gly Cys Phe Leu Gln Phe Tyr
100 105 110

Phe Phe Phe Ser Leu Gly Thr Thr Glu Cys Leu Phe Leu Ala Val Met
115 120 125

Ala Tyr Asp Arg Tyr Leu Ala Ile Cys His Pro Leu Gln Tyr Pro Ala
130 135 140

Ile Met Thr Val Arg Phe Cys Gly Lys Leu Val Ser Phe Cys Trp Leu
145 150 155 160

Ile Gly Phe Leu Gly Tyr Pro Ile Pro Ile Phe Tyr Ile Ser Gln Leu

```
                165                 170                 175

Pro Phe Cys Gly Pro Asn Ile Ile Asp His Phe Leu Cys Asp Met Asp
            180                 185                 190

Pro Leu Met Ala Leu Ser Cys Ala Pro Ala Pro Ile Thr Glu Cys Ile
        195                 200                 205

Phe Tyr Thr Gln Ser Ser Leu Val Leu Phe Phe Thr Ser Met Tyr Ile
    210                 215                 220

Leu Arg Ser Tyr Ile Leu Leu Leu Thr Ala Val Phe Gln Val Pro Ser
225                 230                 235                 240

Ala Ala Gly Arg Arg Lys Ala Phe Ser Thr Cys Gly Ser His Leu Val
                245                 250                 255

Val Val Ser Leu Phe Tyr Gly Thr Val Met Val Met Tyr Val Ser Pro
            260                 265                 270

Thr Tyr Gly Ile Pro Thr Leu Leu Gln Lys Ile Leu Thr Leu Val Tyr
        275                 280                 285

Ser Val Thr Thr Pro Leu Phe Asn Pro Leu Ile Tyr Thr Leu Arg Asn
    290                 295                 300

Lys Asp Met Lys Leu Ala Leu Arg Asn Val Leu Phe Gly Met Arg Ile
305                 310                 315                 320

Arg Gln Asn Ser
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<210> 203
<211> 5352
<212> DNA
<213> Homo sapiens

<400> 203

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ggaacggtca gctccactac tcggtctccg aggaggccaa acacggcacc ttcgtgggcc      240

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cgtccaaggg ccgcggaggc cttctggagg taaatctgca gaatggcatt ttgtttgtga      360

attctcggat cgaccgggag gagctgtgcc ggcggagcgc ggagtgcagc atccacctgg      420
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tgctcactta cagactgagc ccaaatgaat acttttctct ggaaaaacca cctgatgacg 660

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Tyr Ser Val Ser Glu Glu Ala Lys His Gly Thr Phe Val Gly Arg Ile
35 40 45

Ala Gln Asp Leu Gly Leu Glu Leu Ala Glu Leu Val Pro Arg Leu Phe
50 55 60

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Arg Val Ala Ser Lys Gly Arg Gly Gly Leu Leu Glu Val Asn Leu Gln
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Asn Gly Ile Leu Phe Val Asn Ser Arg Ile Asp Arg Glu Glu Leu Cys
                85                  90                  95

Arg Arg Ser Ala Glu Cys Ser Ile His Leu Glu Val Ile Val Asp Arg
            100                 105                 110

Pro Leu Gln Val Phe His Val Asp Val Glu Val Arg Asp Ile Asn Asp
        115                 120                 125

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

Ser Arg Pro Leu Asp Ser Arg Phe Pro Leu Glu Gly Ala Ser Asp Ala
145                 150                 155                 160

Asp Ile Gly Glu Asn Ala Leu Leu Thr Tyr Arg Leu Ser Pro Asn Glu
                165                 170                 175

Tyr Phe Ser Leu Glu Lys Pro Pro Asp Asp Glu Leu Val Lys Gly Leu
            180                 185                 190

Gly Leu Ile Leu Arg Lys Ser Leu Asp Arg Glu Glu Ala Pro Glu Ile
        195                 200                 205

Phe Leu Val Leu Thr Ala Thr Asp Gly Gly Lys Pro Glu Leu Thr Gly
    210                 215                 220

Thr Val Gln Leu Leu Ile Thr Val Leu Asp Ala Asn Asp Asn Ala Pro
225                 230                 235                 240

Ala Phe Asp Arg Thr Ile Tyr Lys Val Arg Leu Leu Glu Asn Val Pro
                245                 250                 255

Asn Gly Thr Leu Val Ile Lys Leu Asn Ala Ser Asp Leu Asp Glu Gly
            260                 265                 270

Leu Asn Gly Asp Ile Val Tyr Ser Phe Ser Asn Asp Ile Ser Pro Asn
        275                 280                 285

Val Lys Ser Lys Phe His Ile Asp Pro Ile Thr Gly Gln Ile Ile Val
    290                 295                 300

Lys Gly Tyr Ile Asp Phe Glu Glu Ser Lys Ser Tyr Glu Ile Ile Val
305                 310                 315                 320
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Glu Gly Ile Asp Lys Gly Gln Leu Pro Leu Ser Gly His Cys Arg Val
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Ile Val Glu Val Glu Asp Asn Asn Asp Asn Val Pro Asp Leu Glu Phe
            340                 345                 350

Lys Ser Leu Ser Leu Pro Ile Arg Glu Asp Ala Pro Leu Gly Thr Val
        355                 360                 365

Ile Ala Leu Ile Ser Val Ser Asp Lys Asp Met Gly Val Asn Gly Leu
    370                 375                 380

Val Thr Cys Ser Leu Thr Ser His Val Pro Phe Lys Leu Val Ser Thr
385                 390                 395                 400

Phe Lys Asn Tyr Tyr Ser Leu Val Leu Asp Ser Ala Leu Asp Arg Glu
                405                 410                 415

Ser Val Ser Ala Tyr Glu Leu Val Val Thr Ala Arg Asp Gly Gly Ser
            420                 425                 430

Pro Ser Leu Trp Ala Thr Ala Ser Val Ser Val Glu Val Ala Asp Val
        435                 440                 445

Asn Asp Asn Ala Pro Ala Phe Ala Gln Pro Glu Tyr Thr Val Phe Val
    450                 455                 460

Lys Glu Asn Asn Pro Pro Gly Cys His Ile Phe Thr Val Ser Ala Trp
465                 470                 475                 480

Asp Ala Asp Ala Gln Glu Asn Ala Leu Val Ser Tyr Ser Leu Val Glu
                485                 490                 495

Arg Arg Val Gly Glu Arg Ala Leu Ser Ser Tyr Val Ser Val His Ala
            500                 505                 510

Glu Ser Gly Lys Val Tyr Ala Leu Gln Pro Leu Asp His Glu Glu Leu
        515                 520                 525

Glu Leu Leu Gln Phe Gln Val Thr Ala Arg Asp Ala Gly Val Pro Pro
    530                 535                 540

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

Asn Ala Pro Ala Leu Leu Ala Pro Arg Ala Gly Gly Thr Gly Gly Ala
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                565                 570                 575

Val Ser Glu Leu Val Pro Trp Ser Val Gly Val Gly His Val Val Ala
            580                 585                 590

Lys Val Arg Ala Val Asp Ala Asp Ser Gly Tyr Asn Ala Trp Leu Ser
        595                 600                 605

Tyr Glu Leu Gln Pro Gly Thr Gly Gly Ala Arg Ile Pro Phe Arg Val
    610                 615                 620

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

Asp Ala Pro Arg His Arg Leu Leu Val Leu Val Lys Asp His Gly Glu
                645                 650                 655

Pro Ala Leu Thr Ala Thr Ala Thr Val Leu Val Ser Leu Val Glu Ser
            660                 665                 670

Gly Gln Ala Pro Lys Ala Ser Ser Arg Ala Leu Val Gly Ala Val Gly
        675                 680                 685

Pro Asp Ala Ala Leu Val Asp Val Asn Val Tyr Leu Ile Ile Ala Ile
    690                 695                 700

Cys Ala Val Ser Ser Leu Leu Val Leu Thr Leu Leu Leu Tyr Thr Ala
705                 710                 715                 720

Leu Arg Cys Ser Ala Leu Pro Thr Glu Gly Ala Cys Ala Pro Gly Lys
                725                 730                 735

Pro Thr Leu Val Cys Ser Ser Ala Val Gly Ser Trp Ser Tyr Ser Gln
            740                 745                 750

Gln Arg Arg Pro Arg Val Cys Ser Gly Glu Gly Pro Pro Lys Thr Asp
        755                 760                 765

Leu Met Ala Phe Ser Pro Ser Leu Pro Asp Ser Arg Asp Arg Glu Asp
    770                 775                 780

Gln Leu Gln Thr Thr Glu Glu Ser Phe Ala Lys Pro Arg Gln Pro Asn
785                 790                 795                 800

Pro Asp Trp Arg Tyr Ser Ala Ser Leu Arg Ala Gly Met His Ser Ser
                805                 810                 815
```

Val His Leu Glu Glu Ala Gly Ile Leu Arg Ala Gly Pro Gly Gly Pro
820 825 830

Asp Gln Gln Trp Pro Thr Val Ser Ser Ala Thr Pro Glu Pro Glu Ala
835 840 845

Gly Glu Val Ser Pro Pro Val Gly Ala Gly Val Asn Ser Asn Ser Trp
850 855 860

Thr Phe Lys Tyr Gly Pro Gly Asn Pro Lys Gln Ser Gly Pro Gly Glu
865 870 875 880

Leu Pro Asp Lys Phe Ile Ile Pro Gly Ser Pro Ala Ile Ile Ser Ile
885 890 895

Arg Gln Glu Pro Thr Asn Ser Gln Ile Asp Lys Ser Asp Phe Ile Thr
900 905 910

Phe Gly Lys Lys Glu Glu Thr Lys Lys Lys Lys Lys Lys Lys Lys Gly
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Asn Lys Thr Gln Glu Lys Lys Glu Lys Gly Asn Ser Thr Thr Asp Asn
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Ser Asp Gln
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Gly Val Ala Val Gly Asn Leu Ser Ala Asp Leu Arg Leu Pro Ala Ala
35 40 45

Ala Met Ser Ser Arg Asn Phe Arg Phe Leu Ser Ser His Arg Glu Leu
50 55 60

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

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Ala Asp Arg Glu Gln Leu Cys Arg Ala Lys Ala Ala Cys Val Leu Thr
                85                  90                  95

Tyr Asp Leu Val Leu Glu Asp Pro Leu Glu Leu His Lys Ile Arg Ile
            100                 105                 110

His Val Leu Asp Thr Asn Asp Asn Ser Pro Leu Phe Pro Ala Gly Asp
        115                 120                 125

Val Gln Leu His Ile Pro Glu Phe Leu Thr Pro Gly Ala Arg Phe Thr
    130                 135                 140

Leu Pro Asn Ala Gln Asp Asp Asp Glu Gly Ser Asn Gly Ile Leu Ser
145                 150                 155                 160

Tyr Ser Leu Ser Pro Ser Gln His Phe Arg Leu Asp Met Gly Ser Arg
                165                 170                 175

Val Asp Gly Ser Glu Tyr Pro Glu Leu Val Leu Glu Lys Ala Leu Asp
            180                 185                 190

Arg Glu Gln Arg Ala Thr His Leu Leu Val Leu Thr Ala Arg Asp Gly
        195                 200                 205

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

Asp Thr Asn Asp Asn Ala Pro Val Phe Glu Arg Ser Val Tyr Arg Thr
225                 230                 235                 240

Lys Val Pro Glu Thr Ala Pro Asn Gly Thr Val Leu Phe Arg Val Gln
                245                 250                 255

Ala Leu Asp Pro Asp Glu Gly Ser Asn Gly Glu Val Gln Tyr Ser Leu
            260                 265                 270

Ser Asn Ser Thr Gln Ala Glu Leu Arg His Arg Phe His Val His Pro
        275                 280                 285

Lys Ser Gly Glu Val Gln Val Ala Ala Ser Leu Gly Pro Pro Glu Thr
    290                 295                 300

Leu Leu Glu Ala Tyr Ile Glu Ala Arg Asp Glu Gly Val Phe Gly Leu
305                 310                 315                 320

Ala Ser Thr Ala Lys Leu Leu Val Glu Val Thr Asp Val Asn Asp His
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                325                 330                 335

Ala Pro Glu Leu Asp Phe Leu Thr Leu Ser Asn Pro Val Pro Glu Asp
            340                 345                 350

Ala Ala Pro Gly Thr Val Ile Ala Leu Phe Ser Val Lys Asp Glu Asp
        355                 360                 365

Leu Asp Ser Asn Gly Arg Val Ile Cys Gly Met Ser Ser Ala Gly Pro
    370                 375                 380

Phe Gln Leu Thr Ala Ser Phe Asp Asn Tyr Tyr Ser Leu Leu Ile Asp
385                 390                 395                 400

Gly Pro Leu Asp Arg Glu Gln Ile Ser Glu Tyr Gln Val Leu Ile Thr
                405                 410                 415

Ala Ser Asp Ser Gly Ser Pro Pro Leu Ser Thr Arg Arg Thr Ile Thr
            420                 425                 430

Val Ser Val Ala Asp Val Asn Asp Asn Thr Pro Asn Phe Pro Gln Pro
        435                 440                 445

Gln Gln Glu Leu Phe Val Ala Glu Asn Asn Gly Pro Gly Ala Ser Leu
    450                 455                 460

Gly Arg Val Phe Ala Gln Asp Pro Asp Leu Gly Lys Asn Gly Leu Val
465                 470                 475                 480

Ser Tyr Glu Leu Leu Asp Val Ile Ser Glu Gly Pro Ser Ala Ser Ser
                485                 490                 495

Leu Leu Ala Val Glu Ser Ser Ser Gly Ala Ile Thr Ala Lys Thr Ser
            500                 505                 510

Phe Asp Phe Glu Gln Leu Arg Gly Phe His Phe Gln Val Glu Gly Arg
        515                 520                 525

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

Val Val Asp Arg Asn Asp Asn Tyr Pro Val Ile Leu Phe Pro Leu Pro
545                 550                 555                 560

Arg Asn Gly Ser Val Pro Val Glu Ile Val Pro Arg Ser Ala Arg Thr
                565                 570                 575
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Gly His Leu Val Thr Lys Val Val Ala Glu Asp Ala Asp Ser Gly Ser
            580                 585                 590

Asn Ala Trp Leu Ser Tyr His Ile Ser Arg Ala Ser Asp Ser Ser Leu
        595                 600                 605

Phe Arg Ile Ser Ala Asn Ile Gly Glu Leu Arg Thr Ala Arg Leu Val
    610                 615                 620

Leu Pro Thr Asp Ala Val Lys Gln Arg Val Val Val Val Val Arg Asp
625                 630                 635                 640

His Gly Asp Pro Pro Leu Ser Ser Ser Val Thr Leu Gly Val Leu Leu
                645                 650                 655

Ser Asn Ser Val Pro Gln Leu Leu Pro Asp Phe Glu Asp Val Trp Glu
            660                 665                 670

Pro Gly Gly Gln Leu Ser Ala Gln Asn Leu Tyr Leu Val Ile Ala Leu
        675                 680                 685

Ala Cys Ile Ser Phe Leu Phe Leu Gly Cys Leu Leu Phe Phe Val Cys
    690                 695                 700

Thr Lys Leu His Gln Ser Pro Gly Cys Cys Ala Gln Ser Cys Cys Arg
705                 710                 715                 720

Ser Thr Glu Asp Leu Arg Tyr Gly Ser Lys Met Val Ser Asn Pro Cys
                725                 730                 735

Met Thr Ser Ala Thr Ile Asp Val Thr Thr Val Glu Arg Leu Ser Gln
            740                 745                 750

Thr Tyr Leu Tyr Arg Ala Ser Leu Gly Leu Gly Ser Asp Asn Asn Ser
        755                 760                 765

Leu Leu Leu Arg Gly Glu Tyr Asn Ala Ala Asp Leu Arg Asn Leu Ala
    770                 775                 780

Thr Gly Val Gly Leu Asn Leu Pro Ile Ser Cys Ile Gln Ile Arg Asn
785                 790                 795                 800

Arg Lys Gly Asp His Ala Asn Val Asn Ala Met Pro Arg Gln Pro Asn
                805                 810                 815

Pro Asp Trp Arg Tyr Ser Ala Ser Leu Arg Ala Gly Met His Ser Ser
            820                 825                 830
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Val His Leu Glu Glu Ala Gly Ile Leu Arg Ala Gly Pro Gly Gly Pro
        835                 840                 845

Asp Gln Gln Trp Pro Thr Val Ser Ser Ala Thr Pro Glu Pro Glu Ala
    850                 855                 860

Gly Glu Val Ser Pro Pro Val Gly Ala Gly Val Asn Ser Asn Ser Trp
865                 870                 875                 880

Thr Phe Lys Tyr Gly Pro Gly Asn Pro Lys Gln Ser Gly Pro Gly Glu
                885                 890                 895

Leu Pro Asp Lys Phe Ile Ile Pro Gly Ser Pro Ala Ile Ile Ser Ile
            900                 905                 910

Arg Gln Glu Pro Thr Asn Ser Gln Ile Asp Lys Ser Asp Phe Ile Thr
        915                 920                 925

Phe Gly Lys Lys Glu Glu Thr Lys Lys Lys Lys Lys Lys Lys Lys Gly
    930                 935                 940

Asn Lys Thr Gln Glu Lys Lys Glu Lys Gly Asn Ser Thr Thr Asp Asn
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Ser Asp Gln
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Thr Leu Lys Ser Glu Ala Leu Arg Asn Trp Gln Val Tyr Arg Leu Val
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Ile Ile Ile Trp Arg Phe Ala Gly Asn Phe Glu Arg Thr Val Gly Thr
                85                  90                  95

Val Arg His Cys Phe Phe Thr Val Ile Phe Ala Ile Phe Ser Ala Ile
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Ile Phe Leu Ser Phe Glu Ala Val Ser Ser Leu Ser Lys Leu Gly Glu
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Val Glu Asp Ala Arg Gly Phe Thr Pro Val Ala Phe Ala Met Leu Gly
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Val Thr Thr Val Arg Ser Arg Met Arg Arg Ala Leu Val Phe Gly Met
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Val Val Pro Ser Val Leu Val Pro Trp Leu Leu Leu Gly Ala Ser Trp
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Leu Ile Pro Gln Thr Ser Phe Leu Ser Asn Val Cys Gly Leu Ser Ile
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Gly Leu Ala Tyr Gly Leu Thr Tyr Cys Tyr Ser Ile Asp Leu Ser Glu
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Arg Val Ala Leu Lys Leu Asp Gln Thr Phe Pro Phe Ser Leu Met Arg
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Arg Ile Ser Val Phe Lys Tyr Val Ser Gly Ser Ser Ala Glu Arg Arg
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Ala Ala Gln Ser Arg Lys Leu Asn Pro Val Pro Gly Ser Tyr Pro Thr
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Gln Ser Cys His Pro His Leu Ser Pro Ser His Pro Val Ser Gln Thr
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Gln His Ala Ser Gly Gln Lys Leu Ala Ser Trp Pro Ser Cys Thr Pro
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Gly His Met Pro Thr Leu Pro Pro Tyr Gln Pro Ala Ser Gly Leu Cys
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Tyr Val Gln Asn His Phe Gly Pro Asn Pro Thr Ser Ser Ser Val Tyr
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Ala Arg Gly Ser Thr Thr Leu Gln Glu Ser Arg Glu Gly Leu Pro Glu
        35                  40                  45

Glu Glu Ala Pro Arg Pro Gln Leu Asp Leu Gln Ala Ser Lys Lys Leu
    50                  55                  60

Pro Asp Leu Tyr Gly Asn Pro Pro Gln Glu Leu Ile Gly Glu Pro Leu
65                  70                  75                  80

Glu Asp Leu Asp Pro Phe Tyr Ser Thr Gln Lys Thr Phe Ile Val Leu
                85                  90                  95

Asn Lys Gly Lys Thr Ile Phe Arg Phe Ser Ala Thr Asn Ala Leu Tyr
            100                 105                 110

Val Leu Ser Pro Phe His Pro Ile Arg Arg Ala Ala Val Lys Ile Leu
        115                 120                 125

Val His Ser Leu Phe Asn Met Leu Ile Met Cys Thr Ile Leu Thr Asn
    130                 135                 140

Cys Val Phe Met Ala Gln His Asp Pro Pro Pro Trp Thr Lys Tyr Val
145                 150                 155                 160

Glu Tyr Thr Phe Thr Ala Ile Tyr Thr Phe Glu Ser Leu Val Lys Ile
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Leu Ala Arg Gly Phe Cys Leu His Ala Phe Thr Phe Leu Arg Asp Pro
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Trp Asn Trp Leu Asp Phe Ser Val Ile Ile Met Ala Tyr Thr Thr Glu
        195                 200                 205

Phe Val Asp Leu Gly Asn Val Ser Ala Leu Arg Thr Phe Arg Val Leu
    210                 215                 220

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

Gly Ala Leu Ile Gln Ser Val Lys Lys Leu Ala Asp Val Met Val Leu
                245                 250                 255

Thr Val Phe Cys Leu Ser Val Phe Ala Leu Ile Gly Leu Gln Leu Phe
            260                 265                 270
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Gly Thr Asn Gly Ser Val Glu Ala Asp Gly Leu Val Trp Glu Ser Leu
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Asp Leu Tyr Leu Ser Asp Pro Glu Asn Tyr Leu Leu Lys Asn Gly Thr
305                 310                 315                 320

Ser Asp Val Leu Leu Cys Gly Asn Ser Ser Asp Ala Gly Thr Cys Pro
                325                 330                 335

Glu Gly Tyr Arg Cys Leu Lys Ala Gly Glu Asn Pro Asp His Gly Tyr
            340                 345                 350

Thr Ser Phe Asp Ser Phe Ala Trp Ala Phe Leu Ala Leu Phe Arg Leu
        355                 360                 365

Met Thr Gln Asp Cys Trp Glu Arg Leu Tyr Gln Gln Thr Leu Arg Ser
    370                 375                 380

Ala Gly Lys Ile Tyr Met Ile Phe Phe Met Leu Val Ile Phe Leu Gly
385                 390                 395                 400

Ser Phe Tyr Leu Val Asn Leu Ile Leu Ala Val Val Ala Met Ala Tyr
                405                 410                 415

Glu Glu Gln Asn Gln Ala Thr Ile Ala Glu Thr Glu Glu Lys Glu Lys
            420                 425                 430

Arg Phe Gln Glu Ala Met Glu Met Leu Lys Lys Glu His Glu Ala Leu
        435                 440                 445

Thr Ile Arg Gly Val Asp Thr Val Ser Arg Ser Ser Leu Glu Met Ser
    450                 455                 460

Pro Leu Ala Pro Val Asn Ser His Glu Arg Arg Ser Lys Arg Arg Lys
465                 470                 475                 480

Arg Met Ser Ser Gly Thr Glu Glu Cys Gly Glu Asp Arg Leu Pro Lys
                485                 490                 495

Ser Asp Ser Glu Asp Gly Pro Arg Ala Met Asn His Leu Ser Leu Thr
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Arg Gly Leu Ser Arg Thr Ser Met Lys Pro Arg Ser Ser Arg Gly Ser
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Ile Phe Thr Phe Arg Arg Arg Asp Leu Gly Ser Glu Ala Asp Phe Ala
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Asp Asp Glu Asn Ser Thr Ala Gly Glu Ser Glu Ser His His Thr Ser
545                 550                 555                 560

Leu Leu Val Pro Trp Pro Leu Arg Arg Thr Ser Ala Gln Gly Gln Pro
                565                 570                 575

Ser Pro Gly Thr Ser Ala Pro Gly His Ala Leu His Gly Lys Lys Asn
            580                 585                 590

Ser Thr Val Asp Cys Asn Gly Val Val Ser Leu Leu Gly Ala Gly Asp
        595                 600                 605

Pro Glu Ala Thr Ser Pro Gly Ser His Leu Leu Arg Pro Val Met Leu
    610                 615                 620

Glu His Pro Pro Asp Thr Thr Thr Pro Ser Glu Glu Pro Gly Gly Pro
625                 630                 635                 640

Gln Met Leu Thr Ser Gln Ala Pro Cys Val Asp Gly Phe Glu Glu Pro
                645                 650                 655

Gly Ala Arg Gln Arg Ala Leu Ser Ala Val Ser Val Leu Thr Ser Ala
            660                 665                 670

Leu Glu Glu Leu Glu Glu Ser Arg His Lys Cys Pro Pro Cys Trp Asn
        675                 680                 685

Arg Leu Ala Gln Arg Tyr Leu Ile Trp Glu Cys Cys Pro Leu Trp Met
    690                 695                 700

Ser Ile Lys Gln Gly Val Lys Leu Val Val Met Asp Pro Phe Thr Asp
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Leu Thr Ile Thr Met Cys Ile Val Leu Asn Thr Leu Phe Met Ala Leu
                725                 730                 735

Glu His Tyr Asn Met Thr Ser Glu Phe Glu Glu Met Leu Gln Val Gly
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Asn Leu Val Phe Thr Gly Ile Phe Thr Ala Glu Met Thr Phe Lys Ile
        755                 760                 765
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Asp Ser Ile Ile Val Ile Leu Ser Leu Met Glu Leu Gly Leu Ser Arg
785                 790                 795                 800

Met Ser Asn Leu Ser Val Leu Arg Ser Phe Arg Leu Leu Arg Val Phe
                805                 810                 815

Lys Leu Ala Lys Ser Trp Pro Thr Leu Asn Thr Leu Ile Lys Ile Ile
            820                 825                 830

Gly Asn Ser Val Gly Ala Leu Gly Asn Leu Thr Leu Val Leu Ala Ile
        835                 840                 845

Ile Val Phe Ile Phe Ala Val Val Gly Met Gln Leu Phe Gly Lys Asn
    850                 855                 860

Tyr Ser Glu Leu Arg Asp Ser Asp Ser Gly Leu Leu Pro Arg Trp His
865                 870                 875                 880

Met Met Asp Phe Phe His Ala Phe Leu Ile Ile Phe Arg Ile Leu Cys
                885                 890                 895

Gly Glu Trp Ile Glu Thr Met Trp Asp Cys Met Glu Val Ser Gly Gln
            900                 905                 910

Ser Leu Cys Leu Leu Val Phe Leu Leu Val Met Val Ile Gly Asn Leu
        915                 920                 925

Val Val Leu Asn Leu Phe Leu Ala Leu Leu Leu Ser Ser Phe Ser Ala
    930                 935                 940

Asp Asn Leu Thr Ala Pro Asp Glu Asp Arg Glu Met Asn Asn Leu Gln
945                 950                 955                 960

Leu Ala Leu Ala Arg Ile Gln Arg Gly Leu Arg Phe Val Lys Arg Thr
                965                 970                 975

Thr Trp Asp Phe Cys Cys Gly Leu Leu Arg Gln Arg Pro Gln Lys Pro
            980                 985                 990

Ala Ala Leu Ala Ala Gln Gly Gln  Leu Pro Ser Cys Ile  Ala Thr Pro
        995                 1000                1005

Tyr Ser  Pro Pro Pro Pro Glu  Thr Glu Lys Val Pro  Pro Thr Arg
    1010                1015                1020
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Lys Glu  Thr Arg Phe Glu Glu  Gly Glu Gln Pro Gly  Gln Gly Thr
    1025                1030                1035

Pro Gly  Asp Pro Glu Pro Val  Cys Val Pro Ile Ala  Val Ala Glu
    1040                1045                1050

Ser Asp  Thr Asp Asp Gln Glu  Glu Asp Glu Glu Asn  Ser Leu Gly
    1055                1060                1065

Thr Glu  Glu Glu Ser Ser Lys  Gln Gln Glu Ser Gln  Pro Val Ser
    1070                1075                1080

Gly Gly  Pro Glu Ala Pro Pro  Asp Ser Arg Thr Trp  Ser Gln Val
    1085                1090                1095

Ser Ala  Thr Ala Ser Ser Glu  Ala Glu Ala Ser Ala  Ser Gln Ala
    1100                1105                1110

Asp Trp  Arg Gln Gln Trp Lys  Ala Glu Pro Gln Ala  Pro Gly Cys
    1115                1120                1125

Gly Glu  Thr Pro Glu Asp Ser  Cys Ser Glu Gly Ser  Thr Ala Asp
    1130                1135                1140

Met Thr  Asn Thr Ala Glu Leu  Leu Glu Gln Ile Pro  Asp Leu Gly
    1145                1150                1155

Gln Asp  Val Lys Asp Pro Glu  Asp Cys Phe Thr Glu  Gly Cys Val
    1160                1165                1170

Arg Arg  Cys Pro Cys Cys Ala  Val Asp Thr Thr Gln  Ala Pro Gly
    1175                1180                1185

Lys Val  Trp Trp Arg Leu Arg  Lys Thr Cys Tyr His  Ile Val Glu
    1190                1195                1200

His Ser  Trp Phe Glu Thr Phe  Ile Ile Phe Met Ile  Leu Leu Ser
    1205                1210                1215

Ser Gly  Ala Leu Ala Phe Glu  Asp Ile Tyr Leu Glu  Glu Arg Lys
    1220                1225                1230

Thr Ile  Lys Val Leu Leu Glu  Tyr Ala Asp Lys Met  Phe Thr Tyr
    1235                1240                1245

Val Phe  Val Leu Glu Met Leu  Leu Lys Trp Val Ala  Tyr Gly Phe
    1250                1255                1260
```

```
Lys Lys  Tyr Phe Thr Asn Ala  Trp Cys Trp Leu Asp  Phe Leu Ile
    1265                 1270                 1275

Val Asp  Val Ser Leu Val Ser  Leu Val Ala Asn Thr  Leu Gly Phe
    1280                 1285                 1290

Ala Glu  Met Gly Pro Ile Lys  Ser Leu Arg Thr Leu  Arg Ala Leu
    1295                 1300                 1305

Arg Pro  Leu Arg Ala Leu Ser  Arg Phe Glu Gly Met  Arg Val Val
    1310                 1315                 1320

Val Asn  Ala Leu Val Gly Ala  Ile Pro Ser Ile Met  Asn Val Leu
    1325                 1330                 1335

Leu Val  Cys Leu Ile Phe Trp  Leu Ile Phe Ser Ile  Met Gly Val
    1340                 1345                 1350

Asn Leu  Phe Ala Gly Lys Phe  Gly Arg Cys Ile Asn  Gln Thr Glu
    1355                 1360                 1365

Gly Asp  Leu Pro Leu Asn Tyr  Thr Ile Val Asn Asn  Lys Ser Gln
    1370                 1375                 1380

Cys Glu  Ser Leu Asn Leu Thr  Gly Glu Leu Tyr Trp  Thr Lys Val
    1385                 1390                 1395

Lys Val  Asn Phe Asp Asn Val  Gly Ala Gly Tyr Leu  Ala Leu Leu
    1400                 1405                 1410

Gln Val  Ala Thr Phe Lys Gly  Trp Met Asp Ile Met  Tyr Ala Ala
    1415                 1420                 1425

Val Asp  Ser Arg Gly Tyr Glu  Glu Gln Pro Gln Trp  Glu Tyr Asn
    1430                 1435                 1440

Leu Tyr  Met Tyr Ile Tyr Phe  Val Ile Phe Ile Ile  Phe Gly Ser
    1445                 1450                 1455

Phe Phe  Thr Leu Asn Leu Phe  Ile Gly Val Ile Ile  Asp Asn Phe
    1460                 1465                 1470

Asn Gln  Gln Lys Lys Lys Leu  Gly Gly Gln Asp Ile  Phe Met Thr
    1475                 1480                 1485

Glu Glu  Gln Lys Lys Tyr Tyr  Asn Ala Met Lys Lys  Leu Gly Ser
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    1490                1495                1500

Lys Lys  Pro Gln Lys Pro Ile  Pro Arg Pro Leu Asn  Lys Tyr Gln
    1505                1510                1515

Gly Phe  Ile Phe Asp Ile Val  Thr Lys Gln Ala Phe  Asp Val Thr
    1520                1525                1530

Ile Met  Phe Leu Ile Cys Leu  Asn Met Val Thr Met  Met Val Glu
    1535                1540                1545

Thr Asp  Asp Gln Ser Pro Glu  Lys Ile Asn Ile Leu  Ala Lys Ile
    1550                1555                1560

Asn Leu  Leu Phe Val Ala Ile  Phe Thr Gly Glu Cys  Ile Val Lys
    1565                1570                1575

Leu Ala  Ala Leu Arg His Tyr  Tyr Phe Thr Asn Ser  Trp Asn Ile
    1580                1585                1590

Phe Asp  Phe Val Val Val Ile  Leu Ser Ile Val Gly  Thr Val Leu
    1595                1600                1605

Ser Asp  Ile Ile Gln Lys Tyr  Phe Phe Ser Pro Thr  Leu Phe Arg
    1610                1615                1620

Val Ile  Arg Leu Ala Arg Ile  Gly Arg Ile Leu Arg  Leu Ile Arg
    1625                1630                1635

Gly Ala  Lys Gly Ile Arg Thr  Leu Leu Phe Ala Leu  Met Met Ser
    1640                1645                1650

Leu Pro  Ala Leu Phe Asn Ile  Gly Leu Leu Leu Phe  Leu Val Met
    1655                1660                1665

Phe Ile  Tyr Ser Ile Phe Gly  Met Ala Asn Phe Ala  Tyr Val Lys
    1670                1675                1680

Trp Glu  Ala Gly Ile Asp Asp  Met Phe Asn Phe Gln  Thr Phe Ala
    1685                1690                1695

Asn Ser  Met Leu Cys Leu Phe  Gln Ile Thr Thr Ser  Ala Gly Trp
    1700                1705                1710

Asp Gly  Leu Leu Ser Pro Ile  Leu Asn Thr Gly Pro  Pro Tyr Cys
    1715                1720                1725
```

```
Asp Pro  Thr Leu Pro Asn Ser  Asn Gly Ser Arg Gly  Asp Cys Gly
    1730                1735                1740

Ser Pro  Ala Val Gly Ile Leu  Phe Phe Thr Thr Tyr  Ile Ile Ile
    1745                1750                1755

Ser Phe  Leu Ile Val Val Asn  Met Tyr Ile Ala Ile  Ile Leu Glu
    1760                1765                1770

Asn Phe  Ser Val Ala Thr Glu  Glu Ser Thr Glu Pro  Leu Ser Glu
    1775                1780                1785

Asp Asp  Phe Asp Met Phe Tyr  Glu Ile Trp Glu Lys  Phe Asp Pro
    1790                1795                1800

Glu Ala  Thr Gln Phe Ile Glu  Tyr Ser Val Leu Ser  Asp Phe Ala
    1805                1810                1815

Asp Ala  Leu Ser Glu Pro Leu  Arg Ile Ala Lys Pro  Asn Gln Ile
    1820                1825                1830

Ser Leu  Ile Asn Met Asp Leu  Pro Met Val Ser Gly  Asp Arg Ile
    1835                1840                1845

His Cys  Met Asp Ile Leu Phe  Ala Phe Thr Lys Arg  Val Leu Gly
    1850                1855                1860

Glu Ser  Gly Glu Met Asp Ala  Leu Lys Ile Gln Met  Glu Glu Lys
    1865                1870                1875

Phe Met  Ala Ala Asn Pro Ser  Lys Ile Ser Tyr Glu  Pro Ile Thr
    1880                1885                1890

Thr Thr  Leu Arg Arg Lys His  Glu Glu Val Ser Ala  Met Val Ile
    1895                1900                1905

Gln Arg  Ala Phe Arg Arg His  Leu Leu Gln Arg Ser  Leu Lys His
    1910                1915                1920

Ala Ser  Phe Leu Phe Arg Gln  Gln Ala Gly Ser Gly  Leu Ser Glu
    1925                1930                1935

Glu Asp  Ala Pro Glu Arg Glu  Gly Leu Ile Ala Tyr  Val Met Ser
    1940                1945                1950

Glu Asn  Phe Ser Arg Pro Leu  Gly Pro Pro Ser Ser  Ser Ser Ile
    1955                1960                1965
```

```
Ser Ser  Thr Ser Phe Pro Pro  Ser Tyr Asp Ser Val  Thr Arg Ala
    1970                 1975                 1980

Thr Ser  Asp Asn Leu Gln Val  Arg Gly Ser Asp Tyr  Ser His Ser
    1985                 1990                 1995

Glu Asp  Leu Ala Asp Phe Pro  Pro Ser Pro Asp Arg  Asp Arg Glu
    2000                 2005                 2010

Ser Ile  Val
    2015
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<210> 211
<211> 1925
<212> DNA
<213> Homo sapiens

<400> 211

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agctgcggct gagcccagcg ctcgaggcgc gaggcagcca ggagggcccg tgcggcgcgg      120

ggagccagcg agcgcgcctt cggcattggc cgccgcgatg tcagctcagt gctgtgcggg      180

ccagctggcc tgctgctgtg ggtctgcagg ctgctctctc tgctgtgatt gctgccccag      240

gattcggcag tccctcagca cccgcttcat gtacgccctc tacttcattc tggtcgtcgt      300

cctctgctgc atcatgatgt caacaaccgt ggctcacaag atgaaagagc acattccttt      360

ttttgaagat atgtgtaaag gcattaaagc tggtgacacc tgtgagaagc tggtgggata      420

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gaccttgaaa atcaacaaca gcaaaagttg tagagctcat attcacaatg gcttttggtt      540

ctttaaactt ctgctgttgg gggccatgtg ctcaggagct ttcttcattc cagatcagga      600

caccttttctg aacgcctggc gctatgtggg agccgtcgga ggcttcctct tcattggcat      660

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tgccactgga ggcttggttt tgatggcagt gttttataca cagaaagaca gctgcatgga      840

aaacaaaatt ctgctgggag taaatggagg cctgtgcctg cttatatcat tggtagccat      900

ctcaccctgg gtccaaaatc gacagccaca ctcggggctc ttacaatcag gggtcataag      960

ctgctatgtc acctacctca ccttctcagc tctgtccagc aaacctgcag aagtagttct     1020

agatgaacat gggaaaaatg ttacaatctg tgtgcctgac tttggtcaag acctgtacag     1080

agatgaaaac ttggtgacta tactggggac cagcctctta atcggatgta tcttgtattc     1140

atgtttgaca tcaacaacaa gatcgagttc tgacgctctg caggggcgat acgcagctcc     1200
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gcagcagccg gggaaggagg gaccacgggt catttatgac gagaagaaag gcaccgtcta 1320

catctactcc tacttccact tcgtgttctt cctagcttcc ctgtatgtga tgatgaccgt 1380

caccaactgg ttcaaaagtg cctttcacct cctgccatga ttctgaggcc tccccagcca 1440

tgtggaactc tgagaaacct gaacggactc catttggctc cttcatttgc aagacatcaa 1500

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ctaggctccc cctcccctct ctaaaccaaa gtataaaaca aaatctagcc ccttcttcag 1860

ggccgagaga attttgagca ctagccgtct ctcggtcgct ggctaataaa ggactcctca 1920

attcg 1925

<210> 212
<211> 423
<212> PRT
<213> Homo sapiens

<400> 212

Met Ser Ala Gln Cys Cys Ala Gly Gln Leu Ala Cys Cys Cys Gly Ser
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Ala Gly Cys Ser Leu Cys Cys Asp Cys Cys Pro Arg Ile Arg Gln Ser
20 25 30

Leu Ser Thr Arg Phe Met Tyr Ala Leu Tyr Phe Ile Leu Val Val Val
35 40 45

Leu Cys Cys Ile Met Met Ser Thr Thr Val Ala His Lys Met Lys Glu
50 55 60

His Ile Pro Phe Phe Glu Asp Met Cys Lys Gly Ile Lys Ala Gly Asp
65 70 75 80

Thr Cys Glu Lys Leu Val Gly Tyr Ser Ala Val Tyr Arg Val Cys Phe
85 90 95

Gly Met Ala Cys Phe Phe Phe Ile Phe Cys Leu Leu Thr Leu Lys Ile
100 105 110

Asn Asn Ser Lys Ser Cys Arg Ala His Ile His Asn Gly Phe Trp Phe

```
        115                 120                 125

Phe Lys Leu Leu Leu Leu Gly Ala Met Cys Ser Gly Ala Phe Phe Ile
    130                 135                 140

Pro Asp Gln Asp Thr Phe Leu Asn Ala Trp Arg Tyr Val Gly Ala Val
145                 150                 155                 160

Gly Gly Phe Leu Phe Ile Gly Ile Gln Leu Leu Leu Leu Val Glu Phe
                165                 170                 175

Ala His Lys Trp Asn Lys Asn Trp Thr Ala Gly Thr Ala Ser Asn Lys
            180                 185                 190

Leu Trp Tyr Ala Ser Leu Ala Leu Val Thr Leu Ile Met Tyr Ser Ile
        195                 200                 205

Ala Thr Gly Gly Leu Val Leu Met Ala Val Phe Tyr Thr Gln Lys Asp
    210                 215                 220

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

Leu Leu Ile Ser Leu Val Ala Ile Ser Pro Trp Val Gln Asn Arg Gln
                245                 250                 255

Pro His Ser Gly Leu Leu Gln Ser Gly Val Ile Ser Cys Tyr Val Thr
            260                 265                 270

Tyr Leu Thr Phe Ser Ala Leu Ser Ser Lys Pro Ala Glu Val Val Leu
        275                 280                 285

Asp Glu His Gly Lys Asn Val Thr Ile Cys Val Pro Asp Phe Gly Gln
    290                 295                 300

Asp Leu Tyr Arg Asp Glu Asn Leu Val Thr Ile Leu Gly Thr Ser Leu
305                 310                 315                 320

Leu Ile Gly Cys Ile Leu Tyr Ser Cys Leu Thr Ser Thr Thr Arg Ser
                325                 330                 335

Ser Ser Asp Ala Leu Gln Gly Arg Tyr Ala Ala Pro Glu Leu Glu Ile
            340                 345                 350

Ala Arg Cys Cys Phe Cys Phe Ser Pro Gly Gly Glu Asp Thr Glu Glu
        355                 360                 365
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```
Gln Gln Pro Gly Lys Glu Gly Pro Arg Val Ile Tyr Asp Glu Lys Lys
    370                 375                 380

Gly Thr Val Tyr Ile Tyr Ser Tyr Phe His Phe Val Phe Phe Leu Ala
385                 390                 395                 400

Ser Leu Tyr Val Met Met Thr Val Thr Asn Trp Phe Asn His Val Arg
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Ser Ala Phe His Leu Leu Pro
            420
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<210> 213
<211> 4717
<212> DNA
<213> Homo sapiens

<400> 213

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atggaagcac attagtgttt attttgatga agaaatatat agatttttta aaacaaccac      180

aaagtagata gctcagtaaa aaatcaattt tggaagatgt cactgaacaa ctcttccaat      240

gtatttctgg attcagtgcc cagtaatacc aatcgctttc aagttagtgt cataaatgag      300

aaccatgaga gcagtgcagc tgcagatgac aatactgacc caccacatta tgaagaaacc      360

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tatgattctc acacaaacac atactatcta caaacttttg gccacaacac catggatgcc      540

gttcccaaga tagagtacta tcgtaacacc ggcagcatca gtgggcccaa ggtcaaccga      600

cccagcctgc ttgagattca cgagcaactc gcaaagaatg tggcagtcac cccaagttca      660

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gatgatcaag ctggtgttgt gaagtttgga tgggtgaaag gtgtgctggt aagatgcatg      780

ctgaacatct ggggagtcat gctcttcatt cgcctctcct ggattgttgg agaagctgga      840

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tcaacttctg cgatagcaac taacgggttt gttcgtggag gtggggccta ctatcttatt      960

tccagaagtt tagggcccga gttcggtggg tcaataggcc tgatctttgc ttttgctaat     1020

gcagtggctg ttgctatgta tgtggtggga tttgctgaga ctgtagtaga tcttcttaag     1080

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ctatggatat gcaaacctct ggagaggatc ctaccagatt ctacatacat tgcataattt 3660

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gaacctgaaa taaaagcact caaattcaaa aaaaaaa 4717

<210> 214
<211> 1099
<212> PRT
<213> Homo sapiens

<400> 214

Met Ser Leu Asn Asn Ser Ser Asn Val Phe Leu Asp Ser Val Pro Ser

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            20                  25                  30

Ser Ala Ala Ala Asp Asp Asn Thr Asp Pro Pro His Tyr Glu Glu Thr
        35                  40                  45

Ser Phe Gly Asp Glu Ala Gln Lys Arg Leu Arg Ile Ser Phe Arg Pro
    50                  55                  60

Gly Asn Gln Glu Cys Tyr Asp Asn Phe Leu Gln Ser Gly Glu Thr Ala
65                  70                  75                  80

Lys Thr Asp Ala Ser Phe His Ala Tyr Asp Ser His Thr Asn Thr Tyr
                85                  90                  95

Tyr Leu Gln Thr Phe Gly His Asn Thr Met Asp Ala Val Pro Lys Ile
            100                 105                 110

Glu Tyr Tyr Arg Asn Thr Gly Ser Ile Ser Gly Pro Lys Val Asn Arg
        115                 120                 125

Pro Ser Leu Leu Glu Ile His Glu Gln Leu Ala Lys Asn Val Ala Val
    130                 135                 140

Thr Pro Ser Ser Ala Asp Arg Val Ala Asn Gly Asp Gly Ile Pro Gly
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Asp Glu Gln Ala Glu Asn Lys Glu Asp Asp Gln Ala Gly Val Val Lys
                165                 170                 175

Phe Gly Trp Val Lys Gly Val Leu Val Arg Cys Met Leu Asn Ile Trp
            180                 185                 190

Gly Val Met Leu Phe Ile Arg Leu Ser Trp Ile Val Gly Glu Ala Gly
        195                 200                 205

Ile Gly Leu Gly Val Leu Ile Ile Leu Leu Ser Thr Met Val Thr Ser
    210                 215                 220

Ile Thr Gly Leu Ser Thr Ser Ala Ile Ala Thr Asn Gly Phe Val Arg
225                 230                 235                 240

Gly Gly Gly Ala Tyr Tyr Leu Ile Ser Arg Ser Leu Gly Pro Glu Phe
                245                 250                 255
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Gly Gly Ser Ile Gly Leu Ile Phe Ala Phe Ala Asn Ala Val Ala Val
            260                 265                 270

Ala Met Tyr Val Val Gly Phe Ala Glu Thr Val Val Asp Leu Leu Lys
        275                 280                 285

Glu Ser Asp Ser Met Met Val Asp Pro Thr Asn Asp Ile Arg Ile Ile
    290                 295                 300

Gly Ser Ile Thr Val Val Ile Leu Leu Gly Ile Ser Val Ala Gly Met
305                 310                 315                 320

Glu Trp Glu Ala Lys Ala Gln Val Ile Leu Leu Val Ile Leu Leu Ile
                325                 330                 335

Ala Ile Ala Asn Phe Phe Ile Gly Thr Val Ile Pro Ser Asn Asn Glu
            340                 345                 350

Lys Lys Ser Arg Gly Phe Phe Asn Tyr Gln Ala Ser Ile Phe Ala Glu
        355                 360                 365

Asn Phe Gly Pro Arg Phe Thr Lys Gly Glu Gly Phe Phe Ser Val Phe
    370                 375                 380

Ala Ile Phe Phe Pro Ala Ala Thr Gly Ile Leu Ala Gly Ala Asn Ile
385                 390                 395                 400

Ser Gly Asp Leu Glu Asp Pro Gln Asp Ala Ile Pro Arg Gly Thr Met
                405                 410                 415

Leu Ala Ile Phe Ile Thr Thr Val Ala Tyr Leu Gly Val Ala Ile Cys
            420                 425                 430

Val Gly Ala Cys Val Val Arg Asp Ala Thr Gly Asn Met Asn Asp Thr
        435                 440                 445

Ile Ile Ser Gly Met Asn Cys Asn Gly Ser Ala Ala Cys Gly Leu Gly
    450                 455                 460

Tyr Asp Phe Ser Arg Cys Arg His Glu Pro Cys Gln Tyr Gly Leu Met
465                 470                 475                 480

Asn Asn Phe Gln Val Met Ser Met Val Ser Gly Phe Gly Pro Leu Ile
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Thr Ala Gly Ile Phe Ser Ala Thr Leu Ser Ser Ala Leu Ala Ser Leu
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Val Ser Ala Pro Lys Val Phe Gln Ala Leu Cys Lys Asp Asn Ile Tyr
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Lys Ala Leu Gln Phe Phe Ala Lys Gly Tyr Gly Lys Asn Asn Glu Pro
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Leu Arg Gly Tyr Ile Leu Thr Phe Leu Ile Ala Met Ala Phe Ile Leu
545                 550                 555                 560

Ile Ala Glu Leu Asn Thr Ile Ala Pro Ile Ile Ser Asn Phe Phe Leu
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Ala Ser Tyr Ala Leu Ile Asn Phe Ser Cys Phe His Ala Ser Tyr Ala
            580                 585                 590

Lys Ser Pro Gly Trp Arg Pro Ala Tyr Gly Ile Tyr Asn Met Trp Val
        595                 600                 605

Ser Leu Phe Gly Ala Val Leu Cys Cys Ala Val Met Phe Val Ile Asn
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Trp Trp Ala Ala Val Ile Thr Tyr Val Ile Glu Phe Phe Leu Tyr Val
625                 630                 635                 640

Tyr Val Thr Cys Lys Lys Pro Asp Val Asn Trp Gly Ser Ser Thr Gln
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Ala Leu Ser Tyr Val Ser Ala Leu Asp Asn Ala Leu Glu Leu Thr Thr
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Val Glu Asp His Val Lys Asn Phe Arg Pro Gln Cys Ile Val Leu Thr
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Gly Gly Pro Met Thr Arg Pro Ala Leu Leu Asp Ile Thr His Ala Phe
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Thr Lys Asn Ser Gly Leu Cys Ile Cys Cys Glu Val Phe Val Gly Pro
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Arg Lys Leu Cys Val Lys Glu Met Asn Ser Gly Met Ala Lys Lys Gln
                725                 730                 735

Ala Trp Leu Ile Lys Asn Lys Ile Lys Ala Phe Tyr Ala Ala Val Ala
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Ala Asp Cys Phe Arg Asp Gly Val Arg Ser Leu Leu Gln Ala Ser Gly
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Trp Arg Lys Ala Pro Leu Thr Glu Ile Glu Asn Tyr Val Gly Ile Ile
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His Asp Ala Phe Asp Phe Glu Ile Gly Val Val Ile Val Arg Ile Ser
                805                 810                 815

Gln Gly Phe Asp Ile Ser Gln Val Leu Gln Val Gln Glu Glu Leu Glu
            820                 825                 830

Arg Leu Glu Gln Glu Arg Leu Ala Leu Glu Ala Thr Ile Lys Asp Asn
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Glu Cys Glu Glu Glu Ser Gly Gly Ile Arg Gly Leu Phe Lys Lys Ala
    850                 855                 860

Gly Lys Leu Asn Ile Thr Lys Thr Thr Pro Lys Lys Asp Gly Ser Ile
865                 870                 875                 880

Asn Thr Ser Gln Ser Met His Val Gly Glu Phe Asn Gln Lys Leu Val
                885                 890                 895

Glu Ala Ser Thr Gln Phe Lys Lys Lys Gln Glu Lys Gly Thr Ile Asp
            900                 905                 910

Val Trp Trp Leu Phe Asp Asp Gly Gly Leu Thr Leu Leu Ile Pro Tyr
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Ile Leu Thr Leu Arg Lys Lys Trp Lys Asp Cys Lys Leu Arg Ile Tyr
    930                 935                 940

Val Gly Gly Lys Ile Asn Arg Ile Glu Glu Glu Lys Ile Val Met Ala
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Ser Leu Leu Ser Lys Phe Arg Ile Lys Phe Ala Asp Ile His Ile Ile
                965                 970                 975

Gly Asp Ile Asn Ile Arg Pro Asn Lys Glu Ser Trp Lys Val Phe Glu
            980                 985                 990

Glu Met Ile Glu Pro Tyr Arg Leu  His Glu Ser Cys Lys  Asp Leu Thr
        995                 1000                1005

Thr Ala  Glu Lys Leu Lys Arg  Glu Thr Pro Trp Lys  Ile Thr Asp
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Leu Tyr Met Ala Trp Leu Glu Ile Leu Thr Lys Asn Leu Pro Pro
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Val Leu Leu Val Arg Gly Asn His Lys Asn Val Leu Thr Phe Tyr
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Asn Phe Ala Leu Val Leu Gln Gly Pro Leu Thr Thr Gln Tyr Leu Trp
        35                  40                  45

His Arg Phe Ser Ala Asp Leu Gly Tyr Asn Gly Thr Arg Gln Arg Gly
    50                  55                  60

Gly Cys Ser Asn Arg Ser Ala Asp Pro Thr Met Gln Glu Val Glu Thr
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Leu Thr Ser His Trp Thr Leu Tyr Met Asn Val Gly Gly Phe Leu Val
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Gly Leu Phe Ser Ser Thr Leu Leu Gly Ala Trp Ser Asp Ser Val Gly
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Arg Arg Pro Leu Leu Val Leu Ala Ser Leu Gly Leu Leu Leu Gln Ala
        115                 120                 125

Leu Val Ser Val Phe Val Val Gln Leu Gln Leu His Val Gly Tyr Phe
    130                 135                 140

Val Leu Gly Arg Ile Leu Cys Ala Leu Leu Gly Asp Phe Gly Gly Leu
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Leu Ala Ala Ser Phe Ala Ser Val Ala Asp Val Ser Ser Ser Arg Ser
                165                 170                 175

Arg Thr Phe Arg Met Ala Leu Leu Glu Ala Ser Ile Gly Val Ala Gly
            180                 185                 190

Met Leu Ala Ser Leu Leu Gly Gly His Trp Leu Arg Ala Gln Gly Tyr
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Ala Asn Pro Phe Trp Leu Ala Leu Ala Leu Leu Ile Ala Met Thr Leu
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Ala Pro Ala Pro Glu Lys Ser Arg Lys His Leu Ala Leu Tyr Ser Leu
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Ala Ile Phe Val Val Ile Thr Val His Phe Gly Ala Gln Asp Ile Leu
        275                 280                 285

Thr Leu Tyr Glu Leu Ser Thr Pro Leu Cys Trp Asp Ser Lys Leu Ile
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Gly Tyr Gly Ser Ala Ala Gln His Leu Pro Tyr Leu Thr Ser Leu Leu
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Glu Thr Glu Gln Gly Ala Leu Phe Ser Ala Val Ala Cys Val Asn Ser
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Leu Ala Met Leu Thr Ala Ser Gly Ile Phe Asn Ser Leu Tyr Pro Ala
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Thr Leu Asn Phe Met Lys Gly Phe Pro Phe Leu Leu Gly Ala Gly Leu
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Leu Leu Ile Pro Ala Val Leu Ile Gly Met Leu Glu Lys Ala Asp Pro
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20 25 30

Ala Leu Ser Leu Ser Phe Ile Ala Lys Thr Leu Gly Ala Ile Ile Met
35 40 45

Lys Ser Ser Ile Ile His Ile Glu Arg Arg Phe Glu Ile Ser Ser Ser
50 55 60

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

Ile Val Phe Val Ser Tyr Phe Gly Ser Lys Leu His Arg Pro Lys Leu

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                85                  90                  95

Ile Gly Ile Gly Cys Phe Ile Met Gly Ile Gly Gly Val Leu Thr Ala
            100                 105                 110

Leu Pro His Phe Phe Met Gly Tyr Tyr Arg Tyr Ser Lys Glu Thr Asn
        115                 120                 125

Ile Asn Ser Ser Glu Asn Ser Thr Ser Thr Leu Ser Thr Cys Leu Ile
    130                 135                 140

Asn Gln Ile Leu Ser Leu Asn Arg Ala Ser Pro Glu Ile Val Gly Lys
145                 150                 155                 160

Gly Cys Leu Lys Glu Ser Gly Ser Tyr Met Trp Ile Tyr Val Phe Met
                165                 170                 175

Gly Asn Met Leu Arg Gly Ile Gly Glu Thr Pro Ile Val Pro Leu Gly
            180                 185                 190

Leu Ser Tyr Ile Asp Asp Phe Ala Lys Glu Gly His Ser Ser Leu Tyr
        195                 200                 205

Leu Gly Ile Leu Asn Ala Ile Ala Met Ile Gly Pro Ile Ile Gly Phe
    210                 215                 220

Thr Leu Gly Ser Leu Phe Ser Lys Met Tyr Val Asp Ile Gly Tyr Val
225                 230                 235                 240

Asp Leu Ser Thr Ile Arg Ile Thr Pro Thr Asp Ser Arg Trp Val Gly
                245                 250                 255

Ala Trp Trp Leu Asn Phe Leu Val Ser Gly Leu Phe Ser Ile Ile Ser
            260                 265                 270

Ser Ile Pro Phe Phe Phe Leu Pro Gln Thr Pro Asn Lys Pro Gln Lys
        275                 280                 285

Glu Arg Lys Ala Ser Leu Ser Leu His Val Leu Glu Thr Asn Asp Glu
    290                 295                 300

Lys Asp Gln Thr Ala Asn Leu Thr Asn Gln Gly Lys Asn Ile Thr Lys
305                 310                 315                 320

Asn Val Thr Gly Phe Phe Gln Ser Phe Lys Ser Ile Leu Thr Asn Pro
                325                 330                 335
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Leu Tyr Val Met Phe Val Leu Leu Thr Leu Leu Gln Val Ser Ser Tyr
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Ile Gly Ala Phe Thr Tyr Val Phe Lys Tyr Val Glu Gln Gln Tyr Gly
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Gln Pro Ser Ser Lys Ala Asn Ile Leu Leu Gly Val Ile Thr Ile Pro
    370                 375                 380

Ile Phe Ala Ser Gly Met Phe Leu Gly Gly Tyr Ile Ile Lys Lys Phe
385                 390                 395                 400

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

Met Ser Leu Ser Phe Tyr Leu Leu Tyr Phe Phe Ile Leu Cys Glu Asn
            420                 425                 430

Lys Ser Val Ala Gly Leu Thr Met Thr Tyr Asp Gly Asn Asn Pro Val
        435                 440                 445

Thr Ser His Arg Asp Val Pro Leu Ser Tyr Cys Asn Ser Asp Cys Asn
    450                 455                 460

Cys Asp Glu Ser Gln Trp Glu Pro Val Cys Gly Asn Asn Gly Ile Thr
465                 470                 475                 480

Tyr Ile Ser Pro Cys Leu Ala Gly Cys Lys Ser Ser Ser Gly Asn Lys
                485                 490                 495

Lys Pro Ile Val Phe Tyr Asn Cys Ser Cys Leu Glu Val Thr Gly Leu
            500                 505                 510

Gln Asn Arg Asn Tyr Ser Ala His Leu Gly Glu Cys Pro Arg Asp Asp
        515                 520                 525

Ala Cys Thr Arg Lys Phe Tyr Phe Phe Val Ala Ile Gln Val Leu Asn
    530                 535                 540

Leu Phe Phe Ser Ala Leu Gly Gly Thr Ser His Val Met Leu Ile Val
545                 550                 555                 560

Lys Ile Val Gln Pro Glu Leu Lys Ser Leu Ala Leu Gly Phe His Ser
                565                 570                 575

Met Val Ile Arg Ala Leu Gly Gly Ile Leu Ala Pro Ile Tyr Phe Gly
            580                 585                 590
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Ala Leu Ile Asp Thr Thr Cys Ile Lys Trp Ser Thr Asn Asn Cys Gly
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Thr Arg Gly Ser Cys Arg Thr Tyr Asn Ser Thr Ser Phe Ser Arg Val
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Tyr Leu Gly Leu Ser Ser Met Leu Arg Val Ser Ser Leu Val Leu Tyr
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Ile Ile Leu Ile Tyr Ala Met Lys Lys Lys Tyr Gln Glu Lys Asp Ile
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Asn Ala Ser Glu Asn Gly Ser Val Met Asp Glu Ala Asn Leu Glu Ser
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Leu Asn Lys Asn Lys His Phe Val Pro Ser Ala Gly Ala Asp Ser Glu
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Thr His Cys
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His Gly Gln Gln Cys Leu Lys Met Pro Gly Pro Arg Ala Pro Gly Leu
35 40 45

Gln Gly Gly Ser Asn Arg Asp Pro Gly Gln Pro Cys Gly Gly Glu Ser
50 55 60

Thr Arg Ser Ser Ser Val Ile Asn Asn Tyr Leu Asp Ala Asn Glu Pro
65 70 75 80

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Val Ser Leu Glu Ala Arg Leu Ser Arg Met His Phe His Asp Ser Gln
                85                  90                  95

Arg Lys Val Asp Tyr Val Leu Ala Tyr His Tyr Arg Lys Arg Gly Val
            100                 105                 110

His Leu Ala Gln Gly Phe Pro Gly His Ser Leu Ala Ile Val Ser Asn
        115                 120                 125

Gly Glu Thr Gly Lys Glu Pro His Ala Gly Gly Pro Gly Asp Ile Glu
    130                 135                 140

Leu Gly Pro Leu Asp Ala Leu Glu Glu Glu Arg Lys Glu Gln Arg Glu
145                 150                 155                 160

Glu Phe Glu His Asn Leu Met Glu Ala Gly Leu Glu Leu Glu Lys Asp
                165                 170                 175

Leu Glu Asn Lys Ser Gln Gly Ser Ile Phe Val Arg Ile His Ala Pro
            180                 185                 190

Trp Gln Val Leu Ala Arg Glu Ala Glu Phe Leu Lys Ile Lys Val Pro
        195                 200                 205

Thr Lys Lys Glu Met Tyr Glu Ile Lys Ala Gly Gly Ser Ile Ala Lys
    210                 215                 220

Lys Phe Ser Ala Ala Leu Gln Lys Leu Ser Ser His Leu Gln Pro Arg
225                 230                 235                 240

Val Pro Glu His Ser Asn Asn Lys Met Lys Asn Leu Ser Tyr Pro Phe
                245                 250                 255

Ser Arg Glu Lys Met Tyr Leu Tyr Asn Ile Gln Glu Lys Asp Thr Phe
            260                 265                 270

Phe Asp Asn Ala Thr Arg Ser Arg Ile Val His Glu Ile Leu Lys Arg
        275                 280                 285

Thr Ala Cys Ser Arg Ala Asn Asn Thr Met Gly Ile Asn Ser Leu Ile
    290                 295                 300

Ala Asn Asn Ile Tyr Glu Ala Ala Tyr Pro Leu His Asp Gly Glu Tyr
305                 310                 315                 320

Asp Ser Pro Glu Asp Asp Met Asn Asp Arg Lys Leu Leu Tyr Gln Glu
                325                 330                 335
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Trp Ala Arg Tyr Gly Val Phe Tyr Lys Phe Gln Pro Ile Asp Leu Ile
            340                 345                 350

Arg Lys Tyr Phe Gly Glu Lys Ile Gly Leu Tyr Phe Ala Trp Leu Gly
        355                 360                 365

Leu Tyr Thr Ser Phe Leu Ile Pro Ser Ser Val Ile Gly Val Ile Val
    370                 375                 380

Phe Leu Tyr Gly Cys Ala Thr Ile Glu Glu Asp Ile Pro Ser Arg Glu
385                 390                 395                 400

Met Cys Asp Gln Gln Asn Ala Phe Thr Met Cys Pro Leu Cys Asp Lys
                405                 410                 415

Ser Cys Asp Tyr Trp Asn Leu Ser Ser Ala Cys Gly Thr Ala Gln Ala
            420                 425                 430

Ser His Leu Phe Asp Asn Pro Ala Thr Val Phe Phe Ser Ile Phe Met
        435                 440                 445

Ala Leu Trp Ala Thr Met Phe Leu Glu Asn Trp Lys Arg Leu Gln Met
    450                 455                 460

Arg Leu Gly Tyr Phe Trp Asp Leu Thr Gly Ile Glu Glu Glu Glu Glu
465                 470                 475                 480

Arg Ala Gln Glu His Ser Arg Pro Glu Tyr Glu Thr Lys Val Arg Glu
                485                 490                 495

Lys Met Leu Lys Glu Ser Asn Gln Ser Ala Val Gln Lys Leu Glu Thr
            500                 505                 510

Asn Thr Thr Glu Cys Gly Asp Glu Asp Asp Glu Asp Lys Leu Thr Trp
        515                 520                 525

Lys Asp Arg Phe Pro Gly Tyr Leu Met Asn Phe Ala Ser Ile Leu Phe
    530                 535                 540

Met Ile Ala Leu Thr Phe Ser Ile Val Phe Gly Val Ile Val Tyr Arg
545                 550                 555                 560

Ile Thr Thr Ala Ala Ala Leu Ser Leu Asn Lys Ala Thr Arg Ser Asn
                565                 570                 575

Val Arg Val Thr Val Thr Ala Thr Ala Val Ile Ile Asn Leu Val Val
            580                 585                 590
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Ile Leu Ile Leu Asp Glu Ile Tyr Gly Ala Val Ala Lys Trp Leu Thr
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Lys Ile Glu Val Pro Lys Thr Glu Gln Thr Phe Glu Glu Arg Leu Ile
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Leu Lys Ala Phe Leu Leu Lys Phe Val Asn Ala Tyr Ser Pro Ile Phe
625                 630                 635                 640

Tyr Val Ala Phe Phe Lys Gly Arg Phe Val Gly Arg Pro Gly Ser Tyr
                645                 650                 655

Val Tyr Val Phe Asp Gly Tyr Arg Met Glu Glu Cys Ala Pro Gly Gly
            660                 665                 670

Cys Leu Met Glu Leu Cys Ile Gln Leu Ser Ile Ile Met Leu Gly Lys
        675                 680                 685

Gln Leu Ile Gln Asn Asn Ile Phe Glu Ile Gly Val Pro Lys Leu Lys
    690                 695                 700

Lys Leu Phe Arg Lys Leu Lys Asp Glu Thr Glu Ala Gly Glu Thr Asp
705                 710                 715                 720

Ser Ala His Ser Lys His Pro Glu Gln Trp Asp Leu Asp Tyr Ser Leu
                725                 730                 735

Glu Pro Tyr Thr Gly Leu Thr Pro Glu Tyr Met Glu Met Ile Ile Gln
            740                 745                 750

Phe Gly Phe Val Thr Leu Phe Val Ala Ser Phe Pro Leu Ala Pro Val
        755                 760                 765

Phe Ala Leu Leu Asn Asn Val Ile Glu Val Arg Leu Asp Ala Lys Lys
    770                 775                 780

Phe Val Thr Glu Leu Arg Arg Pro Asp Ala Val Arg Thr Lys Asp Ile
785                 790                 795                 800

Gly Ile Trp Phe Asp Ile Leu Ser Gly Ile Gly Lys Phe Ser Val Ile
                805                 810                 815

Ser Asn Ala Phe Val Ile Ala Ile Thr Ser Asp Phe Ile Pro Arg Leu
            820                 825                 830

Val Tyr Gln Tyr Ser Tyr Ser His Asn Gly Thr Leu His Gly Phe Val
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Asn His Thr Leu Ser Phe Phe Asn Val Ser Gln Leu Lys Glu Gly Thr
850 855 860

Gln Pro Glu Asn Ser Gln Phe Asp Gln Glu Val Gln Phe Cys Arg Phe
865 870 875 880

Lys Asp Tyr Arg Glu Pro Pro Trp Ala Pro Asn Pro Tyr Glu Phe Ser
885 890 895

Lys Gln Tyr Trp Phe Ile Leu Ser Ala Arg Leu Ala Phe Val Ile Ile
900 905 910

Phe Gln Asn Leu Val Met Phe Leu Ser Val Leu Val Asp Trp Met Ile
915 920 925

Pro Asp Ile Pro Thr Asp Ile Ser Asp Gln Ile Lys Lys Glu Lys Ser
930 935 940

Leu Leu Val Asp Phe Phe Leu Lys Glu Glu His Glu Lys Leu Lys Leu
945 950 955 960

Met Asp Glu Pro Ala Leu Arg Ser Pro Gly Gly Gly Asp Arg Ser Arg
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<400> 222

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20 25 30

Pro Val Ile Ile Phe Ile Ile Leu Ala Ile Thr Arg Thr Lys Phe Pro
35 40 45

Pro Thr Ala Lys Pro Thr Cys Tyr Leu Ala Pro Arg Asn Leu Pro Ser
50 55 60

Thr Gly Phe Phe Pro Phe Leu Gln Thr Leu Leu Cys Asp Thr Asp Ser
65 70 75 80

Lys Cys Lys Asp Thr Pro Tyr Gly Pro Gln Asp Leu Leu Arg Arg Lys
85 90 95

Gly Ile Asp Asp Ala Leu Phe Lys Asp Ser Glu Ile Leu Arg Lys Ser
100 105 110

Ser Asn Leu Asp Lys Asp Ser Ser Leu Ser Phe Gln Ser Thr Gln Val
115 120 125

Pro Glu Arg Arg His Ala Ser Leu Ala Thr Val Phe Pro Ser Pro Ser
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Ser Asp Leu Glu Ile Pro Gly Thr Tyr Thr Phe Asn Gly Ser Gln Val
145 150 155 160

Leu Ala Arg Ile Leu Gly Leu Glu Lys Leu Leu Lys Gln Asn Ser Thr
165 170 175

Ser Glu Asp Ile Arg Arg Glu Leu Cys Asp Ser Tyr Ser Gly Tyr Ile
180 185 190

Val Asp Asp Ala Phe Ser Trp Thr Phe Leu Gly Arg Asn Val Phe Asn
195 200 205

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Lys Phe Cys Leu Ser Asn Met Thr Leu Leu Glu Ser Ser Leu Gln Glu
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Leu Asn Lys Gln Phe Ser Gln Leu Ser Ser Asp Pro Asn Asn Gln Lys
225                 230                 235                 240

Ile Val Phe Gln Glu Ile Val Arg Met Leu Ser Phe Phe Ser Gln Val
                245                 250                 255

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

Phe Gln Asn Asp Thr Ser Leu Ser Asn Leu Phe Asp Val Leu Arg Lys
        275                 280                 285

Ala Asn Ser Val Leu Leu Val Val Gln Lys Val Tyr Pro Arg Phe Ala
    290                 295                 300

Thr Asn Glu Gly Phe Arg Thr Leu Gln Lys Ser Val Lys His Leu Leu
305                 310                 315                 320

Tyr Thr Leu Asp Ser Pro Ala Gln Gly Asp Ser Asp Asn Ile Thr His
                325                 330                 335

Val Trp Asn Glu Asp Asp Gly Gln Thr Leu Ser Pro Ser Ser Leu Ala
            340                 345                 350

Ala Gln Leu Leu Ile Leu Glu Asn Phe Glu Asp Ala Leu Leu Asn Ile
        355                 360                 365

Ser Ala Asn Ser Pro Tyr Ile Pro Tyr Leu Ala Cys Val Arg Asn Val
    370                 375                 380

Thr Asp Ser Leu Ala Arg Gly Ser Pro Glu Asn Leu Arg Leu Leu Gln
385                 390                 395                 400

Ser Thr Ile Arg Phe Lys Lys Ser Phe Leu Arg Asn Gly Ser Tyr Glu
                405                 410                 415

Asp Tyr Phe Pro Pro Val Pro Glu Val Leu Lys Ser Lys Leu Ser Gln
            420                 425                 430

Leu Arg Asn Leu Thr Glu Leu Leu Cys Glu Ser Glu Thr Phe Ser Leu
        435                 440                 445

Ile Glu Lys Ser Cys Gln Leu Ser Asp Met Ser Phe Gly Ser Leu Cys
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Glu Glu Ser Glu Phe Asp Leu Gln Leu Leu Glu Ala Ala Glu Leu Gly
465                 470                 475                 480

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

Lys Val Arg Asp Leu Leu Thr Gly Asp Pro Ser Lys Ile Asn Leu Asn
            500                 505                 510

Met Asp Gln Phe Leu Glu Gln Ala Leu Gln Met Asn Tyr Leu Glu Asn
        515                 520                 525

Ile Thr Gln Leu Ile Pro Ile Ile Glu Ala Met Leu His Val Asn Asn
    530                 535                 540

Ser Ala Asp Ala Ser Glu Lys Pro Gly Gln Leu Leu Glu Met Phe Lys
545                 550                 555                 560

Asn Val Glu Glu Leu Lys Glu Asp Leu Arg Arg Thr Thr Gly Met Ser
                565                 570                 575

Asn Arg Thr Ile Asp Lys Leu Leu Ala Ile Pro Ile Pro Asp Asn Arg
            580                 585                 590

Ala Glu Ile Ile Ser Gln Val Phe Trp Leu His Ser Cys Asp Thr Asn
        595                 600                 605

Ile Thr Thr Pro Lys Leu Glu Asp Ala Met Lys Glu Phe Cys Asn Leu
    610                 615                 620

Ser Leu Ser Glu Arg Ser Arg Gln Ser Tyr Leu Ile Gly Leu Thr Leu
625                 630                 635                 640

Leu His Tyr Leu Asn Ile Tyr Asn Phe Thr Tyr Lys Val Phe Phe Pro
                645                 650                 655

Arg Lys Asp Gln Lys Pro Val Glu Lys Met Met Glu Leu Phe Ile Arg
            660                 665                 670

Leu Lys Glu Ile Leu Asn Gln Met Ala Ser Gly Thr His Pro Leu Leu
        675                 680                 685

Asp Lys Met Arg Ser Leu Lys Gln Met His Leu Pro Arg Ser Val Pro
    690                 695                 700

Leu Thr Gln Ala Met Tyr Arg Ser Asn Arg Met Asn Thr Pro Gln Gly
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Ser Phe Ser Thr Ile Ser Gln Ala Leu Cys Ser Gln Gly Ile Thr Thr
725 730 735

Glu Tyr Leu Thr Ala Met Leu Pro Ser Ser Gln Arg Pro Lys Gly Asn
740 745 750

His Thr Lys Asp Phe Leu Thr Tyr Lys Leu Thr Lys Glu Gln Ile Ala
755 760 765

Ser Lys Tyr Gly Ile Pro Ile Asn Ser Thr Pro Phe Cys Phe Ser Leu
770 775 780

Tyr Lys Asp Ile Ile Asn Met Pro Ala Gly Pro Val Ile Trp Ala Phe
785 790 795 800

Leu Lys Pro Met Leu Leu Gly Arg Ile Leu Tyr Ala Pro Tyr Asn Pro
805 810 815

Val Thr Lys Ala Ile Met Glu Lys Ser Asn Val Thr Leu Arg Gln Leu
820 825 830

Ala Glu Leu Arg Glu Lys Ser Gln Glu Trp Met Asp Lys Ser Pro Leu
835 840 845

Phe Met Asn Ser Phe His Leu Leu Asn Gln Ala Ile Pro Met Leu Gln
850 855 860

Asn Thr Leu Arg Asn Pro Phe Val Gln Val Phe Val Lys Phe Ser Val
865 870 875 880

Gly Leu Asp Ala Val Glu Leu Leu Lys Gln Ile Asp Glu Leu Asp Ile
885 890 895

Leu Arg Leu Lys Leu Glu Asn Asn Ile Asp Ile Ile Asp Gln Leu Asn
900 905 910

Thr Leu Ser Ser Leu Thr Val Asn Ile Ser Ser Cys Val Leu Tyr Asp
915 920 925

Arg Ile Gln Ala Ala Lys Thr Ile Asp Glu Met Glu Arg Glu Ala Lys
930 935 940

Arg Leu Tyr Lys Ser Asn Glu Leu Phe Gly Ser Val Ile Phe Lys Leu
945 950 955 960

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Pro Ser Asn Arg Ser Trp His Arg Gly Tyr Asp Ser Gly Asn Val Phe
               965                 970                 975

Leu Pro Pro Val Ile Lys Tyr Thr Ile Arg Met Ser Leu Lys Thr Ala
           980                 985                 990

Gln Thr Thr Arg Ser Leu Arg Thr  Lys Ile Trp Ala Pro  Gly Pro His
        995                1000                1005

Asn Ser  Pro Ser His Asn Gln  Ile Tyr Gly Arg Ala  Phe Ile Tyr
    1010                1015                1020

Leu Gln  Asp Ser Ile Glu Arg  Ala Ile Ile Glu Leu  Gln Thr Gly
    1025                1030                1035

Arg Asn  Ser Gln Glu Ile Ala  Val Gln Val Gln Ala  Ile Pro Tyr
    1040                1045                1050

Pro Cys  Phe Met Lys Asp Asn  Phe Leu Thr Ser Val  Ser Tyr Ser
    1055                1060                1065

Leu Pro  Ile Val Leu Met Val  Ala Trp Val Val Phe  Ile Ala Ala
    1070                1075                1080

Phe Val  Lys Lys Leu Val Tyr  Glu Lys Asp Leu Arg  Leu His Glu
    1085                1090                1095

Tyr Met  Lys Met Met Gly Val  Asn Ser Cys Ser His  Phe Phe Ala
    1100                1105                1110

Trp Leu  Ile Glu Ser Val Gly  Phe Leu Leu Val Thr  Ile Val Ile
    1115                1120                1125

Leu Ile  Ile Ile Leu Lys Phe  Gly Asn Ile Leu Pro  Lys Thr Asn
    1130                1135                1140

Gly Phe  Ile Leu Phe Leu Tyr  Phe Ser Asp Tyr Ser  Phe Ser Val
    1145                1150                1155

Ile Ala  Met Ser Tyr Leu Ile  Ser Val Phe Phe Asn  Asn Thr Asn
    1160                1165                1170

Ile Ala  Ala Leu Ile Gly Ser  Leu Ile Tyr Ile Ile  Ala Phe Phe
    1175                1180                1185

Pro Phe  Ile Val Leu Val Thr  Val Glu Asn Glu Leu  Ser Tyr Val
    1190                1195                1200
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Leu Lys  Val Phe Met Ser Leu  Leu Ser Pro Thr Ala  Phe Ser Tyr
    1205                 1210                 1215

Ala Ser  Gln Tyr Ile Ala Arg  Tyr Glu Glu Gln Gly  Ile Gly Leu
    1220                 1225                 1230

Gln Trp  Glu Asn Met Tyr Thr  Ser Pro Val Gln Asp  Asp Thr Thr
    1235                 1240                 1245

Ser Phe  Gly Trp Leu Cys Cys  Leu Ile Leu Ala Asp  Ser Phe Ile
    1250                 1255                 1260

Tyr Phe  Leu Ile Ala Trp Tyr  Val Arg Asn Val Phe  Pro Gly Thr
    1265                 1270                 1275

Tyr Gly  Met Ala Ala Pro Trp  Tyr Phe Pro Ile Leu  Pro Ser Tyr
    1280                 1285                 1290

Trp Lys  Glu Arg Phe Gly Cys  Ala Glu Val Lys Pro  Glu Lys Ser
    1295                 1300                 1305

Asn Gly  Leu Met Phe Thr Asn  Ile Met Met Gln Asn  Thr Asn Pro
    1310                 1315                 1320

Ser Ala  Ser Pro Glu Tyr Met  Phe Ser Ser Asn Ile  Glu Pro Glu
    1325                 1330                 1335

Pro Lys  Asp Leu Thr Val Gly  Val Ala Leu His Gly  Val Thr Lys
    1340                 1345                 1350

Ile Tyr  Gly Ser Lys Val Ala  Val Asp Asn Leu Asn  Leu Asn Phe
    1355                 1360                 1365

Tyr Glu  Gly His Ile Thr Ser  Leu Leu Gly Pro Asn  Gly Ala Gly
    1370                 1375                 1380

Lys Thr  Thr Thr Ile Ser Met  Leu Thr Gly Leu Phe  Gly Ala Ser
    1385                 1390                 1395

Ala Gly  Thr Ile Phe Val Tyr  Gly Lys Asp Ile Lys  Thr Asp Leu
    1400                 1405                 1410

His Thr  Val Arg Lys Asn Met  Gly Val Cys Met Gln  His Asp Val
    1415                 1420                 1425

Leu Phe  Ser Tyr Leu Thr Thr  Lys Glu His Leu Leu  Leu Tyr Gly
    1430                 1435                 1440
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Ser Ile  Lys Val Pro His Trp  Thr Lys Lys Gln Leu  His Glu Glu
    1445                 1450                 1455

Val Lys  Arg Thr Leu Lys Asp  Thr Gly Leu Tyr Ser  His Arg His
    1460                 1465                 1470

Lys Arg  Val Gly Thr Leu Ser  Gly Gly Met Lys Arg  Lys Leu Ser
    1475                 1480                 1485

Ile Ser  Ile Ala Leu Ile Gly  Gly Ser Arg Val Val  Ile Leu Asp
    1490                 1495                 1500

Glu Pro  Ser Thr Gly Val Asp  Pro Cys Ser Arg Arg  Ser Ile Trp
    1505                 1510                 1515

Asp Val  Ile Ser Lys Asn Lys  Thr Ala Arg Thr Ile  Ile Leu Ser
    1520                 1525                 1530

Thr His  His Leu Asp Glu Ala  Glu Val Leu Ser Asp  Arg Ile Ala
    1535                 1540                 1545

Phe Leu  Glu Gln Gly Gly Leu  Arg Cys Cys Gly Ser  Pro Phe Tyr
    1550                 1555                 1560

Leu Lys  Glu Ala Phe Gly Asp  Gly Tyr His Leu Thr  Leu Thr Lys
    1565                 1570                 1575

Lys Lys  Ser Pro Asn Leu Asn  Ala Asn Ala Val Cys  Asp Thr Met
    1580                 1585                 1590

Ala Val  Thr Ala Met Ile Gln  Ser His Leu Pro Glu  Ala Tyr Leu
    1595                 1600                 1605

Lys Glu  Asp Ile Gly Gly Glu  Leu Val Tyr Val Leu  Pro Pro Phe
    1610                 1615                 1620

Ser Thr  Lys Val Ser Gly Ala  Tyr Leu Ser Leu Leu  Arg Ala Leu
    1625                 1630                 1635

Asp Asn  Gly Met Gly Asp Leu  Asn Ile Gly Cys Tyr  Gly Ile Ser
    1640                 1645                 1650

Asp Thr  Thr Val Glu Glu Val  Phe Leu Asn Leu Thr  Lys Glu Ser
    1655                 1660                 1665

Gln Lys  Asn Ser Ala Met Ser  Leu Glu His Leu Thr  Gln Lys Lys
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    1670                1675                1680

Ile Gly  Asn Ser Asn Ala Asn  Gly Ile Ser Thr Pro  Asp Asp Leu
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Ser Val  Ser Ser Ser Asn Phe  Thr Asp Arg Asp Asp  Lys Ile Leu
    1700                1705                1710

Thr Arg  Gly Glu Arg Leu Asp  Gly Phe Gly Leu Leu  Leu Lys Lys
    1715                1720                1725

Ile Met  Ala Ile Leu Ile Lys  Arg Phe His His Thr  Arg Arg Asn
    1730                1735                1740

Trp Lys  Gly Leu Ile Ala Gln  Val Ile Leu Pro Ile  Val Phe Val
    1745                1750                1755

Thr Thr  Ala Met Gly Leu Gly  Thr Leu Arg Asn Ser  Ser Asn Ser
    1760                1765                1770

Tyr Pro  Glu Ile Gln Ile Ser  Pro Ser Leu Tyr Gly  Thr Ser Glu
    1775                1780                1785

Gln Thr  Ala Phe Tyr Ala Asn  Tyr His Pro Ser Thr  Glu Ala Leu
    1790                1795                1800

Val Ser  Ala Met Trp Asp Phe  Pro Gly Ile Asp Asn  Met Cys Leu
    1805                1810                1815

Asn Thr  Ser Asp Leu Gln Cys  Leu Asn Lys Asp Ser  Leu Glu Lys
    1820                1825                1830

Trp Asn  Thr Ser Gly Glu Pro  Ile Thr Asn Phe Gly  Val Cys Ser
    1835                1840                1845

Cys Ser  Glu Asn Val Gln Glu  Cys Pro Lys Phe Asn  Tyr Ser Pro
    1850                1855                1860

Pro His  Arg Arg Thr Tyr Ser  Ser Gln Val Ile Tyr  Asn Leu Thr
    1865                1870                1875

Gly Gln  Arg Val Glu Asn Tyr  Leu Ile Ser Thr Ala  Asn Glu Phe
    1880                1885                1890

Val Gln  Lys Arg Tyr Gly Gly  Trp Ser Phe Gly Leu  Pro Leu Thr
    1895                1900                1905
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Lys Asp  Leu Arg Phe Asp Ile  Thr Gly Val Pro Ala  Asn Arg Thr
    1910                 1915                 1920

Leu Ala  Lys Val Trp Tyr Asp  Pro Glu Gly Tyr His  Ser Leu Pro
    1925                 1930                 1935

Ala Tyr  Leu Asn Ser Leu Asn  Asn Phe Leu Leu Arg  Val Asn Met
    1940                 1945                 1950

Ser Lys  Tyr Asp Ala Ala Arg  His Gly Ile Ile Met  Tyr Ser His
    1955                 1960                 1965

Pro Tyr  Pro Gly Val Gln Asp  Gln Glu Gln Ala Thr  Ile Ser Ser
    1970                 1975                 1980

Leu Ile  Asp Ile Leu Val Ala  Leu Ser Ile Leu Met  Gly Tyr Ser
    1985                 1990                 1995

Val Thr  Thr Ala Ser Phe Val  Thr Tyr Val Val Arg  Glu His Gln
    2000                 2005                 2010

Thr Lys  Ala Lys Gln Leu Gln  His Ile Ser Gly Ile  Gly Val Thr
    2015                 2020                 2025

Cys Tyr  Trp Val Thr Asn Phe  Ile Tyr Asp Met Val  Phe Tyr Leu
    2030                 2035                 2040

Val Pro  Val Ala Phe Ser Ile  Gly Ile Ile Ala Ile  Phe Lys Leu
    2045                 2050                 2055

Pro Ala  Phe Tyr Ser Glu Asn  Asn Leu Gly Ala Val  Ser Leu Leu
    2060                 2065                 2070

Leu Leu  Leu Phe Gly Tyr Ala  Thr Phe Ser Trp Met  Tyr Leu Leu
    2075                 2080                 2085

Ala Gly  Leu Phe His Glu Thr  Gly Met Ala Phe Ile  Thr Tyr Val
    2090                 2095                 2100

Cys Val  Asn Leu Phe Phe Gly  Ile Asn Ser Ile Val  Ser Leu Ser
    2105                 2110                 2115

Val Val  Tyr Phe Leu Ser Lys  Glu Lys Pro Asn Asp  Pro Thr Leu
    2120                 2125                 2130

Glu Leu  Ile Ser Glu Thr Leu  Lys Arg Ile Phe Leu  Ile Phe Pro
    2135                 2140                 2145
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Gln Phe  Cys Phe Gly Tyr Gly  Leu Ile Glu Leu Ser  Gln Gln Gln
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Ser Val  Leu Asp Phe Leu Lys  Ala Tyr Gly Val Glu  Tyr Pro Asn
    2165                 2170                 2175

Glu Thr  Phe Glu Met Asn Lys  Leu Gly Ala Met Phe  Val Ala Leu
    2180                 2185                 2190

Val Ser  Gln Gly Thr Met Phe  Phe Ser Leu Arg Leu  Leu Ile Asn
    2195                 2200                 2205

Glu Ser  Leu Ile Lys Lys Leu  Arg Leu Phe Phe Arg  Lys Phe Asn
    2210                 2215                 2220

Ser Ser  His Val Arg Glu Thr  Ile Asp Glu Asp Glu  Asp Val Arg
    2225                 2230                 2235

Ala Glu  Arg Leu Arg Val Glu  Ser Gly Ala Ala Glu  Phe Asp Leu
    2240                 2245                 2250

Val Gln  Leu Tyr Cys Leu Thr  Lys Thr Tyr Gln Leu  Ile His Lys
    2255                 2260                 2265

Lys Ile  Ile Ala Val Asn Asn  Ile Ser Ile Gly Ile  Pro Ala Gly
    2270                 2275                 2280

Glu Cys  Phe Gly Leu Leu Gly  Val Asn Gly Ala Gly  Lys Thr Thr
    2285                 2290                 2295

Ile Phe  Lys Met Leu Thr Gly  Asp Ile Ile Pro Ser  Ser Gly Asn
    2300                 2305                 2310

Ile Leu  Ile Arg Asn Lys Thr  Gly Ser Leu Gly His  Val Asp Ser
    2315                 2320                 2325

His Ser  Ser Leu Val Gly Tyr  Cys Pro Gln Glu Asp  Ala Leu Asp
    2330                 2335                 2340

Asp Leu  Val Thr Val Glu Glu  His Leu Tyr Phe Tyr  Ala Arg Val
    2345                 2350                 2355

His Gly  Ile Pro Glu Lys Asp  Ile Lys Glu Thr Val  His Lys Leu
    2360                 2365                 2370

Leu Arg  Arg Leu His Leu Met  Pro Phe Lys Asp Arg  Ala Thr Ser
    2375                 2380                 2385
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Met Cys  Ser Tyr Gly Thr Lys  Arg Lys Leu Ser Thr  Ala Leu Ala
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Leu Ile  Gly Lys Pro Ser Ile  Leu Leu Leu Asp Glu  Pro Ser Ser
    2405                 2410                 2415

Gly Met  Asp Pro Lys Ser Lys  Arg His Leu Trp Lys  Ile Ile Ser
    2420                 2425                 2430

Glu Glu  Val Gln Asn Lys Cys  Ser Val Ile Leu Thr  Ser His Ser
    2435                 2440                 2445

Met Glu  Glu Cys Glu Ala Leu  Cys Thr Arg Leu Ala  Ile Met Val
    2450                 2455                 2460

Asn Gly  Lys Phe Gln Cys Ile  Gly Ser Leu Gln His  Ile Lys Ser
    2465                 2470                 2475

Arg Phe  Gly Arg Gly Phe Thr  Val Lys Val His Leu  Lys Asn Asn
    2480                 2485                 2490

Lys Val  Thr Met Glu Thr Leu  Thr Lys Phe Met Gln  Leu His Phe
    2495                 2500                 2505

Pro Lys  Thr Tyr Leu Lys Asp  Gln His Leu Ser Met  Leu Glu Tyr
    2510                 2515                 2520

His Val  Pro Val Thr Ala Gly  Gly Val Ala Asn Ile  Phe Asp Leu
    2525                 2530                 2535

Leu Glu  Thr Asn Lys Thr Ala  Leu Asn Ile Thr Asn  Phe Leu Val
    2540                 2545                 2550

Ser Gln  Thr Thr Leu Glu Glu  Val Phe Ile Asn Phe  Ala Lys Asp
    2555                 2560                 2565

Gln Lys  Ser Tyr Glu Thr Ala  Asp Thr Ser Ser Gln  Gly Ser Thr
    2570                 2575                 2580

Ile Ser  Val Asp Ser Gln Asp  Asp Gln Met Glu Ser
    2585                 2590                 2595
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<212> DNA
<213> Homo sapiens

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tgcaaacctc catggtggtg ccctcgtggc cagttaccca tttgataatg gtgttcaagc 660

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<210> 224
<211> 443
<212> PRT
<213> Homo sapiens

<400> 224

Met Asp Phe Pro Cys Leu Trp Leu Gly Leu Leu Leu Pro Leu Val Ala
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Ala Leu Asp Phe Asn Tyr His Arg Gln Glu Gly Met Glu Ala Phe Leu
20 25 30

Lys Thr Val Ala Gln Asn Tyr Ser Ser Val Thr His Leu His Ser Ile
35 40 45

Gly Lys Ser Val Lys Gly Arg Asn Leu Trp Val Leu Val Val Gly Arg
50 55 60

Phe Pro Lys Glu His Arg Ile Gly Ile Pro Glu Phe Lys Tyr Val Ala
65 70 75 80

Asn Met His Gly Asp Glu Thr Val Gly Arg Glu Leu Leu Leu His Leu

```
                85                  90                  95

Ile Asp Tyr Leu Val Thr Ser Asp Gly Lys Asp Pro Glu Ile Thr Asn
            100                 105                 110

Leu Ile Asn Ser Thr Arg Ile His Ile Met Pro Ser Met Asn Pro Asp
        115                 120                 125

Gly Phe Glu Ala Val Lys Lys Pro Asp Cys Tyr Tyr Ser Ile Gly Arg
    130                 135                 140

Glu Asn Tyr Asn Gln Tyr Asp Leu Asn Arg Asn Phe Pro Asp Ala Phe
145                 150                 155                 160

Glu Tyr Asn Asn Val Ser Arg Gln Pro Glu Thr Val Ala Val Met Lys
                165                 170                 175

Trp Leu Lys Thr Glu Thr Phe Val Leu Ser Ala Asn Leu His Gly Gly
            180                 185                 190

Ala Leu Val Ala Ser Tyr Pro Phe Asp Asn Gly Val Gln Ala Thr Gly
        195                 200                 205

Ala Leu Tyr Ser Arg Ser Leu Thr Pro Asp Asp Asp Val Phe Gln Tyr
    210                 215                 220

Leu Ala His Thr Tyr Ala Ser Arg Asn Pro Asn Met Lys Lys Gly Asp
225                 230                 235                 240

Glu Cys Lys Asn Lys Met Asn Phe Pro Asn Gly Val Thr Asn Gly Tyr
                245                 250                 255

Ser Trp Tyr Pro Leu Gln Gly Gly Met Gln Asp Tyr Asn Tyr Ile Trp
            260                 265                 270

Ala Gln Cys Phe Glu Ile Thr Leu Glu Leu Ser Cys Cys Lys Tyr Pro
        275                 280                 285

Arg Glu Glu Lys Leu Pro Ser Phe Trp Asn Asn Asn Lys Ala Ser Leu
    290                 295                 300

Ile Glu Tyr Ile Lys Gln Val His Leu Gly Val Lys Gly Gln Val Phe
305                 310                 315                 320

Asp Gln Asn Gly Asn Pro Leu Pro Asn Val Ile Val Glu Val Gln Asp
                325                 330                 335
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Arg Lys His Ile Cys Pro Tyr Arg Thr Asn Lys Tyr Gly Glu Tyr Tyr
            340                 345                 350

Leu Leu Leu Leu Pro Gly Ser Tyr Ile Ile Asn Val Thr Val Pro Gly
        355                 360                 365

His Asp Pro His Ile Thr Lys Val Ile Ile Pro Glu Lys Ser Gln Asn
    370                 375                 380

Phe Ser Ala Leu Lys Lys Asp Ile Leu Leu Pro Phe Gln Gly Gln Leu
385                 390                 395                 400

Asp Ser Ile Pro Val Ser Asn Pro Ser Cys Pro Met Ile Pro Leu Tyr
                405                 410                 415

Arg Asn Leu Pro Asp His Ser Ala Ala Thr Lys Pro Ser Leu Phe Leu
            420                 425                 430

Phe Leu Val Ser Leu Leu His Ile Phe Phe Lys
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<210> 225
<211> 2873
<212> DNA
<213> Homo sapiens

<400> 225

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ttccggaggt ccgcttcccg gcccccagat tctggcatcc cagccctcag tgtccaagac      180

ccaggcagcc cgggtccccg cctcccggat ccaggcgtcc gggatctgcg ccaccagaac      240

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<211> 541
<212> PRT
<213> Homo sapiens

<400> 226

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Pro Thr Ala Asn Gly Gly Leu Ala Leu Ala Ser Ile Glu Asp Gln Gly
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Ala Ala Ala Gly Gly Tyr Cys Gly Ser Arg Asp Gln Val Arg Arg Cys
35 40 45

Leu Arg Ala Asn Leu Leu Val Leu Leu Thr Val Val Ala Val Val Ala
50 55 60

Gly Val Ala Leu Gly Leu Gly Val Ser Gly Ala Gly Gly Ala Leu Ala
65 70 75 80

Leu Gly Pro Glu Arg Leu Ser Ala Phe Val Phe Pro Gly Glu Leu Leu
85 90 95

Leu Arg Leu Leu Arg Met Ile Ile Leu Pro Leu Val Val Cys Ser Leu
100 105 110

Ile Gly Gly Ala Ala Ser Leu Asp Pro Gly Ala Leu Gly Arg Leu Gly
115 120 125

Ala Trp Ala Leu Leu Phe Phe Leu Val Thr Thr Leu Leu Ala Ser Ala
130 135 140

Leu Gly Val Gly Leu Ala Leu Ala Leu Gln Pro Gly Ala Ala Ser Ala
145 150 155 160

Ala Ile Asn Ala Ser Val Gly Ala Ala Gly Ser Ala Glu Asn Ala Pro
165 170 175

Ser Lys Glu Val Leu Asp Ser Phe Leu Asp Leu Ala Arg Asn Ile Phe
180 185 190

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

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Glu Glu Arg Asn Ile Thr Gly Thr Arg Val Lys Val Pro Val Gly Gln
    210                 215                 220

Glu Val Glu Gly Met Asn Ile Leu Gly Leu Val Val Phe Ala Ile Val
225                 230                 235                 240

Phe Gly Val Ala Leu Arg Lys Leu Gly Pro Glu Gly Glu Leu Leu Ile
                245                 250                 255

Arg Phe Phe Asn Ser Phe Asn Glu Ala Thr Met Val Leu Val Ser Trp
            260                 265                 270

Ile Met Trp Tyr Ala Pro Val Gly Ile Met Phe Leu Val Ala Gly Lys
        275                 280                 285

Ile Val Glu Met Glu Asp Val Gly Leu Leu Phe Ala Arg Leu Gly Lys
    290                 295                 300

Tyr Ile Leu Cys Cys Leu Leu Gly His Ala Ile His Gly Leu Leu Val
305                 310                 315                 320

Leu Pro Leu Ile Tyr Phe Leu Phe Thr Arg Lys Asn Pro Tyr Arg Phe
                325                 330                 335

Leu Trp Gly Ile Val Thr Pro Leu Ala Thr Ala Phe Gly Thr Ser Ser
            340                 345                 350

Ser Ser Ala Thr Leu Pro Leu Met Met Lys Cys Val Glu Glu Asn Asn
        355                 360                 365

Gly Val Ala Lys His Ile Ser Arg Phe Ile Leu Pro Ile Gly Ala Thr
    370                 375                 380

Val Asn Met Asp Gly Ala Ala Leu Phe Gln Cys Val Ala Ala Val Phe
385                 390                 395                 400

Ile Ala Gln Leu Ser Gln Gln Ser Leu Asp Phe Val Lys Ile Ile Thr
                405                 410                 415

Ile Leu Val Thr Ala Thr Ala Ser Ser Val Gly Ala Ala Gly Ile Pro
            420                 425                 430

Ala Gly Gly Val Leu Thr Leu Ala Ile Ile Leu Glu Ala Val Asn Leu
        435                 440                 445

Pro Val Asp His Ile Ser Leu Ile Leu Ala Val Asp Trp Leu Val Asp
    450                 455                 460
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Arg Ser Cys Thr Val Leu Asn Val Glu Gly Asp Ala Leu Gly Ala Gly
465                 470                 475                 480

Leu Leu Gln Asn Tyr Val Asp Arg Thr Glu Ser Arg Ser Thr Glu Pro
                485                 490                 495

Glu Leu Ile Gln Val Lys Ser Glu Leu Pro Leu Asp Pro Leu Pro Val
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Pro Thr Glu Glu Gly Asn Pro Leu Leu Lys His Tyr Arg Gly Pro Ala
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Gly Asp Ala Thr Val Ala Ser Glu Lys Glu Ser Val Met
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Gly Thr Leu Arg Val Cys Thr Ile Ser Ser Thr Gly Pro Leu Gln Pro
35 40 45

Gln Pro Lys Lys Pro Glu Asp Glu Pro Gln Glu Thr Ala Tyr Arg Thr
50 55 60

Gln Val Ser Ser Cys Cys Leu His Ile Cys Gln Gly Ile Arg Gly Leu
65 70 75 80

Trp Gly Thr Thr Leu Thr Glu Asn Thr Ala Glu Asn Arg Glu Leu Tyr
85 90 95

Ile Lys Thr Thr Leu Arg Glu Leu Leu Val Tyr Ile Val Phe Leu Val
100 105 110

Asp Ile Cys Leu Leu Thr Tyr Gly Met Thr Ser Ser Ser Ala Tyr Tyr
115 120 125

Tyr Thr Lys Val Met Ser Glu Leu Phe Leu His Thr Pro Ser Asp Thr
130 135 140

Gly Val Ser Phe Gln Ala Ile Ser Ser Met Ala Asp Phe Trp Asp Phe
145 150 155 160

Ala Gln Gly Pro Leu Leu Asp Ser Leu Tyr Trp Thr Lys Trp Tyr Asn
165 170 175

Asn Gln Ser Leu Gly His Gly Ser His Ser Phe Ile Tyr Tyr Glu Asn
180 185 190

Met Leu Leu Gly Val Pro Arg Leu Arg Gln Leu Lys Val Arg Asn Asp
195 200 205

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Ser Cys Val Val His Glu Asp Phe Arg Glu Asp Ile Leu Ser Cys Tyr
    210                 215                 220

Asp Val Tyr Ser Pro Asp Lys Glu Glu Gln Leu Pro Phe Gly Pro Phe
225                 230                 235                 240

Asn Gly Thr Ala Trp Thr Tyr His Ser Gln Asp Glu Leu Gly Gly Phe
                245                 250                 255

Ser His Trp Gly Arg Leu Thr Ser Tyr Ser Gly Gly Gly Tyr Tyr Leu
            260                 265                 270

Asp Leu Pro Gly Ser Arg Gln Gly Ser Ala Glu Ala Leu Arg Ala Leu
        275                 280                 285

Gln Glu Gly Leu Trp Leu Asp Arg Gly Thr Arg Val Val Phe Ile Asp
    290                 295                 300

Phe Ser Val Tyr Asn Ala Asn Ile Asn Leu Phe Cys Val Leu Arg Leu
305                 310                 315                 320

Val Val Glu Phe Pro Ala Thr Gly Gly Ala Ile Pro Ser Trp Gln Ile
                325                 330                 335

Arg Thr Val Lys Leu Ile Arg Tyr Val Ser Asn Trp Asp Phe Phe Ile
            340                 345                 350

Val Gly Cys Glu Val Ile Phe Cys Val Phe Ile Phe Tyr Tyr Val Val
        355                 360                 365

Glu Glu Ile Leu Glu Leu His Ile His Arg Leu Arg Tyr Leu Ser Ser
    370                 375                 380

Ile Trp Asn Ile Leu Asp Leu Val Val Ile Leu Leu Ser Ile Val Ala
385                 390                 395                 400

Val Gly Phe His Ile Phe Arg Thr Leu Glu Val Asn Arg Leu Met Gly
                405                 410                 415

Lys Leu Leu Gln Gln Pro Asn Thr Tyr Ala Asp Phe Glu Phe Leu Ala
            420                 425                 430

Phe Trp Gln Thr Gln Tyr Asn Asn Met Asn Ala Val Asn Leu Phe Phe
        435                 440                 445

Ala Trp Ile Lys Ile Phe Lys Tyr Ile Ser Phe Asn Lys Thr Met Thr
    450                 455                 460
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Gln Leu Ser Ser Thr Leu Ala Arg Cys Ala Lys Asp Ile Leu Gly Phe
465                 470                 475                 480

Ala Val Met Phe Phe Ile Val Phe Phe Ala Tyr Ala Gln Leu Gly Tyr
                485                 490                 495

Leu Leu Phe Gly Thr Gln Val Glu Asn Phe Ser Thr Phe Ile Lys Cys
            500                 505                 510

Ile Phe Thr Gln Phe Arg Ile Ile Leu Gly Asp Phe Asp Tyr Asn Ala
        515                 520                 525

Ile Asp Asn Ala Asn Arg Ile Leu Gly Pro Ala Tyr Phe Val Thr Tyr
    530                 535                 540

Val Phe Phe Val Phe Phe Val Leu Leu Asn Met Phe Leu Ala Ile Ile
545                 550                 555                 560

Asn Asp Thr Tyr Ser Glu Val Lys Glu Glu Leu Ala Gly Gln Lys Asp
                565                 570                 575

Glu Leu Gln Leu Ser Asp Leu Leu Lys Gln Gly Tyr Asn Lys Thr Leu
            580                 585                 590

Leu Arg Leu Arg Leu Arg Lys Glu Arg Val Ser Asp Val Gln Lys Val
        595                 600                 605

Leu Gln Gly Gly Glu Gln Glu Ile Gln Phe Glu Asp Phe Thr Asn Thr
    610                 615                 620

Leu Arg Glu Leu Gly His Ala Glu His Glu Ile Thr Glu Leu Thr Ala
625                 630                 635                 640

Thr Phe Thr Lys Phe Asp Arg Asp Gly Asn Arg Ile Leu Asp Glu Lys
                645                 650                 655

Glu Gln Glu Lys Met Arg Gln Asp Leu Glu Glu Glu Arg Val Ala Leu
            660                 665                 670

Asn Thr Glu Ile Glu Lys Leu Gly Arg Ser Ile Val Ser Ser Pro Gln
        675                 680                 685

Gly Lys Ser Gly Pro Glu Ala Ala Arg Ala Gly Gly Trp Val Ser Gly
    690                 695                 700

Glu Glu Phe Tyr Met Leu Thr Arg Arg Val Leu Gln Leu Glu Thr Val
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705 710 715 720

Leu Glu Gly Val Val Ser Gln Ile Asp Ala Val Gly Ser Lys Leu Lys
725 730 735

Met Leu Glu Arg Lys Gly Trp Leu Ala Pro Ser Pro Gly Val Lys Glu
740 745 750

Gln Ala Ile Trp Lys His Pro Gln Pro Ala Pro Ala Val Thr Pro Asp
755 760 765

Pro Trp Gly Val Gln Gly Gly Gln Glu Ser Glu Val Pro Tyr Lys Arg
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Glu Glu Glu Ala Leu Glu Glu Arg Arg Leu Ser Arg Gly Glu Ile Pro
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Thr Leu Gln Arg Ser
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<212> PRT
<213> Homo sapiens

<400> 230

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Pro Pro Pro Gly Ala Glu Asp Pro Ala Ala Gly Ala Ala Lys Gly Glu
35 40 45

Arg Arg Arg Arg Arg Gly Cys Ala Gln His Leu Ala Asp Asn Arg Leu
50 55 60

Lys Thr Thr Lys Tyr Thr Leu Leu Ser Phe Leu Pro Lys Asn Leu Phe
65 70 75 80

Glu Gln Phe His Arg Pro Ala Asn Val Tyr Phe Val Phe Ile Ala Leu
85 90 95

Leu Asn Phe Val Pro Ala Val Asn Ala Phe Gln Pro Gly Leu Ala Leu
100 105 110

Ala Pro Val Leu Phe Ile Leu Ala Ile Thr Ala Phe Arg Asp Leu Trp
115 120 125

Glu Asp Tyr Ser Arg His Arg Ser Asp His Lys Ile Asn His Leu Gly
130 135 140

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Cys Leu Val Phe Ser Arg Glu Glu Lys Lys Tyr Val Asn Arg Phe Trp
145                 150                 155                 160

Lys Glu Ile His Val Gly Asp Phe Val Arg Leu Arg Cys Asn Glu Ile
                165                 170                 175

Phe Pro Ala Asp Ile Leu Leu Leu Ser Ser Ser Asp Pro Asp Gly Leu
            180                 185                 190

Cys His Ile Glu Thr Ala Asn Leu Asp Gly Glu Thr Asn Leu Lys Arg
        195                 200                 205

Arg Gln Val Val Arg Gly Phe Ser Glu Leu Val Ser Glu Phe Asn Pro
    210                 215                 220

Leu Thr Phe Thr Ser Val Ile Glu Cys Glu Lys Pro Asn Asn Asp Leu
225                 230                 235                 240

Ser Arg Phe Arg Gly Cys Ile Ile His Asp Asn Gly Lys Lys Ala Gly
                245                 250                 255

Leu Tyr Lys Glu Asn Leu Leu Leu Arg Gly Cys Thr Leu Arg Asn Thr
            260                 265                 270

Asp Ala Val Val Gly Ile Val Ile Tyr Ala Gly His Glu Thr Lys Ala
        275                 280                 285

Leu Leu Asn Asn Ser Gly Pro Arg Tyr Lys Arg Ser Lys Leu Glu Arg
    290                 295                 300

Gln Met Asn Cys Asp Val Leu Trp Cys Val Leu Leu Leu Val Cys Met
305                 310                 315                 320

Ser Leu Phe Ser Ala Val Gly His Gly Leu Trp Ile Trp Arg Tyr Gln
                325                 330                 335

Glu Lys Lys Ser Leu Phe Tyr Val Pro Lys Ser Asp Gly Ser Ser Leu
            340                 345                 350

Ser Pro Val Thr Ala Ala Val Tyr Ser Phe Leu Thr Met Ile Ile Val
        355                 360                 365

Leu Gln Val Leu Ile Pro Ile Ser Leu Tyr Val Ser Ile Glu Ile Val
    370                 375                 380

Lys Ala Cys Gln Val Tyr Phe Ile Asn Gln Asp Met Gln Leu Tyr Asp
385                 390                 395                 400
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Glu Glu Thr Asp Ser Gln Leu Gln Cys Arg Ala Leu Asn Ile Thr Glu
                405                 410                 415

Asp Leu Gly Gln Ile Gln Tyr Ile Phe Ser Asp Lys Thr Gly Thr Leu
            420                 425                 430

Thr Glu Asn Lys Met Val Phe Arg Arg Cys Thr Val Ser Gly Val Glu
        435                 440                 445

Tyr Ser His Asp Ala Asn Ala Gln Arg Leu Ala Arg Tyr Gln Glu Ala
    450                 455                 460

Asp Ser Glu Glu Glu Glu Val Val Pro Arg Gly Gly Ser Val Ser Gln
465                 470                 475                 480

Arg Gly Ser Ile Gly Ser His Gln Ser Val Arg Val Val His Arg Thr
                485                 490                 495

Gln Ser Thr Lys Ser His Arg Arg Thr Gly Ser Arg Ala Glu Ala Lys
            500                 505                 510

Arg Ala Ser Met Leu Ser Lys His Thr Ala Phe Ser Ser Pro Met Glu
        515                 520                 525

Lys Asp Ile Thr Pro Asp Pro Lys Leu Leu Glu Lys Val Ser Glu Cys
    530                 535                 540

Asp Lys Ser Leu Ala Val Ala Arg His Gln Glu His Leu Leu Ala His
545                 550                 555                 560

Leu Ser Pro Glu Leu Ser Asp Val Phe Asp Phe Phe Ile Ala Leu Thr
                565                 570                 575

Ile Cys Asn Thr Val Val Val Thr Ser Pro Asp Gln Pro Arg Thr Lys
            580                 585                 590

Val Arg Val Arg Phe Glu Leu Lys Ser Pro Val Lys Thr Ile Glu Asp
        595                 600                 605

Phe Leu Arg Arg Phe Thr Pro Ser Cys Leu Thr Ser Gly Cys Ser Ser
    610                 615                 620

Ile Gly Ser Leu Ala Ala Asn Lys Ser Ser His Lys Leu Gly Ser Ser
625                 630                 635                 640

Phe Pro Ser Thr Pro Ser Ser Asp Gly Met Leu Leu Arg Leu Glu Glu
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645 650 655

Arg Leu Gly Gln Pro Thr Ser Ala Ile Ala Ser Asn Gly Tyr Ser Ser
660 665 670

Gln Ala Asp Asn Trp Ala Ser Glu Leu Ala Gln Glu Gln Glu Ser Glu
675 680 685

Arg Glu Leu Arg Tyr Glu Ala Glu Ser Pro Asp Glu Ala Ala Leu Val
690 695 700

Tyr Ala Ala Arg Ala Tyr Asn Cys Val Leu Val Glu Arg Leu His Asp
705 710 715 720

Gln Val Ser Val Glu Leu Pro His Leu Gly Arg Leu Thr Phe Glu Leu
725 730 735

Leu His Thr Leu Gly Phe Asp Ser Val Arg Lys Arg Met Ser Val Val
740 745 750

Ile Arg His Pro Leu Thr Asp Glu Ile Asn Val Tyr Thr Lys Gly Ala
755 760 765

Asp Ser Val Val Met Asp Leu Leu Gln Pro Cys Ser Ser Val Asp Ala
770 775 780

Arg Gly Arg His Gln Lys Lys Ile Arg Ser Lys Thr Gln Asn Tyr Leu
785 790 795 800

Asn Val Tyr Ala Ala Glu Gly Leu Arg Thr Leu Cys Ile Ala Lys Arg
805 810 815

Val Leu Ser Lys Glu Glu Tyr Ala Cys Trp Leu Gln Ser His Leu Glu
820 825 830

Ala Glu Ser Ser Leu Glu Asn Ser Glu Glu Leu Leu Phe Gln Ser Ala
835 840 845

Ile Arg Leu Glu Thr Asn Leu His Leu Leu Gly Ala Thr Gly Ile Glu
850 855 860

Asp Arg Leu Gln Asp Gly Val Pro Glu Thr Ile Ser Lys Leu Arg Gln
865 870 875 880

Ala Gly Leu Gln Ile Trp Val Leu Thr Gly Asp Lys Gln Glu Thr Ala
885 890 895

```
Val Asn Ile Ala Tyr Ala Cys Lys Leu Leu Asp His Asp Glu Glu Val
            900                 905                 910

Ile Thr Leu Asn Ala Thr Ser Gln Glu Ala Cys Ala Ala Leu Leu Asp
        915                 920                 925

Gln Cys Leu Cys Tyr Val Gln Ser Arg Gly Leu Gln Arg Ala Pro Glu
    930                 935                 940

Lys Thr Lys Gly Lys Val Ser Met Arg Phe Ser Ser Leu Cys Pro Pro
945                 950                 955                 960

Ser Thr Ser Thr Ala Ser Gly Arg Arg Pro Ser Leu Val Ile Asp Gly
                965                 970                 975

Arg Ser Leu Ala Tyr Ala Leu Glu Lys Asn Leu Glu Asp Lys Phe Leu
            980                 985                 990

Phe Leu Ala Lys Gln Cys Arg Ser  Val Leu Cys Cys Arg  Ser Thr Pro
        995                 1000                1005

Leu Gln  Lys Ser Met Val Val  Lys Leu Val Arg Ser  Lys Leu Lys
    1010                1015                1020

Ala Met  Thr Leu Ala Ile Gly  Asp Gly Ala Asn Asp  Val Ser Met
    1025                1030                1035

Ile Gln  Val Ala Asp Val Gly  Val Gly Ile Ser Gly  Gln Glu Gly
    1040                1045                1050

Met Gln  Ala Val Met Ala Ser  Asp Phe Ala Val Pro  Lys Phe Arg
    1055                1060                1065

Tyr Leu  Glu Arg Leu Leu Ile  Leu His Gly His Trp  Cys Tyr Ser
    1070                1075                1080

Arg Leu  Ala Asn Met Val Leu  Tyr Phe Phe Tyr Lys  Asn Thr Met
    1085                1090                1095

Phe Val  Gly Leu Leu Phe Trp  Phe Gln Phe Phe Cys  Gly Phe Ser
    1100                1105                1110

Ala Ser  Thr Met Ile Asp Gln  Trp Tyr Leu Ile Phe  Phe Asn Leu
    1115                1120                1125

Leu Phe  Ser Ser Leu Pro Pro  Leu Val Thr Gly Val  Leu Asp Arg
    1130                1135                1140
```

```
Asp Val  Pro Ala Asn Val Leu  Leu Thr Asn Pro Gln  Leu Tyr Lys
    1145                1150                1155

Ser Gly  Gln Asn Met Glu Glu  Tyr Arg Pro Arg Thr  Phe Trp Phe
    1160                1165                1170

Asn Met  Ala Asp Ala Ala Phe  Gln Ser Leu Val Cys  Phe Ser Ile
    1175                1180                1185

Pro Tyr  Leu Ala Tyr Tyr Asp  Ser Asn Val Asp Leu  Phe Thr Trp
    1190                1195                1200

Gly Thr  Pro Ile Val Thr Ile  Ala Leu Leu Thr Phe  Leu Leu His
    1205                1210                1215

Leu Gly  Ile Glu Thr Lys Thr  Trp Thr Trp Leu Asn  Trp Ile Thr
    1220                1225                1230

Cys Gly  Phe Ser Val Leu Leu  Phe Phe Thr Val Ala  Leu Ile Tyr
    1235                1240                1245

Asn Ala  Ser Cys Ala Thr Cys  Tyr Pro Pro Ser Asn  Pro Tyr Trp
    1250                1255                1260

Thr Met  Gln Ala Leu Leu Gly  Asp Pro Val Phe Tyr  Leu Thr Cys
    1265                1270                1275

Leu Met  Thr Pro Val Ala Ala  Leu Leu Pro Arg Leu  Phe Phe Arg
    1280                1285                1290

Ser Leu  Gln Gly Arg Val Phe  Pro Thr Gln Leu Gln  Leu Ala Arg
    1295                1300                1305

Gln Leu  Thr Arg Lys Ser Pro  Arg Arg Cys Ser Ala  Pro Lys Glu
    1310                1315                1320

Thr Phe  Ala Gln Gly Arg Leu  Pro Lys Asp Ser Gly  Thr Glu His
    1325                1330                1335

Ser Ser  Gly Arg Thr Val Lys  Thr Ser Val Pro Leu  Ser Gln Pro
    1340                1345                1350

Ser Trp  His Thr Gln Gln Pro  Val Cys Ser Leu Glu  Ala Ser Gly
    1355                1360                1365

Glu Pro  Ser Thr Val Asp Met  Ser Met Pro Val Arg  Glu His Thr
    1370                1375                1380
```

Leu Leu Glu Gly Leu Ser Ala Pro Ala Pro Met Ser Ser Ala Pro
1385 1390 1395

Gly Glu Ala Val Leu Arg Ser Pro Gly Gly Cys Pro Glu Glu Ser
1400 1405 1410

Lys Val Arg Ala Ala Ser Thr Gly Arg Val Thr Pro Leu Ser Ser
1415 1420 1425

Leu Phe Ser Leu Pro Thr Phe Ser Leu Leu Asn Trp Ile Ser Ser
1430 1435 1440

Trp Ser Leu Val Ser Arg Leu Gly Ser Val Leu Gln Phe Ser Arg
1445 1450 1455

Thr Glu Gln Leu Ala Asp Gly Gln Ala Gly Arg Gly Leu Pro Val
1460 1465 1470

Gln Pro His Ser Gly Arg Ser Gly Leu Gln Gly Pro Asp His Arg
1475 1480 1485

Leu Leu Ile Gly Ala Ser Ser Arg Arg Ser Gln
1490 1495

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atgcaaaact acgaccccaa cctgcggccc gcggaacgag actcggatgt ggtcaatgtc 180

agcctgaagc taaccctcac caacctcatc tccctgaacg agcgagagga agccctcacc 240

accaatgtct ggatagagat gcagtggtgc gactatcgcc tgcgctggga tccgcgagac 300

tacgaaggcc tgtgggtgct gagggtgccg tccaccatgg tgtggcggcc ggatatcgtg 360

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cctgacggct gtatctactg gctgccgcct gccatcttcc gttccgcctg ctctatctca 480

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aaggtgcctg aaacctccca ggcggtgcca ctcatcagca agtacctgac cttcctcctg 960

gtggtgacca tcctcattgt cgtgaatgct gtggttgtgc tcaatgtctc cttgcggtct 1020

ccacacacac actccatggc ccgaggggtc cgcaaggtgt tcctgaggct cttgccccag 1080

ctgctgagga tgcacgttcg cccgctggcc ccggcagctg tgcaggacac ccagtcccgg 1140

ctacagaatg gctcctcggg atggtcgatc acaactgggg aggaggtggc cctctgcctg 1200

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gctgccccag ccatccaggc ctgtgtggaa gcctgcaacc tcattgcctg tgcccggcac 1380

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ccctcaccag actgagccaa ccaaccactg tggggcatgt gggagtcaca cacgtgggtc 1620

acactgagtc ttatcagcca cgttctccta ctgaggtcct aagtgtgctc tttgggaagt 1680

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aatcctcttt ttttttttt ttttttt 2187

<210> 232
<211> 517
<212> PRT
<213> Homo sapiens

<400> 232

Met His Gly Gly Gln Gly Pro Leu Leu Leu Leu Leu Leu Leu Ala Val
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Cys Leu Gly Ala Gln Gly Arg Asn Gln Glu Glu Arg Leu Leu Ala Asp
            20                  25                  30

Leu Met Gln Asn Tyr Asp Pro Asn Leu Arg Pro Ala Glu Arg Asp Ser
        35                  40                  45

Asp Val Val Asn Val Ser Leu Lys Leu Thr Leu Thr Asn Leu Ile Ser
    50                  55                  60

Leu Asn Glu Arg Glu Glu Ala Leu Thr Thr Asn Val Trp Ile Glu Met
65                  70                  75                  80

Gln Trp Cys Asp Tyr Arg Leu Arg Trp Asp Pro Arg Asp Tyr Glu Gly
                85                  90                  95

Leu Trp Val Leu Arg Val Pro Ser Thr Met Val Trp Arg Pro Asp Ile
            100                 105                 110

Val Leu Glu Asn Asn Val Asp Gly Val Phe Glu Val Ala Leu Tyr Cys
        115                 120                 125

Asn Val Leu Val Ser Pro Asp Gly Cys Ile Tyr Trp Leu Pro Pro Ala
    130                 135                 140

Ile Phe Arg Ser Ala Cys Ser Ile Ser Val Thr Tyr Phe Pro Phe Asp
145                 150                 155                 160

Trp Gln Asn Cys Ser Leu Ile Phe Gln Ser Gln Thr Tyr Ser Thr Asn
                165                 170                 175

Glu Ile Asp Leu Gln Leu Ser Gln Glu Asp Gly Gln Thr Ile Glu Trp
            180                 185                 190

Ile Phe Ile Asp Pro Glu Ala Phe Thr Glu Asn Gly Glu Trp Ala Ile
        195                 200                 205

Gln His Arg Pro Ala Lys Met Leu Leu Asp Pro Ala Ala Pro Ala Gln
    210                 215                 220

Glu Ala Gly His Gln Lys Val Val Phe Tyr Leu Leu Ile Gln Arg Lys
225                 230                 235                 240

Pro Leu Phe Tyr Val Ile Asn Ile Ile Ala Pro Cys Val Leu Ile Ser
                245                 250                 255

Ser Val Ala Ile Leu Ile His Phe Leu Pro Ala Lys Ala Gly Gly Gln
            260                 265                 270
```

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Lys Cys Thr Val Ala Ile Asn Val Leu Leu Ala Gln Thr Val Phe Leu
        275                 280                 285

Phe Leu Val Ala Lys Lys Val Pro Glu Thr Ser Gln Ala Val Pro Leu
    290                 295                 300

Ile Ser Lys Tyr Leu Thr Phe Leu Leu Val Val Thr Ile Leu Ile Val
305                 310                 315                 320

Val Asn Ala Val Val Val Leu Asn Val Ser Leu Arg Ser Pro His Thr
                325                 330                 335

His Ser Met Ala Arg Gly Val Arg Lys Val Phe Leu Arg Leu Leu Pro
            340                 345                 350

Gln Leu Leu Arg Met His Val Arg Pro Leu Ala Pro Ala Ala Val Gln
        355                 360                 365

Asp Thr Gln Ser Arg Leu Gln Asn Gly Ser Ser Gly Trp Ser Ile Thr
    370                 375                 380

Thr Gly Glu Glu Val Ala Leu Cys Leu Pro Arg Ser Glu Leu Leu Phe
385                 390                 395                 400

Gln Gln Trp Gln Arg Gln Gly Leu Val Ala Ala Ala Leu Glu Lys Leu
                405                 410                 415

Glu Lys Gly Pro Glu Leu Gly Leu Ser Gln Phe Cys Gly Ser Leu Lys
            420                 425                 430

Gln Ala Ala Pro Ala Ile Gln Ala Cys Val Glu Ala Cys Asn Leu Ile
        435                 440                 445

Ala Cys Ala Arg His Gln Gln Ser His Phe Asp Asn Gly Asn Glu Glu
    450                 455                 460

Trp Phe Leu Val Gly Arg Val Leu Asp Arg Val Cys Phe Leu Ala Met
465                 470                 475                 480

Leu Ser Leu Phe Ile Cys Gly Thr Ala Gly Ile Phe Leu Met Ala His
                485                 490                 495

Tyr Asn Arg Val Pro Ala Leu Pro Phe Pro Gly Asp Pro Arg Pro Tyr
            500                 505                 510

Leu Pro Ser Pro Asp
        515
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<211> 4148
<212> DNA
<213> Homo sapiens

<400> 233
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<210> 234
<211> 1297
<212> PRT
<213> Homo sapiens

<400> 234

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Phe Leu Ser Leu Gly Phe Gly Leu Asp Thr Val Glu Val Cys Pro Ser
20 25 30

Leu Asp Ile Arg Ser Glu Val Ala Glu Leu Arg Gln Leu Glu Asn Cys
35 40 45

Ser Val Val Glu Gly His Leu Gln Ile Leu Leu Met Phe Thr Ala Thr
50 55 60

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

Asp Tyr Leu Leu Leu Phe Arg Val Tyr Gly Leu Glu Ser Leu Arg Asp
85 90 95

Leu Phe Pro Asn Leu Ala Val Ile Arg Gly Thr Arg Leu Phe Leu Gly
100 105 110

Tyr Ala Leu Val Ile Phe Glu Met Pro His Leu Arg Asp Val Ala Leu
115 120 125

Pro Ala Leu Gly Ala Val Leu Arg Gly Ala Val Arg Val Glu Lys Asn

```
    130                 135                 140

Gln Glu Leu Cys His Leu Ser Thr Ile Asp Trp Gly Leu Leu Gln Pro
145                 150                 155                 160

Ala Pro Gly Ala Asn His Ile Val Gly Asn Lys Leu Gly Glu Glu Cys
                165                 170                 175

Ala Asp Val Cys Pro Gly Val Leu Gly Ala Ala Gly Glu Pro Cys Ala
            180                 185                 190

Lys Thr Thr Phe Ser Gly His Thr Asp Tyr Arg Cys Trp Thr Ser Ser
        195                 200                 205

His Cys Gln Arg Val Cys Pro Cys Pro His Gly Met Ala Cys Thr Ala
    210                 215                 220

Arg Gly Glu Cys Cys His Thr Glu Cys Leu Gly Gly Cys Ser Gln Pro
225                 230                 235                 240

Glu Asp Pro Arg Ala Cys Val Ala Cys Arg His Leu Tyr Phe Gln Gly
                245                 250                 255

Ala Cys Leu Trp Ala Cys Pro Pro Gly Thr Tyr Gln Tyr Glu Ser Trp
            260                 265                 270

Arg Cys Val Thr Ala Glu Arg Cys Ala Ser Leu His Ser Val Pro Gly
        275                 280                 285

Arg Ala Ser Thr Phe Gly Ile His Gln Gly Ser Cys Leu Ala Gln Cys
    290                 295                 300

Pro Ser Gly Phe Thr Arg Asn Ser Ser Ser Ile Phe Cys His Lys Cys
305                 310                 315                 320

Glu Gly Leu Cys Pro Lys Glu Cys Lys Val Gly Thr Lys Thr Ile Asp
                325                 330                 335

Ser Ile Gln Ala Ala Gln Asp Leu Val Gly Cys Thr His Val Glu Gly
            340                 345                 350

Ser Leu Ile Leu Asn Leu Arg Gln Gly Tyr Asn Leu Glu Pro Gln Leu
        355                 360                 365

Gln His Ser Leu Gly Leu Val Glu Thr Ile Thr Gly Phe Leu Lys Ile
    370                 375                 380
```

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Lys His Ser Phe Ala Leu Val Ser Leu Gly Phe Phe Lys Asn Leu Lys
385                 390                 395                 400

Leu Ile Arg Gly Asp Ala Met Val Asp Gly Asn Tyr Thr Leu Tyr Val
                405                 410                 415

Leu Asp Asn Gln Asn Leu Gln Gln Leu Gly Ser Trp Val Ala Ala Gly
            420                 425                 430

Leu Thr Ile Pro Val Gly Lys Ile Tyr Phe Ala Phe Asn Pro Arg Leu
        435                 440                 445

Cys Leu Glu His Ile Tyr Arg Leu Glu Glu Val Thr Gly Thr Arg Gly
    450                 455                 460

Arg Gln Asn Lys Ala Glu Ile Asn Pro Arg Thr Asn Gly Asp Arg Ala
465                 470                 475                 480

Ala Cys Gln Thr Arg Thr Leu Arg Phe Val Ser Asn Val Thr Glu Ala
                485                 490                 495

Asp Arg Ile Leu Leu Arg Trp Glu Arg Tyr Glu Pro Leu Glu Ala Arg
            500                 505                 510

Asp Leu Leu Ser Phe Ile Val Tyr Tyr Lys Glu Ser Pro Phe Gln Asn
        515                 520                 525

Ala Thr Glu His Val Gly Pro Asp Ala Cys Gly Thr Gln Ser Trp Asn
    530                 535                 540

Leu Leu Asp Val Glu Leu Pro Leu Ser Arg Thr Gln Glu Pro Gly Val
545                 550                 555                 560

Thr Leu Ala Ser Leu Lys Pro Trp Thr Gln Tyr Ala Val Phe Val Arg
                565                 570                 575

Ala Ile Thr Leu Thr Thr Glu Glu Asp Ser Pro His Gln Gly Ala Gln
            580                 585                 590

Ser Pro Ile Val Tyr Leu Arg Thr Leu Pro Ala Ala Pro Thr Val Pro
        595                 600                 605

Gln Asp Val Ile Ser Thr Ser Asn Ser Ser Ser His Leu Leu Val Arg
    610                 615                 620

Trp Lys Pro Pro Thr Gln Arg Asn Gly Asn Leu Thr Tyr Tyr Leu Val
625                 630                 635                 640
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Leu Trp Gln Arg Leu Ala Glu Asp Gly Asp Leu Tyr Leu Asn Asp Tyr
                645                 650                 655

Cys His Arg Gly Leu Arg Leu Pro Thr Ser Asn Asn Asp Pro Arg Phe
            660                 665                 670

Asp Gly Glu Asp Gly Asp Pro Glu Ala Glu Met Glu Ser Asp Cys Cys
        675                 680                 685

Pro Cys Gln His Pro Pro Pro Gly Gln Val Leu Pro Pro Leu Glu Ala
    690                 695                 700

Gln Glu Ala Ser Phe Gln Lys Lys Phe Glu Asn Phe Leu His Asn Ala
705                 710                 715                 720

Ile Thr Ile Pro Ile Ser Pro Trp Lys Val Thr Ser Ile Asn Lys Ser
                725                 730                 735

Pro Gln Arg Asp Ser Gly Arg His Arg Arg Ala Ala Gly Pro Leu Arg
            740                 745                 750

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

Arg Glu Arg Ala Val Leu Ser Gly Leu Arg His Phe Thr Glu Tyr Arg
    770                 775                 780

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Gly Ile Pro Gly Lys Val Ala Trp Glu Ala Ser Ser Lys Asn Ser Val
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Ser Ser Leu Arg Asn Leu Val Val Ser Leu Leu Asn Ser Met Lys Ser
        595                 600                 605

Ile Ile Ser Leu Leu Phe Leu Leu Phe Leu Phe Ile Val Val Phe Ala
    610                 615                 620

Leu Leu Gly Met Gln Leu Phe Gly Gly Gln Phe Asn Phe Gln Asp Glu
625                 630                 635                 640

Thr Pro Thr Thr Asn Phe Asp Thr Phe Pro Ala Ala Ile Leu Thr Val
                645                 650                 655

Phe Gln Ile Leu Thr Gly Glu Asp Trp Asn Ala Val Met Tyr His Gly
            660                 665                 670

Ile Glu Ser Gln Gly Gly Val Ser Lys Gly Met Phe Ser Ser Phe Tyr
        675                 680                 685

Phe Ile Val Leu Thr Leu Phe Gly Asn Tyr Thr Leu Leu Asn Val Phe
    690                 695                 700

Leu Ala Ile Ala Val Asp Asn Leu Ala Asn Ala Gln Glu Leu Thr Lys
705                 710                 715                 720
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Asp Glu Glu Glu Met Glu Glu Ala Ala Asn Gln Lys Leu Ala Leu Gln
                725                 730                 735

Lys Ala Lys Glu Val Ala Glu Val Ser Pro Met Ser Ala Ala Asn Ile
            740                 745                 750

Ser Ile Ala Ala Arg Gln Gln Asn Ser Ala Lys Ala Arg Ser Val Trp
        755                 760                 765

Glu Gln Arg Ala Ser Gln Leu Arg Leu Gln Asn Leu Arg Ala Ser Cys
    770                 775                 780

Glu Ala Leu Tyr Ser Glu Met Asp Pro Glu Glu Arg Leu Arg Phe Ala
785                 790                 795                 800

Thr Thr Arg His Leu Arg Pro Asp Met Lys Thr His Leu Asp Arg Pro
                805                 810                 815

Leu Val Val Glu Leu Gly Arg Asp Gly Ala Arg Gly Pro Val Gly Gly
            820                 825                 830

Lys Ala Arg Pro Glu Ala Ala Glu Ala Pro Glu Gly Val Asp Pro Pro
        835                 840                 845

Arg Arg His His Arg His Arg Asp Lys Asp Lys Thr Pro Ala Ala Gly
    850                 855                 860

Asp Gln Asp Arg Ala Glu Ala Pro Lys Ala Glu Ser Gly Glu Pro Gly
865                 870                 875                 880

Ala Arg Glu Glu Arg Pro Arg Pro His Arg Ser His Ser Lys Glu Ala
                885                 890                 895

Ala Gly Pro Pro Glu Ala Arg Ser Glu Arg Gly Arg Gly Pro Gly Pro
            900                 905                 910

Glu Gly Gly Arg Arg His His Arg Arg Gly Ser Pro Glu Glu Ala Ala
        915                 920                 925

Glu Arg Glu Pro Arg Arg His Arg Ala His Arg His Gln Asp Pro Ser
    930                 935                 940

Lys Glu Cys Ala Gly Ala Lys Gly Glu Arg Arg Ala Arg His Arg Gly
945                 950                 955                 960

Gly Pro Arg Ala Gly Pro Arg Glu Ala Glu Ser Gly Glu Glu Pro Ala
```

965 970 975

Arg Arg His Arg Ala Arg His Lys Ala Gln Pro Ala His Glu Ala Val
980 985 990

Glu Lys Glu Thr Thr Glu Lys Glu Ala Thr Glu Lys Glu Ala Glu Ile
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Val Glu Ala Asp Lys Glu Lys Glu Leu Arg Asn His Gln Pro Arg
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Glu Pro His Cys Asp Leu Glu Thr Ser Gly Thr Val Thr Val Gly
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Pro Met His Thr Leu Pro Ser Thr Cys Leu Gln Lys Val Glu Glu
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Gln Pro Glu Asp Ala Asp Asn Gln Arg Asn Val Thr Arg Met Gly
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Ser Gln Pro Pro Asp Pro Asn Thr Ile Val His Ile Pro Val Met
1070 1075 1080

Leu Thr Gly Pro Leu Gly Glu Ala Thr Val Val Pro Ser Gly Asn
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Val Asp Leu Glu Ser Gln Ala Glu Gly Lys Lys Glu Val Glu Ala
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Asp Asp Val Met Arg Ser Gly Pro Arg Pro Ile Val Pro Tyr Ser
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Ser Met Phe Cys Leu Ser Pro Thr Asn Leu Leu Arg Arg Phe Cys
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His Tyr Ile Val Thr Met Arg Tyr Phe Glu Val Val Ile Leu Val
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Val Ile Ala Leu Ser Ser Ile Ala Leu Ala Ala Glu Asp Pro Val
1160 1165 1170

Arg Thr Asp Ser Pro Arg Asn Asn Ala Leu Lys Tyr Leu Asp Tyr
1175 1180 1185

Ile Phe Thr Gly Val Phe Thr Phe Glu Met Val Ile Lys Met Ile
1190 1195 1200

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Asp Leu  Gly Leu Leu Leu His  Pro Gly Ala Tyr Phe  Arg Asp Leu
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Trp Asn  Ile Leu Asp Phe Ile  Val Val Ser Gly Ala  Leu Val Ala
    1220                 1225                 1230

Phe Ala  Phe Ser Gly Ser Lys  Gly Lys Asp Ile Asn  Thr Ile Lys
    1235                 1240                 1245

Ser Leu  Arg Val Leu Arg Val  Leu Arg Pro Leu Lys  Thr Ile Lys
    1250                 1255                 1260

Arg Leu  Pro Lys Leu Lys Ala  Val Phe Asp Cys Val  Val Asn Ser
    1265                 1270                 1275

Leu Lys  Asn Val Leu Asn Ile  Leu Ile Val Tyr Met  Leu Phe Met
    1280                 1285                 1290

Phe Ile  Phe Ala Val Ile Ala  Val Gln Leu Phe Lys  Gly Lys Phe
    1295                 1300                 1305

Phe Tyr  Cys Thr Asp Glu Ser  Lys Glu Leu Glu Arg  Asp Cys Arg
    1310                 1315                 1320

Gly Gln  Tyr Leu Asp Tyr Glu  Lys Glu Glu Val Glu  Ala Gln Pro
    1325                 1330                 1335

Arg Gln  Trp Lys Lys Tyr Asp  Phe His Tyr Asp Asn  Val Leu Trp
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Ala Leu  Leu Thr Leu Phe Thr  Val Ser Thr Gly Glu  Gly Trp Pro
    1355                 1360                 1365

Met Val  Leu Lys His Ser Val  Asp Ala Thr Tyr Glu  Glu Gln Gly
    1370                 1375                 1380

Pro Ser  Pro Gly Tyr Arg Met  Glu Leu Ser Ile Phe  Tyr Val Val
    1385                 1390                 1395

Tyr Phe  Val Val Phe Pro Phe  Phe Phe Val Asn Ile  Phe Val Ala
    1400                 1405                 1410

Leu Ile  Ile Ile Thr Phe Gln  Glu Gln Gly Asp Lys  Val Met Ser
    1415                 1420                 1425

Glu Cys  Ser Leu Glu Lys Asn  Glu Arg Ala Cys Ile  Asp Phe Ala
    1430                 1435                 1440
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Ile Ser  Ala Lys Pro Leu Thr  Arg Tyr Met Pro Gln  Asn Arg Gln
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Ser Phe  Gln Tyr Lys Thr Trp  Thr Phe Val Val Ser  Pro Pro Phe
    1460                 1465                 1470

Glu Tyr  Phe Ile Met Ala Met  Ile Ala Leu Asn Thr  Val Val Leu
    1475                 1480                 1485

Met Met  Lys Phe Tyr Asp Ala  Pro Tyr Glu Tyr Glu  Leu Met Leu
    1490                 1495                 1500

Lys Cys  Leu Asn Ile Val Phe  Thr Ser Met Phe Ser  Met Glu Cys
    1505                 1510                 1515

Val Leu  Lys Ile Ile Ala Phe  Gly Val Leu Asn Tyr  Phe Arg Asp
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Ala Trp  Asn Val Phe Asp Phe  Val Thr Val Leu Gly  Ser Ile Thr
    1535                 1540                 1545

Asp Ile  Leu Val Thr Glu Ile  Ala Glu Thr Asn Asn  Phe Ile Asn
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Leu Ser  Phe Leu Arg Leu Phe  Arg Ala Ala Arg Leu  Ile Lys Leu
    1565                 1570                 1575

Leu Arg  Gln Gly Tyr Thr Ile  Arg Ile Leu Leu Trp  Thr Phe Val
    1580                 1585                 1590

Gln Ser  Phe Lys Ala Leu Pro  Tyr Val Cys Leu Leu  Ile Ala Met
    1595                 1600                 1605

Leu Phe  Phe Ile Tyr Ala Ile  Ile Gly Met Gln Val  Phe Gly Asn
    1610                 1615                 1620

Ile Ala  Leu Asp Asp Asp Thr  Ser Ile Asn Arg His  Asn Asn Phe
    1625                 1630                 1635

Arg Thr  Phe Leu Gln Ala Leu  Met Leu Leu Phe Arg  Ser Ala Thr
    1640                 1645                 1650

Gly Glu  Ala Trp His Glu Ile  Met Leu Ser Cys Leu  Ser Asn Gln
    1655                 1660                 1665

Ala Cys  Asp Glu Gln Ala Asn  Ala Thr Glu Cys Gly  Ser Asp Phe
    1670                 1675                 1680
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Ala Tyr  Phe Tyr Phe Val Ser  Phe Ile Phe Leu Cys  Ser Phe Leu
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Met Leu  Asn Leu Phe Val Ala  Val Ile Met Asp Asn  Phe Glu Tyr
    1700                 1705                 1710

Leu Thr  Arg Asp Ser Ser Ile  Leu Gly Pro His His  Leu Asp Glu
    1715                 1720                 1725

Phe Ile  Arg Val Trp Ala Glu  Tyr Asp Pro Ala Ala  Cys Gly Arg
    1730                 1735                 1740

Ile Ser  Tyr Asn Asp Met Phe  Glu Met Leu Lys His  Met Ser Pro
    1745                 1750                 1755

Pro Leu  Gly Leu Gly Lys Lys  Cys Pro Ala Arg Val  Ala Tyr Lys
    1760                 1765                 1770

Arg Leu  Val Arg Met Asn Met  Pro Ile Ser Asn Glu  Asp Met Thr
    1775                 1780                 1785

Val His  Phe Thr Ser Thr Leu  Met Ala Leu Ile Arg  Thr Ala Leu
    1790                 1795                 1800

Glu Ile  Lys Leu Ala Pro Ala  Gly Thr Lys Gln His  Gln Cys Asp
    1805                 1810                 1815

Ala Glu  Leu Arg Lys Glu Ile  Ser Val Val Trp Ala  Asn Leu Pro
    1820                 1825                 1830

Gln Lys  Thr Leu Asp Leu Leu  Val Pro Pro His Lys  Pro Asp Glu
    1835                 1840                 1845

Met Thr  Val Gly Lys Val Tyr  Ala Ala Leu Met Ile  Phe Asp Phe
    1850                 1855                 1860

Tyr Lys  Gln Asn Lys Thr Thr  Arg Asp Gln Met Gln  Gln Ala Pro
    1865                 1870                 1875

Gly Gly  Leu Ser Gln Met Gly  Pro Val Ser Leu Phe  His Pro Leu
    1880                 1885                 1890

Lys Ala  Thr Leu Glu Gln Thr  Gln Pro Ala Val Leu  Arg Gly Ala
    1895                 1900                 1905

Arg Val  Phe Leu Arg Gln Lys  Ser Ser Thr Ser Leu  Ser Asn Gly
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1910 1915 1920

Gly Ala Ile Gln Asn Gln Glu Ser Gly Ile Lys Glu Ser Val Ser
1925 1930 1935

Trp Gly Thr Gln Arg Thr Gln Asp Ala Pro His Glu Ala Arg Pro
1940 1945 1950

Pro Leu Glu Arg Gly His Ser Thr Glu Ile Pro Val Gly Arg Ser
1955 1960 1965

Gly Ala Leu Ala Val Asp Val Gln Met Gln Ser Ile Thr Arg Arg
1970 1975 1980

Gly Pro Asp Gly Glu Pro Gln Pro Gly Leu Glu Ser Gln Gly Arg
1985 1990 1995

Ala Ala Ser Met Pro Arg Leu Ala Ala Glu Thr Gln Pro Val Thr
2000 2005 2010

Asp Ala Ser Pro Met Lys Arg Ser Ile Ser Thr Leu Ala Gln Arg
2015 2020 2025

Pro Arg Gly Thr His Leu Cys Ser Thr Thr Pro Asp Arg Pro Pro
2030 2035 2040

Pro Ser Gln Ala Ser Ser His His His His His Arg Cys His Arg
2045 2050 2055

Arg Arg Asp Arg Lys Gln Arg Ser Leu Glu Lys Gly Pro Ser Leu
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Ser Ala Asp Met Asp Gly Ala Pro Ser Ser Ala Val Gly Pro Gly
2075 2080 2085

Leu Pro Pro Gly Glu Gly Pro Thr Gly Cys Arg Arg Glu Arg Glu
2090 2095 2100

Arg Arg Gln Glu Arg Gly Arg Ser Gln Glu Arg Arg Gln Pro Ser
2105 2110 2115

Ser Ser Ser Ser Glu Lys Gln Arg Phe Tyr Ser Cys Asp Arg Phe
2120 2125 2130

Gly Gly Arg Glu Pro Pro Lys Pro Lys Pro Ser Leu Ser Ser His
2135 2140 2145

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Pro Thr  Ser Pro Thr Ala Gly  Gln Glu Pro Gly Pro  His Pro Gln
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Gly Ser  Gly Ser Val Asn Gly  Ser Pro Leu Leu Ser  Thr Ser Gly
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Ala Ser  Thr Pro Gly Arg Gly  Gly Arg Arg Gln Leu  Pro Gln Thr
    2180                 2185                 2190

Pro Leu  Thr Pro Arg Pro Ser  Ile Thr Tyr Lys Thr  Ala Asn Ser
    2195                 2200                 2205

Ser Pro  Ile His Phe Ala Gly  Ala Gln Thr Ser Leu  Pro Ala Phe
    2210                 2215                 2220

Ser Pro  Gly Arg Leu Ser Arg  Gly Leu Ser Glu His  Asn Ala Leu
    2225                 2230                 2235

Leu Gln  Arg Asp Pro Leu Ser  Gln Pro Leu Ala Pro  Gly Ser Arg
    2240                 2245                 2250

Ile Gly  Ser Asp Pro Tyr Leu  Gly Gln Arg Leu Asp  Ser Glu Ala
    2255                 2260                 2265

Ser Val  His Ala Leu Pro Glu  Asp Thr Leu Thr Phe  Glu Glu Ala
    2270                 2275                 2280

Val Ala  Thr Asn Ser Gly Arg  Ser Ser Arg Thr Ser  Tyr Val Ser
    2285                 2290                 2295

Ser Leu  Thr Ser Gln Ser His  Pro Leu Arg Arg Val  Pro Asn Gly
    2300                 2305                 2310

Tyr His  Cys Thr Leu Gly Leu  Ser Ser Gly Gly Arg  Ala Arg His
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Ser Tyr  His His Pro Asp Gln  Asp His Trp Cys
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gcccacccac cctgggtgct ttctggcttg cagtgctctt ggcagacatg aggcaacgat      180
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35 40 45

Asn Gly Phe Gln Leu Leu Arg His Ala Val Lys Arg Asp Leu Leu Pro
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Pro Arg Thr Pro Pro Tyr Gln Val His Ile Ser His Arg Glu Ala Arg
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Arg Gly Cys Ser Thr Gly Asn
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Phe Ala Val Leu Pro His His Ser Glu Gly Ala Cys Val Tyr Gln Asp
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Ser Leu Leu Ala Asp Ala Thr Ile Trp Lys Pro Asp Ser Cys Gln Ser
35 40 45

Cys Arg Cys His Gly Asp Ile Val Ile Cys Lys Pro Ala Val Cys Arg
50 55 60

Asn Pro Gln Cys Ala Phe Glu Lys Gly Glu Val Leu Gln Ile Ala Ala
65 70 75 80

Asn Gln Cys Cys Pro Glu Cys Val Leu Arg Thr Pro Gly Ser Cys His
85 90 95

His Glu Lys Lys Ile His Glu His Gly Thr Glu Trp Ala Ser Ser Pro
100 105 110

Cys Ser Val Cys Ser Cys Asn His Gly Glu Val Arg Cys Thr Pro Gln
115 120 125

Pro Cys Pro Pro Leu Ser Cys Gly His Gln Glu Leu Ala Phe Ile Pro
130 135 140

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Glu Gly Ser Cys Cys Pro Val Cys Val Gly Leu Gly Lys Pro Cys Ser
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Tyr Glu Gly His Val Phe Gln Asp Gly Glu Asp Trp Arg Leu Ser Arg
                165                 170                 175

Cys Ala Lys Cys Leu Cys Arg Asn Gly Val Ala Gln Cys Phe Thr Ala
            180                 185                 190

Gln Cys Gln Pro Leu Phe Cys Asn Gln Asp Glu Thr Val Val Arg Val
        195                 200                 205

Pro Gly Lys Cys Cys Pro Gln Cys Ser Ala Arg Ser Cys Ser Ala Ala
    210                 215                 220

Gly Gln Val Tyr Glu His Gly Glu Gln Trp Ser Glu Asn Ala Cys Thr
225                 230                 235                 240

Thr Cys Ile Cys Asp Arg Gly Glu Val Arg Cys His Lys Gln Ala Cys
                245                 250                 255

Leu Pro Leu Arg Cys Gly Lys Gly Gln Ser Arg Ala Arg Arg His Gly
            260                 265                 270

Gln Cys Cys Glu Glu Cys Val Ser Pro Ala Gly Ser Cys Ser Tyr Asp
        275                 280                 285

Gly Val Val Arg Tyr Gln Asp Glu Met Trp Lys Gly Ser Ala Cys Glu
    290                 295                 300

Phe Cys Met Cys Asp His Gly Gln Val Thr Cys Gln Thr Gly Glu Cys
305                 310                 315                 320

Ala Lys Val Glu Cys Ala Arg Asp Glu Glu Leu Ile His Leu Asp Gly
                325                 330                 335

Lys Cys Cys Pro Glu Cys Ile Ser Arg Asn Gly Tyr Cys Val Tyr Glu
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Glu Thr Gly Glu Phe Met Ser Ser Asn Ala Ser Glu Val Lys Arg Ile
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Pro Glu Gly Glu Lys Trp Glu Asp Gly Pro Cys Lys Val Cys Glu Cys
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Arg Gly Ala Gln Val Thr Cys Tyr Glu Pro Ser Cys Pro Pro Cys Pro
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Val Gly Thr Leu Ala Leu Glu Val Lys Gly Gln Cys Cys Pro Asp Cys
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Thr Ser Val His Cys His Pro Asp Cys Leu Thr Cys Ser Gln Ser Pro
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Asp His Cys Asp Leu Cys Gln Asp Pro Thr Lys Leu Leu Gln Asn Gly
        435                 440                 445

Trp Cys Val His Ser Cys Gly Leu Gly Phe Tyr Gln Ala Gly Ser Leu
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Cys Leu Ala Cys Gln Pro Gln Cys Ser Thr Cys Thr Ser Gly Leu Glu
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Cys Ser Ser Cys Gln Pro Pro Leu Leu Met Arg His Gly Gln Cys Val
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Pro Thr Cys Gly Asp Gly Phe Tyr Gln Asp Arg His Ser Cys Ala Val
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Cys His Glu Ser Cys Ala Gly Cys Trp Gly Pro Thr Glu Lys His Cys
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Leu Ala Cys Arg Asp Pro Leu His Val Leu Arg Asp Gly Gly Cys Glu
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Ser Ser Cys Gly Lys Gly Phe Tyr Asn Arg Gln Gly Thr Cys Ser Ala
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Cys Asp Gln Ser Cys Asp Ser Cys Gly Pro Ser Ser Pro Arg Cys Leu
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Thr Cys Thr Glu Lys Thr Val Leu His Asp Gly Lys Cys Met Ser Glu
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Cys Pro Gly Gly Tyr Tyr Ala Asp Ala Thr Gly Arg Cys Lys Val Cys
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His Asn Ser Cys Ala Ser Cys Ser Gly Pro Thr Pro Ser His Cys Thr
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Ala Cys Ser Pro Pro Lys Ala Leu Arg Gln Gly His Cys Leu Pro Arg
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Cys Gly Glu Gly Phe Tyr Ser Asp His Gly Val Cys Lys Ala Cys His
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Ser Ser Cys Leu Ala Cys Met Gly Pro Ala Pro Ser His Cys Thr Gly
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Cys Lys Lys Pro Glu Glu Gly Leu Gln Val Glu Gln Leu Ser Asp Val
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Gly Ile Pro Ser Gly Glu Cys Leu Ala Gln Cys Arg Ala His Phe Tyr
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Leu Glu Ser Thr Gly Ile Cys Glu Ala Cys His Gln Ser Cys Phe Arg
705                 710                 715                 720

Cys Ala Gly Lys Ser Pro His Asn Cys Thr Asp Cys Gly Pro Ser His
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Val Leu Leu Asp Gly Gln Cys Leu Ser Gln Cys Pro Asp Gly Tyr Phe
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His Gln Glu Gly Ser Cys Thr Glu Cys His Pro Thr Cys Arg Gln Cys
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His Gly Pro Leu Glu Ser Asp Cys Ile Ser Cys Tyr Pro His Ile Ser
    770                 775                 780

Leu Thr Asn Gly Asn Cys Arg Thr Ser Cys Arg Glu Glu Gln Phe Leu
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Asn Leu Val Gly Tyr Cys Ala Asp Cys His His Leu Cys Gln His Cys
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Ala Ala Asp Leu His Asn Thr Gly Ser Ile Cys Leu Arg Cys Gln Asn
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Ala His Tyr Leu Leu Leu Gly Asp His Cys Val Pro Asp Cys Pro Ser
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Gly Tyr Tyr Ala Glu Arg Gly Ala Cys Lys Lys Cys His Ser Ser Cys
    850                 855                 860

Arg Thr Cys Gln Gly Arg Gly Pro Phe Ser Cys Ser Ser Cys Asp Thr
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Asn Leu Val Leu Ser His Thr Gly Thr Cys Ser Thr Thr Cys Phe Pro
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Gly His Tyr Leu Asp Asp Asn His Val Cys Gln Pro Cys Asn Thr His
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Cys Gly Ser Cys Asp Ser Gln Ala Ser Cys Thr Ser Cys Arg Asp Pro
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Asn Lys Val Leu Leu Phe Gly Glu Cys Gln Tyr Glu Ser Cys Ala Pro
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Gln Tyr Tyr Leu Asp Phe Ser Thr Asn Thr Cys Lys Glu Cys Asp Trp
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Ser Cys Ser Ala Cys Ser Gly Pro Leu Lys Thr Asp Cys Leu Gln Cys
                965                 970                 975

Met Asp Gly Tyr Val Leu Gln Asp Gly Ala Cys Val Glu Gln Cys Leu
            980                 985                 990

Ser Ser Phe Tyr Gln Asp Ser Gly  Leu Cys Lys Asn Cys  Asp Ser Tyr
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Cys Leu  Gln Cys Gln Gly Pro  His Glu Cys Thr Arg  Cys Lys Gly
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Pro Phe  Leu Leu Leu Glu Ala  Gln Cys Val Gln Glu  Cys Gly Lys
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Gly Tyr  Phe Ala Asp His Ala  Lys His Lys Cys Thr  Ala Cys Pro
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Gln Gly  Cys Leu Gln Cys Ser  His Arg Asp Arg Cys  His Leu Cys
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Asp His  Gly Phe Phe Leu Lys  Ser Gly Leu Cys Val  Tyr Asn Cys
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Val Pro  Gly Phe Ser Val His  Thr Ser Asn Glu Thr  Cys Ser Gly
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Lys Ile  His Thr Pro Ser Leu  His Val Asn Gly Ser  Leu Ile Leu
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Pro Ile  Gly Ser Ile Lys Pro  Leu Asp Phe Ser Leu  Leu Asn Val
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Asn Glu  Lys Lys Val Arg Phe  Val His Ser Lys Glu  Lys Leu Arg
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Lys Gly  Tyr Leu Phe Leu Lys  Ile Ser Asp Gln Gln  Phe Phe Ser
    1190                 1195                 1200

Glu Pro  Gln Leu Ile Asn Ile  Gln Ala Phe Ser Thr  Gln Ala Pro
    1205                 1210                 1215

Tyr Val  Leu Arg Asn Glu Val  Leu His Ile Ser Arg  Gly Glu Arg
    1220                 1225                 1230

Ala Thr  Ile Thr Thr Gln Met  Leu Asp Ile Arg Asp  Asp Asp Asn
    1235                 1240                 1245

Pro Gln  Asp Val Val Ile Glu  Ile Ile Asp Pro Pro  Leu His Gly
    1250                 1255                 1260

Gln Leu  Leu Gln Thr Leu Gln  Ser Pro Ala Thr Pro  Ile Tyr Gln
    1265                 1270                 1275

Phe Gln  Leu Asp Glu Leu Ser  Arg Gly Leu Leu His  Tyr Ala His
    1280                 1285                 1290

Asp Gly  Ser Asp Ser Thr Ser  Asp Val Ala Val Leu  Gln Ala Asn
    1295                 1300                 1305

Asp Gly  His Ser Phe His Asn  Ile Leu Phe Gln Val  Lys Thr Val
    1310                 1315                 1320

Pro Gln  Asn Asp Arg Gly Leu  Gln Leu Val Ala Asn  Ser Met Val
    1325                 1330                 1335

Trp Val  Pro Glu Gly Gly Met  Leu Gln Ile Thr Asn  Arg Ile Leu
    1340                 1345                 1350

Gln Ala  Glu Ala Pro Gly Ala  Ser Ala Glu Glu Ile  Ile Tyr Lys
    1355                 1360                 1365

Ile Thr  Gln Asp Tyr Pro Gln  Phe Gly Glu Val Val  Leu Leu Val
    1370                 1375                 1380
```

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Asn Met  Pro Ala Asp Ser Pro  Ala Asp Glu Gly Gln  His Leu Pro
    1385                 1390                 1395

Asp Gly  Arg Thr Ala Thr Pro  Thr Ser Thr Phe Thr  Gln Gln Asp
    1400                 1405                 1410

Ile Asn  Glu Gly Ile Val Trp  Tyr Arg His Ser Gly  Ala Pro Ala
    1415                 1420                 1425

Gln Ser  Asp Ser Phe Arg Phe  Glu Val Ser Ser Ala  Ser Asn Ala
    1430                 1435                 1440

Gln Thr  Arg Leu Glu Ser His  Met Phe Asn Ile Ala  Ile Leu Pro
    1445                 1450                 1455

Gln Thr  Pro Glu Ala Pro Lys  Val Ser Leu Glu Ala  Ser Leu His
    1460                 1465                 1470

Met Thr  Ala Arg Glu Asp Gly  Leu Thr Val Ile Gln  Pro His Ser
    1475                 1480                 1485

Leu Ser  Phe Ile Asn Ser Glu  Lys Pro Ser Gly Lys  Ile Val Tyr
    1490                 1495                 1500

Asn Ile  Thr Leu Pro Leu His  Pro Asn Gln Gly Ile  Ile Glu His
    1505                 1510                 1515

Arg Asp  His Pro His Ser Pro  Ile Arg Tyr Phe Thr  Gln Glu Asp
    1520                 1525                 1530

Ile Asn  Gln Gly Lys Val Met  Tyr Arg Pro Pro Pro  Ala Ala Pro
    1535                 1540                 1545

His Leu  Gln Glu Leu Met Ala  Phe Ser Phe Ala Gly  Leu Pro Glu
    1550                 1555                 1560

Ser Val  Lys Phe His Phe Thr  Val Ser Asp Gly Glu  His Thr Ser
    1565                 1570                 1575

Pro Glu  Met Val Leu Thr Ile  His Leu Leu Pro Ser  Asp Gln Gln
    1580                 1585                 1590

Leu Pro  Val Phe Gln Val Thr  Ala Pro Arg Leu Ala  Val Ser Pro
    1595                 1600                 1605

Gly Gly  Ser Thr Ser Val Gly  Leu Gln Val Val Val  Arg Asp Ala
```

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    1610                1615                1620

Glu Thr  Ala Pro Lys Glu Leu  Phe Phe Glu Leu Arg  Arg Pro Pro
    1625                1630                1635

Gln His  Gly Val Leu Leu Lys  His Thr Ala Glu Phe  Arg Arg Pro
    1640                1645                1650

Met Ala  Thr Gly Asp Thr Phe  Thr Tyr Glu Asp Val  Glu Lys Asn
    1655                1660                1665

Ala Leu  Gln Tyr Ile His Asp  Gly Ser Ser Thr Arg  Glu Asp Ser
    1670                1675                1680

Met Glu  Ile Ser Val Thr Asp  Gly Leu Thr Val Thr  Met Leu Glu
    1685                1690                1695

Val Arg  Val Glu Val Ser Leu  Ser Glu Asp Arg Gly  Pro Arg Leu
    1700                1705                1710

Ala Ala  Gly Ser Ser Leu Ser  Ile Thr Val Ala Ser  Lys Ser Thr
    1715                1720                1725

Ala Ile  Ile Thr Arg Ser His  Leu Ala Tyr Val Asp  Asp Ser Ser
    1730                1735                1740

Pro Asp  Pro Glu Ile Trp Ile  Gln Leu Asn Tyr Leu  Pro Ser Tyr
    1745                1750                1755

Gly Thr  Leu Leu Arg Ile Ser  Gly Ser Glu Val Glu  Glu Leu Ser
    1760                1765                1770

Glu Val  Ser Asn Phe Thr Met  Glu Asp Ile Asn Asn  Lys Lys Ile
    1775                1780                1785

Arg Tyr  Ser Ala Val Phe Glu  Thr Asp Gly His Leu  Val Thr Asp
    1790                1795                1800

Ser Phe  Tyr Phe Ser Val Ser  Asp Met Asp His Asn  His Leu Asp
    1805                1810                1815

Asn Gln  Ile Phe Thr Ile Met  Ile Thr Pro Ala Glu  Asn Pro Pro
    1820                1825                1830

Pro Val  Ile Ala Phe Ala Asp  Leu Ile Thr Val Asp  Glu Gly Gly
    1835                1840                1845
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Arg Ala  Pro Leu Ser Phe His  His Phe Phe Ala Thr  Asp Asp Asp
    1850                 1855                 1860

Asp Asn  Leu Gln Arg Asp Ala  Ile Ile Lys Leu Ser  Ala Leu Pro
    1865                 1870                 1875

Lys Tyr  Gly Cys Ile Glu Asn  Thr Gly Thr Gly Asp  Arg Phe Gly
    1880                 1885                 1890

Pro Glu  Thr Ala Ser Asp Leu  Glu Ala Ser Phe Pro  Ile Gln Asp
    1895                 1900                 1905

Val Leu  Glu Asn Tyr Ile Tyr  Tyr Phe Gln Ser Val  His Glu Ser
    1910                 1915                 1920

Ile Glu  Pro Thr His Asp Ile  Phe Ser Phe Tyr Val  Ser Asp Gly
    1925                 1930                 1935

Thr Ser  Arg Ser Glu Ile His  Ser Ile Asn Ile Thr  Ile Glu Arg
    1940                 1945                 1950

Lys Asn  Asp Glu Pro Pro Arg  Met Thr Leu Gln Pro  Leu Arg Val
    1955                 1960                 1965

Gln Leu  Ser Ser Gly Val Val  Ile Ser Asn Ser Ser  Leu Ser Leu
    1970                 1975                 1980

Gln Asp  Leu Asp Thr Pro Asp  Asn Glu Leu Ile Phe  Val Leu Thr
    1985                 1990                 1995

Lys Lys  Pro Asp His Gly His  Val Leu Trp Arg Gln  Thr Ala Ser
    2000                 2005                 2010

Glu Pro  Leu Glu Asn Gly Arg  Val Leu Val Gln Gly  Ser Thr Phe
    2015                 2020                 2025

Thr Tyr  Gln Asp Ile Leu Ala  Gly Leu Val Gly Tyr  Val Pro Ser
    2030                 2035                 2040

Val Pro  Gly Met Val Val Asp  Glu Phe Gln Phe Ser  Leu Thr Asp
    2045                 2050                 2055

Gly Leu  His Val Asp Thr Gly  Arg Met Lys Ile Tyr  Thr Glu Leu
    2060                 2065                 2070

Pro Ala  Ser Asp Thr Pro His  Leu Ala Ile Asn Gln  Gly Leu Gln
    2075                 2080                 2085
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Leu Ser  Ala Gly Ser Val Ala  Arg Ile Thr Glu Gln  His Leu Lys
    2090                 2095                 2100

Val Thr  Asp Ile Asp Ser Asp  Asp His Gln Val Met  Tyr Ile Met
    2105                 2110                 2115

Lys Glu  Asp Pro Gly Ala Gly  Arg Leu Gln Met Met  Lys His Gly
    2120                 2125                 2130

Asn Leu  Glu Gln Ile Ser Ile  Lys Gly Pro Ile Arg  Ser Phe Thr
    2135                 2140                 2145

Gln Ala  Asp Ile Ser Gln Gly  His Val Glu Tyr Ser  His Gly Thr
    2150                 2155                 2160

Gly Glu  Pro Gly Gly Ser Phe  Ala Phe Lys Phe Asp  Val Val Asp
    2165                 2170                 2175

Gly Glu  Gly Asn Arg Leu Ile  Asp Lys Ser Phe Ser  Ile Ser Ile
    2180                 2185                 2190

Leu Glu  Asp Lys Ser Pro Pro  Val Ile Thr Thr Asn  Lys Gly Leu
    2195                 2200                 2205

Val Leu  Asp Glu Asn Ser Val  Lys Lys Ile Thr Thr  Leu Gln Leu
    2210                 2215                 2220

Ser Ala  Thr Asp Gln Asp Ser  Gly Pro Thr Glu Leu  Ile Tyr Arg
    2225                 2230                 2235

Ile Thr  Arg Gln Pro Gln Leu  Gly His Leu Glu His  Ala Ala Ser
    2240                 2245                 2250

Pro Gly  Ile Gln Ile Ser Ser  Phe Thr Gln Ala Asp  Leu Thr Ser
    2255                 2260                 2265

Arg Asn  Val Gln Tyr Val His  Ser Ser Glu Ala Glu  Lys His Ser
    2270                 2275                 2280

Asp Ala  Phe Ser Phe Thr Leu  Ser Asp Gly Val Ser  Glu Val Thr
    2285                 2290                 2295

Gln Thr  Phe His Ile Thr Leu  His Pro Val Asp Asp  Ser Leu Pro
    2300                 2305                 2310

Val Val  Gln Asn Leu Gly Met  Arg Val Gln Glu Gly  Met Arg Lys
    2315                 2320                 2325
```

```
Thr Ile  Thr Glu Phe Glu Leu  Lys Ala Val Asp Ala  Asp Thr Glu
    2330                 2335                 2340

Ala Glu  Ser Val Thr Phe Thr  Ile Val Gln Pro Pro  Arg His Gly
    2345                 2350                 2355

Thr Ile  Glu Arg Thr Ser Asn  Gly Gln His Phe His  Leu Thr Ser
    2360                 2365                 2370

Thr Phe  Thr Met Lys Asp Ile  Tyr Gln Asn Arg Val  Ser Tyr Ser
    2375                 2380                 2385

His Asp  Gly Ser Asn Ser Leu  Lys Asp Arg Phe Thr  Phe Thr Val
    2390                 2395                 2400

Ser Asp  Gly Thr Asn Pro Phe  Phe Ile Ile Glu Glu  Gly Gly Lys
    2405                 2410                 2415

Glu Ile  Met Thr Ala Ala Pro  Gln Pro Phe Arg Val  Asp Ile Leu
    2420                 2425                 2430

Pro Val  Asp Asp Gly Thr Pro  Arg Ile Val Thr Asn  Leu Gly Leu
    2435                 2440                 2445

Gln Trp  Leu Glu Tyr Met Asp  Gly Lys Ala Thr Asn  Leu Ile Thr
    2450                 2455                 2460

Lys Lys  Glu Leu Leu Thr Met  Asp Pro Asp Thr Glu  Asp Ala Gln
    2465                 2470                 2475

Leu Val  Tyr Glu Ile Thr Thr  Gly Pro Lys His Gly  Phe Val Glu
    2480                 2485                 2490

Asn Lys  Leu Gln Pro Gly Arg  Ala Ala Ala Thr Phe  Thr Gln Glu
    2495                 2500                 2505

Asp Val  Asn Leu Gly Leu Ile  Arg Tyr Val Leu His  Lys Glu Lys
    2510                 2515                 2520

Ile Arg  Glu Met Met Asp Ser  Phe Gln Phe Leu Val  Lys Asp Ser
    2525                 2530                 2535

Lys Pro  Asn Val Val Ser Asp  Asn Val Phe His Ile  Gln Trp Ser
    2540                 2545                 2550

Leu Ile  Ser Phe Lys Tyr Thr  Ser Tyr Asn Val Ser  Glu Lys Ala
```

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Gly Ser Val Ser Val Thr Val Gln Arg Thr Gly Asn Leu Asn Gln
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Tyr Ala Ile Val Leu Cys Arg Thr Glu Gln Gly Thr Ala Ser Ser
2585 2590 2595

Ser Ser Arg Val Ser Ser Gln Pro Gly Gln Gln Asp Tyr Val Glu
2600 2605 2610

Tyr Ala Gly Gln Val Gln Phe Asp Glu Arg Glu Asp Thr Lys Ser
2615 2620 2625

Cys Thr Ile Val Ile Asn Asp Asp Asp Val Phe Glu Asn Val Glu
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Ser Phe Thr Val Glu Leu Ser Met Pro Ala Tyr Ala Leu Leu Gly
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Glu Phe Thr Gln Ala Lys Val Ile Ile Asn Asp Thr Glu Asp Glu
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Pro Thr Leu Glu Phe Asp Lys Lys Ile Tyr Trp Val Asn Glu Ser
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Ala Gly Phe Leu Phe Ala Pro Ile Glu Arg Lys Gly Asp Ala Ser
2690 2695 2700

Ser Ile Val Ser Ala Ile Cys Tyr Thr Val Pro Lys Ser Ala Met
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Gly Ser Ser Leu Tyr Ala Leu Glu Ser Gly Ser Asp Phe Lys Ser
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Arg Gly Met Ser Ala Ala Ser Arg Val Ile Phe Gly Pro Gly Val
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Thr Met Ser Thr Cys Asp Val Met Leu Ile Asp Asp Ser Glu Tyr
2750 2755 2760

Glu Glu Glu Glu Glu Phe Glu Ile Ala Leu Ala Asp Ala Ser Asp
2765 2770 2775

Asn Ala Arg Ile Gly Arg Val Ala Thr Ala Lys Val Leu Ile Ser
2780 2785 2790

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Gly Pro  Asn Asp Ala Ser Thr  Val Ser Leu Gly Asn  Thr Ala Phe
    2795                 2800                 2805

Thr Val  Ser Glu Asp Ala Gly  Thr Val Lys Ile Pro  Val Ile Arg
    2810                 2815                 2820

His Gly  Thr Asp Leu Ser Thr  Phe Ala Ser Val Trp  Cys Ala Thr
    2825                 2830                 2835

Arg Pro  Ser Asp Pro Ala Ser  Ala Thr Pro Gly Val  Asp Tyr Val
    2840                 2845                 2850

Pro Ser  Ser Arg Lys Val Glu  Phe Gly Pro Gly Val  Ile Glu Gln
    2855                 2860                 2865

Tyr Cys  Thr Leu Thr Ile Leu  Asp Asp Thr Gln Tyr  Pro Val Ile
    2870                 2875                 2880

Glu Gly  Leu Glu Thr Phe Val  Val Phe Leu Ser Ser  Ala Gln Gly
    2885                 2890                 2895

Ala Glu  Leu Thr Lys Pro Phe  Gln Ala Val Ile Ala  Ile Asn Asp
    2900                 2905                 2910

Thr Phe  Gln Asp Val Pro Ser  Met Gln Phe Ala Lys  Asp Leu Leu
    2915                 2920                 2925

Leu Val  Lys Glu Lys Glu Gly  Val Leu His Val Pro  Ile Thr Arg
    2930                 2935                 2940

Ser Gly  Asp Leu Ser Tyr Glu  Ser Ser Val Arg Cys  Tyr Thr Gln
    2945                 2950                 2955

Ser His  Ser Ala Gln Val Met  Glu Asp Phe Glu Glu  Arg Gln Asn
    2960                 2965                 2970

Ala Asp  Ser Ser Arg Ile Thr  Phe Leu Lys Gly Asp  Lys Val Lys
    2975                 2980                 2985

Asn Cys  Thr Val Tyr Ile His  Asp Asp Ser Met Phe  Glu Pro Glu
    2990                 2995                 3000

Glu Gln  Phe Arg Val Tyr Leu  Gly Leu Pro Leu Gly  Asn His Trp
    3005                 3010                 3015

Ser Gly  Ala Arg Ile Gly Lys  Asn Asn Met Ala Thr  Ile Thr Ile
    3020                 3025                 3030
```

```
Ser Asn  Asp Glu Asp Ala Pro  Thr Ile Glu Phe Glu  Glu Ala Ala
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Tyr Gln  Val Arg Glu Pro Ala  Gly Pro Asp Ala Ile  Ala Ile Leu
    3050                 3055                 3060

Asn Ile  Lys Val Ile Arg Arg  Gly Asp Gln Asn Arg  Thr Ser Lys
    3065                 3070                 3075

Val Arg  Cys Ser Thr Arg Asp  Gly Ser Ala Gln Ser  Gly Val Asp
    3080                 3085                 3090

Tyr Tyr  Pro Lys Ser Arg Val  Leu Lys Phe Ser Pro  Gly Val Asp
    3095                 3100                 3105

His Ile  Phe Phe Lys Val Glu  Ile Leu Ser Asn Glu  Asp Arg Glu
    3110                 3115                 3120

Trp His  Glu Ser Phe Ser Leu  Val Leu Gly Pro Asp  Asp Pro Val
    3125                 3130                 3135

Glu Ala  Val Leu Gly Asp Val  Thr Thr Ala Thr Val  Thr Ile Leu
    3140                 3145                 3150

Asp Gln  Glu Ala Ala Gly Ser  Leu Ile Leu Pro Ala  Pro Pro Ile
    3155                 3160                 3165

Val Val  Thr Leu Ala Asp Tyr  Asp His Val Glu Glu  Val Thr Lys
    3170                 3175                 3180

Glu Gly  Val Lys Lys Ser Pro  Ser Pro Gly Tyr Pro  Leu Val Cys
    3185                 3190                 3195

Val Thr  Pro Cys Asp Pro His  Phe Pro Arg Tyr Ala  Val Met Lys
    3200                 3205                 3210

Glu Arg  Cys Ser Glu Ala Gly  Ile Asn Gln Thr Ser  Val Gln Phe
    3215                 3220                 3225

Ser Trp  Glu Val Ala Ala Pro  Thr Asp Gly Asn Gly  Ala Arg Ser
    3230                 3235                 3240

Pro Phe  Glu Thr Ile Thr Asp  Asn Thr Pro Phe Thr  Ser Val Asn
    3245                 3250                 3255

His Met  Val Leu Asp Ser Ile  Tyr Phe Ser Arg Arg  Phe His Val
    3260                 3265                 3270
```

```
Arg Cys  Val Ala Lys Ala Val  Asp Lys Val Gly His  Val Gly Thr
    3275                 3280                 3285

Pro Leu  Arg Ser Asn Ile Val  Thr Ile Gly Thr Asp  Ser Ala Ile
    3290                 3295                 3300

Cys His  Thr Pro Val Val Ala  Gly Thr Ser Arg Gly  Phe Gln Ala
    3305                 3310                 3315

Gln Ser  Phe Ile Ala Thr Leu  Lys Tyr Leu Asp Val  Lys His Lys
    3320                 3325                 3330

Glu His  Pro Asn Arg Ile His  Ile Ser Val Gln Ile  Pro His Gln
    3335                 3340                 3345

Asp Gly  Met Leu Pro Leu Ile  Ser Thr Met Pro Leu  His Asn Leu
    3350                 3355                 3360

His Phe  Leu Leu Ser Glu Ser  Ile Tyr Arg His Gln  His Val Cys
    3365                 3370                 3375

Ser Asn  Leu Val Thr Thr Tyr  Asp Leu Arg Gly Ile  Ser Glu Ala
    3380                 3385                 3390

Gly Phe  Leu Asp Asp Val Val  Tyr Asp Ser Thr Ala  Leu Gly Pro
    3395                 3400                 3405

Gly Tyr  Asp Arg Pro Phe Gln  Phe Asp Pro Ser Val  Arg Glu Pro
    3410                 3415                 3420

Lys Thr  Ile Gln Leu Tyr Lys  His Leu Asn Leu Lys  Ser Cys Val
    3425                 3430                 3435

Trp Thr  Phe Asp Ala Tyr Tyr  Asp Met Thr Glu Leu  Ile Asp Val
    3440                 3445                 3450

Cys Gly  Gly Ser Val Thr Ala  Asp Phe Gln Val Arg  Asp Ser Ala
    3455                 3460                 3465

Gln Ser  Phe Leu Thr Val His  Val Pro Leu Tyr Val  Ser Tyr Ile
    3470                 3475                 3480

Tyr Val  Thr Ala Pro Arg Gly  Trp Ala Ser Leu Glu  His His Thr
    3485                 3490                 3495

Glu Met  Glu Phe Ser Phe Phe  Tyr Asp Thr Val Leu  Trp Arg Thr
```

```
    3500                3505                3510

Gly Ile  Gln Thr Asp Ser Val  Leu Ser Ala Arg Leu  Gln Ile Ile
    3515                3520                3525

Arg Ile  Tyr Ile Arg Glu Asp  Gly Arg Leu Val Ile  Glu Phe Lys
    3530                3535                3540

Thr His  Ala Lys Phe Arg Gly  Gln Phe Val Met Glu  His His Thr
    3545                3550                3555

Leu Pro  Glu Val Lys Ser Phe  Val Leu Thr Pro Asp  His Leu Gly
    3560                3565                3570

Gly Ile  Glu Phe Asp Leu Gln  Leu Leu Trp Ser Ala  Gln Thr Phe
    3575                3580                3585

Asp Ser  Pro His Gln Leu Trp  Arg Ala Thr Ser Ser  Tyr Asn Arg
    3590                3595                3600

Lys Asp  Tyr Ser Gly Glu Tyr  Thr Ile Tyr Leu Ile  Pro Cys Thr
    3605                3610                3615

Val Gln  Pro Thr Gln Pro Trp  Val Asp Pro Gly Glu  Lys Pro Leu
    3620                3625                3630

Ala Cys  Thr Ala His Ala Pro  Glu Arg Phe Leu Ile  Pro Ile Ala
    3635                3640                3645

Phe Gln  Gln Thr Asn Arg Pro  Val Pro Val Val Tyr  Ser Leu Asn
    3650                3655                3660

Thr Glu  Phe Gln Leu Cys Asn  Asn Glu Lys Val Phe  Leu Met Asp
    3665                3670                3675

Pro Asn  Thr Ser Asp Met Ser  Leu Ala Glu Met Asp  Tyr Lys Gly
    3680                3685                3690

Ala Phe  Ser Lys Gly Gln Ile  Leu Tyr Gly Arg Val  Leu Trp Asn
    3695                3700                3705

Pro Glu  Gln Asn Leu Asn Ser  Ala Tyr Lys Leu Gln  Leu Glu Lys
    3710                3715                3720

Val Tyr  Leu Cys Thr Gly Lys  Asp Gly Tyr Val Pro  Phe Phe Asp
    3725                3730                3735
```

```
Pro Thr  Gly Thr Ile Tyr Asn  Glu Gly Pro Gln Tyr  Gly Cys Ile
    3740                3745                3750

Gln Pro  Asn Lys His Leu Lys  His Arg Phe Leu Leu  Leu Asp Arg
    3755                3760                3765

Asn Gln  Pro Glu Val Thr Asp  Lys Tyr Phe His Asp  Val Pro Phe
    3770                3775                3780

Glu Ala  His Phe Ala Ser Glu  Leu Pro Asp Phe His  Val Val Ser
    3785                3790                3795

Asn Met  Pro Gly Val Asp Gly  Phe Thr Leu Lys Val  Asp Ala Leu
    3800                3805                3810

Tyr Lys  Val Glu Ala Gly His  Gln Trp Tyr Leu Gln  Val Ile Tyr
    3815                3820                3825

Ile Ile  Gly Pro Asp Thr Ile  Ser Gly Pro Arg Val  Gln Arg Ser
    3830                3835                3840

Leu Thr  Ala Pro Leu Arg Arg  Asn Arg Arg Asp Leu  Val Glu Pro
    3845                3850                3855

Asp Gly  Gln Leu Ile Leu Asp  Asp Ser Leu Ile Tyr  Asp Asn Glu
    3860                3865                3870

Gly Asp  Gln Val Lys Asn Gly  Thr Asn Met Lys Ser  Leu Asn Leu
    3875                3880                3885

Glu Met  Gln Glu Leu Ala Val  Ala Ala Ser Leu Ser  Gln Thr Gly
    3890                3895                3900

Ala Ser  Ile Gly Ser Ala Leu  Ala Ala Ile Met Leu  Leu Leu Leu
    3905                3910                3915

Val Phe  Leu Val Ala Cys Phe  Ile Asn Arg Lys Cys  Gln Lys Gln
    3920                3925                3930

Arg Lys  Lys Lys Pro Ala Glu  Asp Ile Leu Glu Glu  Tyr Pro Leu
    3935                3940                3945

Asn Thr  Lys Val Glu Val Pro  Lys Arg His Pro Asp  Arg Val Glu
    3950                3955                3960

Lys Asn  Val Asn Arg His Tyr  Cys Thr Val Arg Asn  Val Asn Ile
    3965                3970                3975
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Leu Ser Glu Pro Glu Ala Ala Tyr Thr Phe Lys Gly Ala Lys Val
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Gly Thr Glu Val
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<212> PRT
<213> Homo sapiens

<400> 242

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Leu Pro Ala Gly Cys Leu Ser Leu Leu Val Thr Val Gln His Thr Glu

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Arg Tyr Val Thr Leu Phe Ala Ser Ile Ile Leu Lys Cys Asp Tyr Thr
        35                  40                  45

Thr Ser Ala Gln Leu Gln Asp Val Val Val Thr Trp Arg Phe Lys Ser
    50                  55                  60

Phe Cys Lys Asp Pro Ile Phe Asp Tyr Tyr Ser Ala Ser Tyr Gln Ala
65                  70                  75                  80

Ala Leu Ser Leu Gly Gln Asp Pro Ser Asn Asp Cys Asn Asp Asn Gln
                85                  90                  95

Arg Glu Val Arg Ile Val Ala Gln Arg Arg Gly Gln Asn Glu Pro Val
            100                 105                 110

Leu Gly Val Asp Tyr Arg Gln Arg Lys Ile Thr Ile Gln Asn Arg Ala
        115                 120                 125

Asp Leu Val Ile Asn Glu Val Met Trp Trp Asp His Gly Val Tyr Tyr
    130                 135                 140

Cys Thr Ile Glu Ala Pro Gly Asp Thr Ser Gly Asp Pro Asp Lys Glu
145                 150                 155                 160

Val Lys Leu Ile Val Leu His Trp Leu Thr Val Ile Phe Ile Ile Leu
                165                 170                 175

Gly Ala Leu Leu Leu Leu Leu Leu Ile Gly Val Cys Trp Cys Gln Cys
            180                 185                 190

Cys Pro Gln Tyr Cys Cys Cys Tyr Ile Arg Cys Pro Cys Cys Pro Ala
        195                 200                 205

His Cys Cys Cys Pro Glu Glu Asp Leu Ser Leu Pro Ser Ser Leu Pro
    210                 215                 220

Gln Met Pro Met Thr Gln Thr Thr Asn Gln Pro Pro Ile Ala Asn Gly
225                 230                 235                 240

Val Leu Glu Tyr Leu Glu Lys Glu Leu Arg Asn Leu Asn Leu Ala Gln
                245                 250                 255

Pro Leu Pro Pro Asp Leu Lys Gly Arg Phe Gly His Pro Cys Ser Met
            260                 265                 270
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Leu Ser Ser Leu Gly Ser Glu Val Val Glu Arg Arg Ile Ile His Leu
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Pro Pro Leu Ile Arg Asp Leu Ser Ser Ser Arg Arg Thr Ser Asp Ser
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Leu His Gln Gln Trp Leu Thr Pro Ile Pro Ser Arg Pro Trp Asp Leu
305                 310                 315                 320

Arg Glu Gly Arg Ser His His His Tyr Pro Asp Phe His Gln Glu Leu
                325                 330                 335

Gln Asp Arg Gly Pro Lys Ser Trp Ala Leu Glu Arg Arg Glu Leu Asp
            340                 345                 350

Pro Ser Trp Ser Gly Arg His Arg Ser Ser Arg Leu Asn Gly Ser Pro
        355                 360                 365

Ile His Trp Ser Asp Arg Asp Ser Leu Ser Asp Val Pro Ser Ser Ser
    370                 375                 380

Glu Ala Arg Trp Arg Pro Ser His Pro Pro Phe Arg Ser Arg Cys Gln
385                 390                 395                 400

Glu Arg Pro Arg Arg Pro Ser Pro Arg Glu Ser Thr Gln Arg His Gly
                405                 410                 415

Arg Arg Arg Arg His Arg Ser Tyr Ser Pro Pro Leu Pro Ser Gly Leu
            420                 425                 430

Ser Ser Trp Ser Ser Glu Glu Asp Lys Glu Arg Gln Pro Gln Ser Trp
        435                 440                 445

Arg Ala His Arg Arg Gly Ser His Ser Pro His Trp Pro Glu Glu Lys
    450                 455                 460

Pro Pro Ser Tyr Arg Ser Leu Asp Ile Thr Pro Gly Lys Asn Ser Arg
465                 470                 475                 480

Lys Lys Gly Ser Val Glu Arg Arg Ser Glu Lys Asp Ser Ser His Ser
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Gly Arg Ser Val Val Ile
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<212> DNA

<213> Homo sapiens

<400> 243

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<212> PRT
<213> Homo sapiens

<400> 244

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Thr Pro Ala Gly His Gly His Pro Glu Ala Asn Ser Asn Glu Lys His
35 40 45

Pro Ser Gln Gln Asp Thr Arg Pro Ala Glu Gln Ser Leu Asp Met Glu
50 55 60

Glu Lys Asp Tyr Ser Glu Ala Asp Gly Leu Ser Glu Arg Thr Thr Pro
65 70 75 80

Ser Lys Ala Gln Lys Ser Pro Gln Lys Ile Ala Lys Lys Tyr Lys Ser
85 90 95

Ala Ile Cys Arg Val Thr Leu Leu Asp Ala Ser Glu Tyr Glu Cys Glu
100 105 110

Val Glu Lys His Gly Arg Gly Gln Val Leu Phe Asp Leu Val Cys Glu
115 120 125

```
His Leu Asn Leu Leu Glu Lys Asp Tyr Phe Gly Leu Thr Phe Cys Asp
    130                 135                 140

Ala Asp Ser Gln Lys Asn Trp Leu Asp Pro Ser Lys Glu Ile Lys Lys
145                 150                 155                 160

Gln Ile Arg Ser Ser Pro Trp Asn Phe Ala Phe Thr Val Lys Phe Tyr
                165                 170                 175

Pro Pro Asp Pro Ala Gln Leu Thr Glu Asp Ile Thr Arg Tyr Tyr Leu
            180                 185                 190

Cys Leu Gln Leu Arg Ala Asp Ile Ile Thr Gly Arg Leu Pro Cys Ser
        195                 200                 205

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

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

Arg Phe Ala Pro Asn Gln Thr Arg Glu Leu Glu Glu Arg Ile Met Glu
                245                 250                 255

Leu His Lys Thr Tyr Arg Gly Met Thr Pro Gly Glu Ala Glu Ile His
            260                 265                 270

Phe Leu Glu Asn Ala Lys Lys Leu Ser Met Tyr Gly Val Asp Leu His
        275                 280                 285

His Ala Lys Asp Ser Glu Gly Ile Asp Ile Met Leu Gly Val Cys Ala
    290                 295                 300

Asn Gly Leu Leu Ile Tyr Arg Asp Arg Leu Arg Ile Asn Arg Phe Ala
305                 310                 315                 320

Trp Pro Lys Ile Leu Lys Ile Ser Tyr Lys Arg Ser Asn Phe Tyr Ile
                325                 330                 335

Lys Ile Arg Pro Gly Glu Tyr Glu Gln Phe Glu Ser Thr Ile Gly Phe
            340                 345                 350

Lys Leu Pro Asn His Arg Ser Ala Lys Arg Leu Trp Lys Val Cys Ile
        355                 360                 365

Glu His His Thr Phe Phe Arg Leu Val Ser Pro Glu Pro Pro Pro Lys
    370                 375                 380
```

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Gly Phe Leu Val Met Gly Ser Lys Phe Arg Tyr Ser Gly Arg Thr Gln
385                 390                 395                 400

Ala Gln Thr Arg Gln Ala Ser Ala Leu Ile Asp Arg Pro Ala Pro Phe
                405                 410                 415

Phe Glu Arg Ser Ser Ser Lys Arg Tyr Thr Met Ser Arg Ser Leu Asp
            420                 425                 430

Gly Ala Glu Phe Ser Arg Pro Ala Ser Val Ser Glu Asn His Asp Ala
        435                 440                 445

Gly Pro Asp Gly Asp Lys Arg Asp Glu Asp Gly Glu Ser Gly Gly Gln
    450                 455                 460

Arg Ser Glu Ala Glu Glu Gly Glu Val Arg Thr Pro Thr Lys Ile Lys
465                 470                 475                 480

Glu Leu Lys Pro Glu Gln Glu Thr Thr Pro Arg His Lys Gln Glu Phe
                485                 490                 495

Leu Asp Lys Pro Glu Asp Val Leu Leu Lys His Gln Ala Ser Ile Asn
            500                 505                 510

Glu Leu Lys Arg Thr Leu Lys Glu Pro Asn Ser Lys Leu Ile His Arg
        515                 520                 525

Asp Arg Asp Trp Glu Arg Glu Arg Arg Leu Pro Ser Ser Pro Ala Ser
    530                 535                 540

Pro Ser Pro Lys Gly Thr Pro Glu Lys Ala Asn Glu Arg Ala Gly Leu
545                 550                 555                 560

Arg Glu Gly Ser Glu Glu Lys Val Lys Pro Pro Arg Pro Arg Ala Pro
                565                 570                 575

Glu Ser Asp Thr Gly Asp Glu Asp Gln Asp Gln Glu Arg Asp Thr Val
            580                 585                 590

Phe Leu Lys Asp Asn His Leu Ala Ile Glu Arg Lys Cys Ser Ser Ile
        595                 600                 605

Thr Val Ser Ser Thr Ser Ser Leu Glu Ala Glu Val Asp Phe Thr Val
    610                 615                 620

Ile Gly Asp Tyr His Gly Ser Ala Phe Glu Asp Phe Ser Arg Ser Leu
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625 630 635 640

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

Gly Gly Ile Glu Asp Ser Pro Asp Arg Gly Ala Cys Ser Thr Pro Asp
675 680 685

Met Pro Gln Phe Glu Pro Val Lys Thr Glu Thr Met Thr Val Ser Ser
690 695 700

Leu Ala Ile Arg Lys Lys Ile Glu Pro Glu Ala Val Leu Gln Thr Arg
705 710 715 720

Val Ser Ala Met Asp Asn Thr Gln Gln Val Asp Gly Ser Ala Ser Val
725 730 735

Gly Arg Glu Phe Ile Ala Thr Thr Pro Ser Ile Thr Thr Glu Thr Ile
740 745 750

Ser Thr Thr Met Glu Asn Ser Leu Lys Ser Gly Lys Gly Ala Ala Ala
755 760 765

Met Ile Pro Gly Pro Gln Thr Val Ala Thr Glu Ile Arg Ser Leu Ser
770 775 780

Pro Ile Ile Gly Lys Asp Val Leu Thr Ser Thr Tyr Gly Ala Thr Ala
785 790 795 800

Glu Thr Leu Ser Thr Ser Thr Thr Thr His Val Thr Lys Thr Val Lys
805 810 815

Gly Gly Phe Ser Glu Thr Arg Ile Glu Lys Arg Ile Ile Ile Thr Gly
820 825 830

Asp Glu Asp Val Asp Gln Asp Gln Ala Leu Ala Leu Ala Ile Lys Glu
835 840 845

Ala Lys Leu Gln His Pro Asp Met Leu Val Thr Lys Ala Val Val Tyr
850 855 860

Arg Glu Thr Asp Pro Ser Pro Glu Glu Arg Asp Lys Lys Pro Gln Glu
865 870 875 880

Ser

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<212> DNA
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<400> 245
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<211> 43
<212> PRT
<213> Homo sapiens

<400> 246

Met Ala Ala Arg Ala Val Phe Leu Ala Leu Ser Ala Gln Leu Leu Gln
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Ala Arg Leu Met Lys Glu Glu Ser Pro Val Val Ser Trp Arg Leu Glu
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Pro Glu Asp Gly Thr Ala Leu Cys Phe Ile Phe
35 40

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<212> DNA
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Phe Pro Arg Gly Ala Asp Gln Glu Tyr Ser Ala Phe Arg Val Gly Met
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Val Gln Phe Ser Thr Ser Glu Phe Arg Leu Thr Pro His Ile Asp Asn
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Leu Glu Val Ala Asn Ser Phe Ala Val Thr Asn Ala Phe Cys Ser Gln
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Phe Ser Arg Gly Val Tyr Ala Ile Phe Gly Phe Tyr Asp Lys Lys Ser
85 90 95

Val Asn Thr Ile Thr Ser Phe Cys Gly Thr Leu His Val Ser Phe Ile
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Thr Pro Ser Phe Pro Thr Asp Gly Thr His Pro Phe Val Ile Gln Met
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Arg Pro Asp Leu Lys Gly Ala Leu Leu Ser Leu Ile Glu Tyr Tyr Gln
130 135 140

Trp Asp Lys Phe Ala Tyr Leu Tyr Asp Ser Asp Arg Gly Leu Ser Thr
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Leu Gln Ala Val Leu Asp Ser Ala Ala Glu Lys Lys Trp Gln Val Thr
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Ala Ile Asn Val Gly Asn Ile Asn Asn Asp Lys Lys Asp Glu Met Tyr

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Thr Ile Gly Lys His Val Lys Gly Tyr His Tyr Ile Ile Ala Asn Leu
225                 230                 235                 240

Gly Phe Thr Asp Gly Asp Leu Leu Lys Ile Gln Phe Gly Gly Ala Asn
                245                 250                 255

Val Ser Gly Phe Gln Ile Val Asp Tyr Asp Asp Ser Leu Val Ser Lys
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Phe Ile Glu Arg Trp Ser Thr Leu Glu Glu Lys Glu Tyr Pro Gly Ala
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His Thr Thr Thr Ile Lys Tyr Thr Ser Ala Leu Thr Tyr Asp Ala Val
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Gln Val Met Thr Glu Ala Phe Arg Asn Leu Arg Lys Gln Arg Ile Glu
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Ile Ser Arg Arg Gly Asn Ala Gly Asp Cys Leu Ala Asn Pro Ala Val
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Pro Trp Gly Gln Gly Val Glu Ile Glu Arg Ala Leu Lys Gln Val Gln
            340                 345                 350

Val Glu Gly Leu Ser Gly Asn Ile Lys Phe Asp Gln Asn Gly Lys Arg
        355                 360                 365

Ile Asn Tyr Thr Ile Asn Ile Met Glu Leu Lys Thr Asn Gly Pro Arg
    370                 375                 380

Lys Ile Gly Tyr Trp Ser Glu Val Asp Lys Met Val Val Thr Leu Thr
385                 390                 395                 400

Glu Leu Pro Ser Gly Asn Asp Thr Ser Gly Leu Glu Asn Lys Thr Val
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Val Val Thr Thr Ile Leu Glu Ser Pro Tyr Val Met Met Lys Lys Asn
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Leu Ala Ala Glu Ile Ala Lys His Cys Gly Phe Lys Tyr Lys Leu Thr
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Ile Val Gly Asp Gly Lys Tyr Gly Ala Arg Asp Ala Asp Thr Lys Ile
465                 470                 475                 480

Trp Asn Gly Met Val Gly Glu Leu Val Tyr Gly Lys Ala Asp Ile Ala
                485                 490                 495

Ile Ala Pro Leu Thr Ile Thr Leu Val Arg Glu Glu Val Ile Asp Phe
            500                 505                 510

Ser Lys Pro Phe Met Ser Leu Gly Ile Ser Ile Met Ile Lys Lys Pro
        515                 520                 525

Gln Lys Ser Lys Pro Gly Val Phe Ser Phe Leu Asp Pro Leu Ala Tyr
    530                 535                 540

Glu Ile Trp Met Cys Ile Val Phe Ala Tyr Ile Gly Val Ser Val Val
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Leu Phe Leu Val Ser Arg Phe Ser Pro Tyr Glu Trp His Thr Glu Glu
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Phe Glu Asp Gly Arg Glu Thr Gln Ser Ser Glu Ser Thr Asn Glu Phe
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Gly Ile Phe Asn Ser Leu Trp Phe Ser Leu Gly Ala Phe Met Arg Gln
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Gly Cys Asp Ile Ser Pro Arg Ser Leu Ser Gly Arg Ile Val Gly Gly
    610                 615                 620

Val Trp Trp Phe Phe Thr Leu Ile Ile Ile Ser Ser Tyr Thr Ala Asn
625                 630                 635                 640

Leu Ala Ala Phe Leu Thr Val Glu Arg Met Val Ser Pro Ile Glu Ser
                645                 650                 655

Ala Glu Asp Leu Ser Lys Gln Thr Glu Ile Ala Tyr Gly Thr Leu Asp
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Ser Gly Ser Thr Lys Glu Phe Phe Arg Arg Ser Lys Ile Ala Val Phe
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Asp Lys Met Trp Thr Tyr Met Arg Ser Ala Glu Pro Ser Val Phe Val
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Arg Thr Thr Ala Glu Gly Val Ala Arg Val Arg Lys Ser Lys Gly Lys
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Tyr Ala Tyr Leu Leu Glu Ser Thr Met Asn Glu Tyr Ile Glu Gln Arg
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Lys Pro Cys Asp Thr Met Lys Val Gly Gly Asn Leu Asp Ser Lys Gly
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Tyr Gly Ile Ala Thr Pro Lys Gly Ser Ser Leu Arg Thr Pro Val Asn
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Leu Ala Val Leu Lys Leu Ser Glu Gln Gly Val Leu Asp Lys Leu Lys
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Asn Lys Trp Trp Tyr Asp Lys Gly Glu Cys Gly Ala Lys Asp Ser Gly
785                 790                 795                 800

Ser Lys Glu Lys Thr Ser Ala Leu Ser Leu Ser Asn Val Ala Gly Val
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Phe Tyr Ile Leu Val Gly Gly Leu Gly Leu Ala Met Leu Val Ala Leu
            820                 825                 830

Ile Glu Phe Cys Tyr Lys Ser Arg Ala Glu Ala Lys Arg Met Lys Val
        835                 840                 845

Ala Lys Asn Ala Gln Asn Ile Asn Pro Ser Ser Ser Gln Asn Ser Gln
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Thr Thr Ala Ala Ser Ser Gly Gln Arg Asp Arg Pro Cys Gln Pro His
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Ala Arg Thr Gln Leu Ser Arg Pro Pro Ala Val Pro Phe Val Val Pro
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Pro Thr Leu Gln Gly Arg Asp Trp Val Pro Leu His Ser Gly Glu Trp

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    130                 135                 140

Asp Gly Cys Leu Gly Arg Leu Trp Phe Ser Val Glu Tyr Glu Gln Glu
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Ala Glu Arg Leu Leu Val Gly Leu Ile Lys Ala Gln His Leu Gln Ala
                165                 170                 175

Pro Ser Glu Thr Cys Ser Pro Leu Val Lys Leu Tyr Leu Leu Pro Asp
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Glu Arg Arg Phe Leu Gln Ser Lys Thr Lys Arg Lys Thr Ser Asn Pro
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Gly Pro Tyr Met Tyr Thr Arg Gly Arg Glu Leu Glu His Trp Asp Glu
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Met Leu Ser Lys Pro Lys Glu Leu Val Lys Arg Trp His Ala Leu Cys
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Cys Leu Leu Ser Leu Gly Gly Ala Ile Glu Ile Pro Met Asp Leu Thr
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Gln Pro Pro Thr Ile Thr Lys Gln Ser Ala Lys Asp His Ile Val Asp
        35                  40                  45

Pro Arg Asp Asn Ile Leu Ile Glu Cys Glu Ala Lys Gly Asn Pro Ala
    50                  55                  60

Pro Ser Phe His Trp Thr Arg Asn Ser Arg Phe Phe Asn Ile Ala Lys
65                  70                  75                  80

Asp Pro Arg Val Ser Met Arg Arg Arg Ser Gly Thr Leu Val Ile Asp
                85                  90                  95

Phe Arg Ser Gly Gly Arg Pro Glu Glu Tyr Glu Gly Glu Tyr Gln Cys
            100                 105                 110

Phe Ala Arg Asn Lys Phe Gly Thr Ala Leu Ser Asn Arg Ile Arg Leu
        115                 120                 125

Gln Val Ser Lys Ser Pro Leu Trp Pro Lys Glu Asn Leu Asp Pro Val
    130                 135                 140

Val Val Gln Glu Gly Ala Pro Leu Thr Leu Gln Cys Asn Pro Pro Pro
145                 150                 155                 160

Gly Leu Pro Ser Pro Val Ile Phe Trp Met Ser Ser Ser Met Glu Pro
                165                 170                 175

Ile Thr Gln Asp Lys Arg Val Ser Gln Gly His Asn Gly Asp Leu Tyr
            180                 185                 190

Phe Ser Asn Val Met Leu Gln Asp Met Gln Thr Asp Tyr Ser Cys Asn
        195                 200                 205

Ala Arg Phe His Phe Thr His Thr Ile Gln Gln Lys Asn Pro Phe Thr
    210                 215                 220

Leu Lys Val Leu Thr Asn His Pro Tyr Asn Asp Ser Ser Leu Arg Asn
225                 230                 235                 240

His Pro Asp Met Tyr Ser Ala Arg Gly Val Ala Glu Arg Thr Pro Ser
                245                 250                 255

Phe Met Tyr Pro Gln Gly Thr Ala Ser Ser Gln Met Val Leu Arg Gly
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        275                 280                 285

Ile Ala Trp Tyr Lys Lys Gly Gly Asp Leu Pro Ser Asp Lys Ala Lys
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Phe Glu Asn Phe Asn Lys Ala Leu Arg Ile Thr Asn Val Ser Glu Glu
305                 310                 315                 320

Asp Ser Gly Glu Tyr Phe Cys Leu Ala Ser Asn Lys Met Gly Ser Ile
                325                 330                 335

Arg His Thr Ile Ser Val Arg Val Lys Ala Ala Pro Tyr Trp Leu Asp
            340                 345                 350

Glu Pro Lys Asn Leu Ile Leu Ala Pro Gly Glu Asp Gly Arg Leu Val
        355                 360                 365

Cys Arg Ala Asn Gly Asn Pro Lys Pro Thr Val Gln Trp Met Val Asn
    370                 375                 380

Gly Glu Pro Leu Gln Ser Ala Pro Pro Asn Pro Asn Arg Glu Val Ala
385                 390                 395                 400

Gly Asp Thr Ile Ile Phe Arg Asp Thr Gln Ile Ser Ser Arg Ala Val
                405                 410                 415

Tyr Gln Cys Asn Thr Ser Asn Glu His Gly Tyr Leu Leu Ala Asn Ala
            420                 425                 430

Phe Val Ser Val Leu Asp Val Pro Pro Arg Met Leu Ser Pro Arg Asn
        435                 440                 445

Gln Leu Ile Arg Val Ile Leu Tyr Asn Arg Thr Arg Leu Asp Cys Pro
    450                 455                 460

Phe Phe Gly Ser Pro Ile Pro Thr Leu Arg Trp Phe Lys Asn Gly Gln
465                 470                 475                 480

Gly Ser Asn Leu Asp Gly Gly Asn Tyr His Val Tyr Glu Asn Gly Ser
                485                 490                 495

Leu Glu Ile Lys Met Ile Arg Lys Glu Asp Gln Gly Ile Tyr Thr Cys
            500                 505                 510
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Val Ala Thr Asn Ile Leu Gly Lys Ala Glu Asn Gln Val Arg Leu Glu
        515                 520                 525

Val Lys Asp Pro Thr Arg Ile Tyr Arg Met Pro Glu Asp Gln Val Ala
    530                 535                 540

Arg Arg Gly Thr Thr Val Gln Leu Glu Cys Arg Val Lys His Asp Pro
545                 550                 555                 560

Ser Leu Lys Leu Thr Val Ser Trp Leu Lys Asp Asp Glu Pro Leu Tyr
                565                 570                 575

Ile Gly Asn Arg Met Lys Lys Glu Asp Asp Ser Leu Thr Ile Phe Gly
            580                 585                 590

Val Ala Glu Arg Asp Gln Gly Ser Tyr Thr Cys Val Ala Ser Thr Glu
        595                 600                 605

Leu Asp Gln Asp Leu Ala Lys Ala Tyr Leu Thr Val Leu Gly Arg Pro
    610                 615                 620

Asp Arg Pro Arg Asp Leu Glu Leu Thr Asp Leu Ala Glu Arg Ser Val
625                 630                 635                 640

Arg Leu Thr Trp Ile Pro Gly Asp Ala Asn Asn Ser Pro Ile Thr Asp
                645                 650                 655

Tyr Val Val Gln Phe Glu Glu Asp Gln Phe Gln Pro Gly Val Trp His
            660                 665                 670

Asp His Ser Lys Tyr Pro Gly Ser Val Asn Ser Ala Val Leu Arg Leu
        675                 680                 685

Ser Pro Tyr Val Asn Tyr Gln Phe Arg Val Ile Ala Ile Asn Glu Val
    690                 695                 700

Gly Ser Ser His Pro Ser Leu Pro Ser Glu Arg Tyr Arg Thr Ser Gly
705                 710                 715                 720

Ala Pro Pro Glu Ser Asn Pro Gly Asp Val Lys Gly Glu Gly Thr Arg
                725                 730                 735

Lys Asn Asn Met Glu Ile Thr Trp Thr Pro Met Asn Ala Thr Ser Ala
            740                 745                 750

Phe Gly Pro Asn Leu Arg Tyr Ile Val Lys Trp Arg Arg Arg Glu Thr
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Gly Gln Thr Pro Val Tyr Val Pro Tyr Glu Ile Arg Val Gln Ala Glu
785                 790                 795                 800

Asn Asp Phe Gly Lys Gly Pro Glu Pro Glu Ser Val Ile Gly Tyr Ser
                805                 810                 815

Gly Glu Asp Tyr Pro Arg Ala Ala Pro Thr Glu Val Lys Val Arg Val
            820                 825                 830

Met Asn Ser Thr Ala Ile Ser Leu Gln Trp Asn Arg Val Tyr Ser Asp
        835                 840                 845

Thr Val Gln Gly Gln Leu Arg Glu Tyr Arg Ala Tyr Tyr Trp Arg Glu
    850                 855                 860

Ser Ser Leu Leu Lys Asn Leu Trp Val Ser Gln Lys Arg Gln Gln Ala
865                 870                 875                 880

Ser Phe Pro Gly Asp Arg Leu Arg Gly Val Val Ser Arg Leu Phe Pro
                885                 890                 895

Tyr Ser Asn Tyr Lys Leu Glu Met Val Val Val Asn Gly Arg Gly Asp
            900                 905                 910

Gly Pro Arg Ser Glu Thr Lys Glu Phe Thr Thr Pro Glu Gly Val Pro
        915                 920                 925

Ser Ala Pro Arg Arg Phe Arg Val Arg Gln Pro Asn Leu Glu Thr Ile
    930                 935                 940

Asn Leu Glu Trp Asp His Pro Glu His Pro Asn Gly Ile Met Ile Gly
945                 950                 955                 960

Tyr Thr Leu Lys Tyr Val Ala Phe Asn Gly Thr Lys Val Gly Lys Gln
                965                 970                 975

Ile Val Glu Asn Phe Ser Pro Asn Gln Thr Lys Phe Thr Val Gln Arg
            980                 985                 990

Thr Asp Pro Val Ser Arg Tyr Arg  Phe Thr Leu Ser Ala  Arg Thr Gln
        995                 1000                1005

Val Gly  Ser Gly Glu Ala Val  Thr Glu Glu Ser Pro  Ala Pro Pro
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1040 1045 1050

Leu Leu Ile Val Cys Phe Ile Lys Arg Ser Arg Gly Gly Lys Tyr
1055 1060 1065

Pro Val Arg Glu Lys Lys Asp Val Pro Leu Gly Pro Glu Asp Pro
1070 1075 1080

Lys Glu Glu Asp Gly Ser Phe Asp Tyr Ser Asp Glu Asp Asn Lys
1085 1090 1095

Pro Leu Gln Gly Ser Gln Thr Ser Leu Asp Gly Thr Ile Lys Gln
1100 1105 1110

Gln Glu Ser Asp Asp Ser Leu Val Asp Tyr Gly Glu Gly Gly Glu
1115 1120 1125

Gly Gln Phe Asn Glu Asp Gly Ser Phe Ile Gly Gln Tyr Thr Val
1130 1135 1140

Lys Lys Asp Lys Glu Glu Thr Glu Gly Asn Glu Ser Ser Glu Ala
1145 1150 1155

Thr Ser Pro Val Asn Ala Ile Tyr Ser Leu Ala
1160 1165

<210> 253
<211> 523
<212> DNA
<213> Homo sapiens

<400> 253
tttaatagga ctctaggaac accagggaac catggactgg agacagtgga caaagccctg 60

ttactctgtt tggattcttg caatgaaaac tagctttcgc ttctctctac actggcatcc 120

acatgtactt acttgcaccc tgtgatgtta caagtgtgtt ttatttccta agcttctgca 180

tgtcatcaga ggtatacaag gagtagggag atgcactgaa caaacctccc cccaaggtgt 240

tattggcagt cagctcttcc cattttccag atcagtctgc cctgcacata aaatccacag 300

ctgctgactg cagggcctgt cactgttacc agttctgcct cttcatcaca cagtcagcat 360

gacttttttg ctcaatcaaa cttaccccaa cttggattgt tccattggag tggtctggtt 420

gctgctactg cgatttccca gctattaaca tagacattac agcgctccaa ccactcaaag 480

actgcagcaa cacagtcatc ctggatagca gccacttcag gga 523

<210> 254
<211> 823
<212> PRT
<213> Homo sapiens

<400> 254

Met Ala Leu Pro Arg Cys Thr Trp Pro Asn Tyr Val Trp Arg Ala Val
1 5 10 15

Met Ala Cys Leu Val His Arg Gly Leu Gly Ala Pro Leu Thr Leu Cys
20 25 30

Met Leu Gly Cys Leu Leu Gln Ala Gly His Val Leu Ser Gln Lys Leu
35 40 45

Asp Asp Val Asp Pro Leu Val Ala Thr Asn Phe Gly Lys Ile Arg Gly
50 55 60

Ile Lys Lys Glu Leu Asn Asn Glu Ile Leu Gly Pro Val Ile Gln Phe
65 70 75 80

Leu Gly Val Pro Tyr Ala Ala Pro Pro Thr Gly Glu Arg Arg Phe Gln
85 90 95

Pro Pro Glu Pro Pro Ser Pro Trp Ser Asp Ile Arg Asn Ala Thr Gln
100 105 110

Phe Ala Pro Val Cys Pro Gln Asn Ile Ile Asp Gly Arg Leu Pro Glu
115 120 125

Val Met Leu Pro Val Trp Phe Thr Asn Asn Leu Asp Val Val Ser Ser
130 135 140

Tyr Val Gln Asp Gln Ser Glu Asp Cys Leu Tyr Leu Asn Ile Tyr Val
145 150 155 160

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

Val Tyr Ile His Gly Gly Ser Tyr Met Glu Gly Thr Gly Asn Leu Tyr
180 185 190

Asp Gly Ser Val Leu Ala Ser Tyr Gly Asn Val Ile Val Ile Thr Val
195 200 205

```
Asn Tyr Arg Leu Gly Val Leu Gly Phe Leu Ser Thr Gly Asp Gln Ala
    210                 215                 220

Ala Lys Gly Asn Tyr Gly Leu Leu Asp Leu Ile Gln Ala Leu Arg Trp
225                 230                 235                 240

Thr Ser Glu Asn Ile Gly Phe Phe Gly Gly Asp Pro Leu Arg Ile Thr
                245                 250                 255

Val Phe Gly Ser Gly Ala Gly Gly Ser Cys Val Asn Leu Leu Thr Leu
            260                 265                 270

Ser His Tyr Ser Glu Gly Asn Arg Trp Ser Asn Ser Thr Lys Gly Leu
        275                 280                 285

Phe Gln Arg Ala Ile Ala Gln Ser Gly Thr Ala Leu Ser Ser Trp Ala
    290                 295                 300

Val Ser Phe Gln Pro Ala Lys Tyr Ala Arg Met Leu Ala Thr Lys Val
305                 310                 315                 320

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

Lys Pro Tyr Lys Glu Leu Val Asp Gln Asp Ile Gln Pro Ala Arg Tyr
            340                 345                 350

His Ile Ala Phe Gly Pro Val Ile Asp Gly Asp Val Ile Pro Asp Asp
        355                 360                 365

Pro Gln Ile Leu Met Glu Gln Gly Glu Phe Leu Asn Tyr Asp Ile Met
    370                 375                 380

Leu Gly Val Asn Gln Gly Glu Gly Leu Lys Phe Val Glu Asn Ile Val
385                 390                 395                 400

Asp Ser Asp Asp Gly Ile Ser Ala Ser Asp Phe Asp Phe Ala Val Ser
                405                 410                 415

Asn Phe Val Asp Asn Leu Tyr Gly Tyr Pro Glu Gly Lys Asp Val Leu
            420                 425                 430

Arg Glu Thr Ile Lys Phe Met Tyr Thr Asp Trp Ala Asp Arg His Asn
        435                 440                 445

Pro Glu Thr Arg Arg Lys Thr Leu Leu Ala Leu Phe Thr Asp His Gln
    450                 455                 460
```

```
Trp Val Ala Pro Ala Val Ala Thr Ala Asp Leu His Ser Asn Phe Gly
465                 470                 475                 480

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

Val Pro Ala Trp Ala Asp Ala Ala His Gly Asp Glu Val Pro Tyr Val
            500                 505                 510

Leu Gly Ile Pro Met Ile Gly Pro Thr Glu Leu Phe Pro Cys Asn Phe
        515                 520                 525

Ser Lys Asn Asp Val Met Leu Ser Ala Val Val Met Thr Tyr Trp Thr
    530                 535                 540

Asn Phe Ala Lys Thr Gly Asp Pro Asn Gln Pro Val Pro Gln Asp Thr
545                 550                 555                 560

Lys Phe Ile His Thr Lys Pro Asn Arg Phe Glu Glu Val Ala Trp Thr
                565                 570                 575

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

Arg Val Lys Glu His Tyr Arg Ala Asn Lys Val Asn Leu Trp Leu Glu
        595                 600                 605

Leu Val Pro His Leu His Asn Leu Asn Asp Ile Ser Gln Tyr Thr Ser
    610                 615                 620

Thr Thr Thr Lys Val Pro Ser Thr Asp Ile Thr Phe Arg Pro Thr Arg
625                 630                 635                 640

Lys Asn Ser Val Pro Val Thr Ser Ala Phe Pro Thr Ala Lys Gln Asp
                645                 650                 655

Asp Pro Lys Gln Gln Pro Ser Pro Phe Ser Val Asp Gln Arg Asp Tyr
            660                 665                 670

Ser Thr Glu Leu Ser Val Thr Ile Ala Val Gly Ala Ser Leu Leu Phe
        675                 680                 685

Leu Asn Ile Leu Ala Phe Ala Ala Leu Tyr Tyr Lys Lys Asp Lys Arg
    690                 695                 700

Arg His Asp Val His Arg Arg Cys Ser Pro Gln Arg Thr Thr Thr Asn
705                 710                 715                 720
```

Asp Leu Thr His Ala Gln Glu Glu Glu Ile Met Ser Leu Gln Met Lys
725 730 735

His Thr Asp Leu Asp His Glu Cys Glu Ser Ile His Pro His Glu Val
740 745 750

Val Leu Arg Thr Ala Cys Pro Pro Asp Tyr Thr Leu Ala Met Arg Arg
755 760 765

Ser Pro Asp Asp Val Pro Leu Met Thr Pro Asn Thr Ile Thr Met Ile
770 775 780

Pro Asn Thr Ile Pro Gly Ile Gln Pro Leu His Thr Phe Asn Thr Phe
785 790 795 800

Thr Gly Gly Gln Asn Asn Thr Leu Pro His Pro His Pro His Pro His
805 810 815

Ser His Ser Thr Thr Arg Val
820

<210> 255
<211> 2907
<212> DNA
<213> Homo sapiens

<400> 255
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gttataaaaa gcggtggggc agggccggcg agacaatctg ggaggcgggt accgggcctc 120

acggatccgc gccgcgcccc ccacctgtgg ctgcgcgcgg ggtgggctgc gctcccctgg 180

gcggcgccgg gcgcccgggg ctggtggcga gatgggccgc tactctggca agacgtgccg 240

gctgctcttc atgctggtgc tcaccgtcgc cttcttcgtg gcggagctgg tctccggcta 300

cctgggcaac tccatcgcgc tgctctccga ctccttcaac atgctctccg acctgatctc 360

gctgtgcgtg ggcctgagcg ccggctacat cgcccggcgc cccacccggg gcttcagcgc 420

cacctacggc tacgcccgcg ccgaggtggt gggcgcgctg agcaacgcgg tcttcctcac 480

cgcgctctgc ttcaccatct tcgtggaggc cgtgctgcgc ctggcccggc ccgagcgcat 540

cgatgacccc gagctggtgc tcatcgtcgg cgtcctgggg ctgttggtca acgtggtggg 600

gctgctcatc ttccaggact gcgccgcctg gttcgcgtgc tgcctccggg gacgcagtcg 660

ccgcctgcag cagcggcagc agctggcgga gggctgtgtc cccggcgctt tcgggggccc 720

tcagggcgcg gaggacccgc ggcgcgcggc ggacccgaca gccccaggct cggactcggc 780

cgtaaccctc cgggggacct cggtggaaag gaagcgggag aaggggcga ccgtgttcgc 840

aaacgtagca gaacttatac acaacacaag gtttcttctt tgaatgcagg tgattccttc 900

aacacccaga atgagccaga agacatgatg aaaaaagaga aaaagtctga agctctgaat 960

atcagaggtg tacttttgca tgtgatggga gatgccctgg ggtccgtggt tgtggtcatc 1020

acggccatca tattctatgt gcttcccctg aagagtgagg acccgtgtaa ctggcagtgt 1080

tacattgacc ccagcctgac tgtcctcatg gtcatcatca ttttgtcatc tgccttcccg 1140

cttatcaagg agaccgctgc cattctgcta cagatggtcc caaaaggagt caacatggaa 1200

gagctgatga gtaaactctc tgctgtgcct ggaattagca gtgtacatga agtgcacatc 1260

tgggaacttg taagtggaaa gattattgcc accctgcaca tcaagtatcc taaggacagg 1320

ggatatcaag atgccagcac aaaaattcga gaaatcttcc accatgcggg aatccacaat 1380

gtgaccatcc agtttgaaaa tgtggacttg aaggaacccc tggagcagaa ggacttactg 1440

ttgctctgca actcaccctg catctccaag ggctgtgcta agcagctgtg ttgtcccccc 1500

ggggcactgc ctctggctca cgtcaatggc tgtgctgagc acaatggtgg gccctctcta 1560

gacacatacg gaagtgatgg cctcagtaga agagacgcaa gagaagtggc tattgaagtg 1620

tctttggata gctgtctgag tgaccacgga caaagtctta acaaaactca ggaggaccaa 1680

tgttatgtca acagaacgca tttttaatct ggtactcaca taatcagacc atatagacga 1740

ggcactttgg aaccacaagc ttggctcaca aaaagagctt tctgggttgt aggcccagac 1800

tagacttgca gcatgcatgc tctgtgttca ctaggggttg gctgtttggg attttagtta 1860

aacgtgtctg tgaattttta tgtaactaac tcctttccat tcccctgggt gtctcatgct 1920

gctctttgac tgtttcagct tgaacatgca ttttctaaag caaactgcac tagtgtatat 1980

atcagggaca ttaaagtctg ggactggggc tcaatagctg cggatacagt gttcaaagaa 2040

gttcttgttt ctaaactgat tagaacttct agctaatgct caggtgagat catagcttaa 2100

atacattgaa aaaactaaag taccacaata gctgtatttt tcccaatccc cttaacgatc 2160

ataaaagagg caagttaagt atttctggca ctgaagaaat atctttttc tttgattcat 2220

ttttgaataa atataaaatg aataactatt aaggtagaaa atattctcag aacattctag 2280

aggaggtaaa ggttagtagg agggcgttgg ccatctctac attttgtgag gtgagagaaa 2340

actaatgttt actttctgct gtgaactgaa ctgcagctat agaatgtttc aaatgcttaa 2400

atatataata catttttttc catggaagtg agggaatatt tcagtttcct gaagtatgac 2460

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ttgatctatg cagcatttac cagaaaagag tattcctggg atagcagaat gcataacact 2640

gagtgttaat tcttgtgaaa taaataagct agactgcctt ctctttaatt agacatattt 2700

taaagtattt attatagttg tcaactagta actcaatgaa aaagttgatg cccaagggag 2760

aaatgagaat tagcttaatt gctgccttta atgtgttttt gaggaactta aaattttctt 2820

tcatgtcgct gatccatatt accaagttca aataaaattt ttataatcgg attcagaccc 2880

ataaccaaac taaaaaaaaa aaaaaaa 2907

<210> 256
<211> 223
<212> PRT
<213> Homo sapiens

<400> 256

Met Gly Arg Tyr Ser Gly Lys Thr Cys Arg Leu Leu Phe Met Leu Val
1 5 10 15

Leu Thr Val Ala Phe Phe Val Ala Glu Leu Val Ser Gly Tyr Leu Gly
20 25 30

Asn Ser Ile Ala Leu Leu Ser Asp Ser Phe Asn Met Leu Ser Asp Leu
35 40 45

Ile Ser Leu Cys Val Gly Leu Ser Ala Gly Tyr Ile Ala Arg Arg Pro
50 55 60

Thr Arg Gly Phe Ser Ala Thr Tyr Gly Tyr Ala Arg Ala Glu Val Val
65 70 75 80

Gly Ala Leu Ser Asn Ala Val Phe Leu Thr Ala Leu Cys Phe Thr Ile
85 90 95

Phe Val Glu Ala Val Leu Arg Leu Ala Arg Pro Glu Arg Ile Asp Asp
100 105 110

Pro Glu Leu Val Leu Ile Val Gly Val Leu Gly Leu Leu Val Asn Val
115 120 125

Val Gly Leu Leu Ile Phe Gln Asp Cys Ala Ala Trp Phe Ala Cys Cys
130 135 140

Leu Arg Gly Arg Ser Arg Arg Leu Gln Gln Arg Gln Gln Leu Ala Glu
145 150 155 160

Gly Cys Val Pro Gly Ala Phe Gly Gly Pro Gln Gly Ala Glu Asp Pro
165 170 175

Arg Arg Ala Ala Asp Pro Thr Ala Pro Gly Ser Asp Ser Ala Val Thr
180 185 190

Leu Arg Gly Thr Ser Val Glu Arg Lys Arg Glu Lys Gly Ala Thr Val
195 200 205

Phe Ala Asn Val Ala Glu Leu Ile His Asn Thr Arg Phe Leu Leu
210 215 220

<210> 257
<211> 2132
<212> DNA
<213> Homo sapiens

<400> 257
attaacgagt gacagtctta atgactaaca cacctctaac atttcacctc tagctcagat 60

gagagagaga atgggacttc ttggtactga ttgtttttcc catgcctcaa ttggtttctt 120

ttagggagct acaaatttac gtgttcactg gtgattgatc ttttcatcca gcacaatgga 180

cagaagtcta aggaacgtcc ttgtggtttc ctttgggttc ctgcttctct ttacagccta 240

tggaggtctg cagagcctgc agagcagcct gtacagcgag gagggcctgg gtgtcacagc 300

gctcagcacc ctctatggag gcatgctcct gtcctccatg ttcctcccac cgctcctcat 360

cgagaggctg ggctgcaagg ggaccatcat cctctccatg tgtggctacg tggccttctc 420

cgtgggcaac ttcttcgcca gctggtacac tttgatcccc acctccatac tgctgggact 480

cggggccgcc ccgctgtggt ctgcacagtg cacatacctc acgatcacgg gaaacacaca 540

tgcagagaag gcgggaaagc gtggcaaaga catggtgaac cagtattttg gcatcttctt 600

cctcatattc cagtcatccg gtgtgtgggg caacttgatc tcatcgctgg tatttggcca 660

gactcccagc caagagaccc ttccagaaga gcagctcacg tcctgtgggg ccagtgactg 720

cctgatggcc accacaacca ccaacagcac ccagaggccc tcccagcagc tggtctacac 780

cctcctgggc atctacactg ggagtggtgt cctggctgtc ctgatgatag ctgcgttcct 840

ccaacccata cgagatgttc agcgggaaag tgaaggagag aagaaatcag tacctttctg 900

gtccacttta ctgtcgactt tcaagctata tagagataaa cgtctgtgcc tcttaattct 960

gctgccgctg tacagtggat tgcagcaagg attcctctcc agcgaataca caaggtccta 1020

tgtcacctgc accctgggca tccagttcgt cggctacgtg atgatctgct tctcggccac 1080

tgacgcgctg tgctccgtgt tgtatggaaa ggtctcgcag tacacgggca gggctgtgct 1140

gtacgtgctg ggcgcggtga cccacgtgtc ctgcatgatt gccctactgc tgtggagacc 1200

tcgtgctgac catctggcag tgttcttcgt attctctggc ctgtggggcg tggcagatgc 1260

cgtctggcag acacaaaaca atgctctcta cggcgttctg tttgagaaga gcaaggaagc 1320

tgccttcgcc aattaccgcc tgtgggaggc cctgggcttc gtcattgcct tcgggtacag 1380

catgtttttg tgcgtgcacg tcaagctcta cattctgctg ggggtcctga gcctgaccat 1440

ggtggcgtat gggcttgtgg agtgcgtgga gtccaagaac ccgatcagac cccacgctcc 1500

aggacaggtc aaccaggcag aggatgaaga aatacaaaca aaaatgtgag agcagtgagg 1560

tccgaggagg atgaactcag aaagcaccag ccagagaatt ttcttagaag atgcctcagg 1620

acatagagcg gctcctcatc accatctcag cacaatttgg ccattctgaa gagatcatgt 1680

tatttcactc ttcatgtatt ttttttctat tctaacaaat ttttcgtcca ccatcttaac 1740

agagatcaag tgtatacatg aaggtatcag ttcatttaat tttagatgca aaagaaaaag 1800

gtctaacgta caatcagcca attagaattt gcctgaaatc atagactcac cctagtttta 1860

ttgctgtagt tgtttttaag aattggaagc ctgcttaaaa aatgtagttg agccccataa 1920

ttttacaaat gggcgaactt ttaaacttct aactctactt ggatcaaaac ctcatacatt 1980

ttacaaaggg gtcctgacaa gtcagctgac tcaacctcac agagtcaggg ggtgacaaag 2040

ccagactggg gctcaggatt cctgaaacgt gtggggtctg cgtttctaaa taaagacggt 2100

tatttaatgg aaaaaaaaaa aaaaaaaaaa aa 2132

<210> 258
<211> 457
<212> PRT
<213> Homo sapiens

<400> 258

Met Asp Arg Ser Leu Arg Asn Val Leu Val Val Ser Phe Gly Phe Leu
1 5 10 15

Leu Leu Phe Thr Ala Tyr Gly Gly Leu Gln Ser Leu Gln Ser Ser Leu
20 25 30

Tyr Ser Glu Glu Gly Leu Gly Val Thr Ala Leu Ser Thr Leu Tyr Gly
35 40 45

Gly Met Leu Leu Ser Ser Met Phe Leu Pro Pro Leu Leu Ile Glu Arg
50 55 60

Leu Gly Cys Lys Gly Thr Ile Ile Leu Ser Met Cys Gly Tyr Val Ala
65 70 75 80

Phe Ser Val Gly Asn Phe Phe Ala Ser Trp Tyr Thr Leu Ile Pro Thr
85 90 95

Ser Ile Leu Leu Gly Leu Gly Ala Ala Pro Leu Trp Ser Ala Gln Cys
100 105 110

Thr Tyr Leu Thr Ile Thr Gly Asn Thr His Ala Glu Lys Ala Gly Lys
115 120 125

```
Arg Gly Lys Asp Met Val Asn Gln Tyr Phe Gly Ile Phe Phe Leu Ile
    130                 135                 140

Phe Gln Ser Ser Gly Val Trp Gly Asn Leu Ile Ser Ser Leu Val Phe
145                 150                 155                 160

Gly Gln Thr Pro Ser Gln Glu Thr Leu Pro Glu Glu Gln Leu Thr Ser
                165                 170                 175

Cys Gly Ala Ser Asp Cys Leu Met Ala Thr Thr Thr Thr Asn Ser Thr
            180                 185                 190

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

Gly Ser Gly Val Leu Ala Val Leu Met Ile Ala Ala Phe Leu Gln Pro
    210                 215                 220

Ile Arg Asp Val Gln Arg Glu Ser Glu Gly Glu Lys Lys Ser Val Pro
225                 230                 235                 240

Phe Trp Ser Thr Leu Leu Ser Thr Phe Lys Leu Tyr Arg Asp Lys Arg
                245                 250                 255

Leu Cys Leu Leu Ile Leu Leu Pro Leu Tyr Ser Gly Leu Gln Gln Gly
            260                 265                 270

Phe Leu Ser Ser Glu Tyr Thr Arg Ser Tyr Val Thr Cys Thr Leu Gly
        275                 280                 285

Ile Gln Phe Val Gly Tyr Val Met Ile Cys Phe Ser Ala Thr Asp Ala
    290                 295                 300

Leu Cys Ser Val Leu Tyr Gly Lys Val Ser Gln Tyr Thr Gly Arg Ala
305                 310                 315                 320

Val Leu Tyr Val Leu Gly Ala Val Thr His Val Ser Cys Met Ile Ala
                325                 330                 335

Leu Leu Leu Trp Arg Pro Arg Ala Asp His Leu Ala Val Phe Phe Val
            340                 345                 350

Phe Ser Gly Leu Trp Gly Val Ala Asp Ala Val Trp Gln Thr Gln Asn
        355                 360                 365

Asn Ala Leu Tyr Gly Val Leu Phe Glu Lys Ser Lys Glu Ala Ala Phe
    370                 375                 380
```

```
Ala Asn Tyr Arg Leu Trp Glu Ala Leu Gly Phe Val Ile Ala Phe Gly
385                 390                 395                 400

Tyr Ser Met Phe Leu Cys Val His Val Lys Leu Tyr Ile Leu Leu Gly
                405                 410                 415

Val Leu Ser Leu Thr Met Val Ala Tyr Gly Leu Val Glu Cys Val Glu
            420                 425                 430

Ser Lys Asn Pro Ile Arg Pro His Ala Pro Gly Gln Val Asn Gln Ala
        435                 440                 445

Glu Asp Glu Glu Ile Gln Thr Lys Met
    450                 455
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<210> 259
<211> 945
<212> DNA
<213> Homo sapiens

<400> 259

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atggaaaaaa gaaatctaac agttgtcagg gaattcgtcc ttctgggact tcctagctca       60

gcagagcagc agcacctcct gtctgtgctc tttctctgta tgtatttagc caccaccttg      120

gggaacatgc tcatcattgc gacgattggc tttgactctc acctccattc ccctatgtac      180

ttcttcctta gtaacttggc ctttgttgac atctgcttta cgtcgactac agtcccccaa      240

atggtagtga atatcttgac tggcaccaag actatctctt ttgcaggctg cctcacccag      300

ctcttcttct tcgtttcttt tgtgaatatg gacagcctcc ttctgtgtgt gatggcgtat      360

gatagatatg tggcgatttg ccacccctta cattacaccg ccagaatgaa cctgtgcctt      420

tgtgtccagc tagtggctgg actgtggctt gttacttacc tccacgccct cctgcatact      480

gtcctaatag cacagctgtc cttctgtgcc tccaatatca tccatcattt cttctgtgat      540

ctcaatcctc tcctgcagct ctcttgctct gacgtctcct tcaatgtaat gatcattttt      600

gcagtaggag gtctattggc tctcacgccc cttgtctgta tcctcgtatc ttatggactt      660

atcttctcca ctgttctgaa gatcacctct actcagggca agcagagagc tgtttccacc      720

tgcagctgcc acctgtcagt ggtggtgttg ttttacggca cagccatcgc cgtctatttc      780

agcccttcat ccccccatat gcctgagagc gacactctgt caaccatcat gtattcaatg      840

gtggctccga tgctgaatcc tttcatctat accctaagga acagggatat gaagagggga      900

cttcagaaaa tgcttctcaa gtgcacagtc tttcagcagc aataa                      945
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<210> 260
<211> 314

<212> PRT
<213> Homo sapiens

<400> 260

Met Glu Lys Arg Asn Leu Thr Val Val Arg Glu Phe Val Leu Leu Gly
1 5 10 15

Leu Pro Ser Ser Ala Glu Gln Gln His Leu Leu Ser Val Leu Phe Leu
20 25 30

Cys Met Tyr Leu Ala Thr Thr Leu Gly Asn Met Leu Ile Ile Ala Thr
35 40 45

Ile Gly Phe Asp Ser His Leu His Ser Pro Met Tyr Phe Phe Leu Ser
50 55 60

Asn Leu Ala Phe Val Asp Ile Cys Phe Thr Ser Thr Thr Val Pro Gln
65 70 75 80

Met Val Val Asn Ile Leu Thr Gly Thr Lys Thr Ile Ser Phe Ala Gly
85 90 95

Cys Leu Thr Gln Leu Phe Phe Phe Val Ser Phe Val Asn Met Asp Ser
100 105 110

Leu Leu Leu Cys Val Met Ala Tyr Asp Arg Tyr Val Ala Ile Cys His
115 120 125

Pro Leu His Tyr Thr Ala Arg Met Asn Leu Cys Leu Cys Val Gln Leu
130 135 140

Val Ala Gly Leu Trp Leu Val Thr Tyr Leu His Ala Leu Leu His Thr
145 150 155 160

Val Leu Ile Ala Gln Leu Ser Phe Cys Ala Ser Asn Ile Ile His His
165 170 175

Phe Phe Cys Asp Leu Asn Pro Leu Leu Gln Leu Ser Cys Ser Asp Val
180 185 190

Ser Phe Asn Val Met Ile Ile Phe Ala Val Gly Gly Leu Leu Ala Leu
195 200 205

Thr Pro Leu Val Cys Ile Leu Val Ser Tyr Gly Leu Ile Phe Ser Thr
210 215 220

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

```
Cys Ser Cys His Leu Ser Val Val Val Leu Phe Tyr Gly Thr Ala Ile
                245                 250                 255

Ala Val Tyr Phe Ser Pro Ser Ser Pro His Met Pro Glu Ser Asp Thr
            260                 265                 270

Leu Ser Thr Ile Met Tyr Ser Met Val Ala Pro Met Leu Asn Pro Phe
        275                 280                 285

Ile Tyr Thr Leu Arg Asn Arg Asp Met Lys Arg Gly Leu Gln Lys Met
    290                 295                 300

Leu Leu Lys Cys Thr Val Phe Gln Gln Gln
305                 310
```

<210> 261
<211> 3561
<212> DNA
<213> Homo sapiens

<400> 261

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tccgcacccg ggagggagat gcggccgggg ctcaggctcc ttgcagattc ctaaccagca      120

taatgctgga gccgggagcc accaacctgc agttttcaga atggccgtgt tggacactga      180

tttggatcac attcttccat cttctgttct tcctccattc tgggctaagt tagtagtggg      240

atcggttgcc attgtgtgtt ttgcacgcag ctatgatgga gactttgtct ttgatgactc      300

agaagctatt gttaacaata aggacctcca agcagaaacg cccctggggg acctgtggca      360

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caccgtcctg actttcagga ttaactacta cctctcggga ggcttccacc ccgtgggctt      480

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35 40 45

Ala Ile Val Asn Asn Lys Asp Leu Gln Ala Glu Thr Pro Leu Gly Asp
50 55 60

Leu Trp His His Asp Phe Trp Gly Ser Arg Leu Ser Ser Asn Thr Ser
65 70 75 80

His Lys Ser Tyr Arg Pro Leu Thr Val Leu Thr Phe Arg Ile Asn Tyr
85 90 95

Tyr Leu Ser Gly Gly Phe His Pro Val Gly Phe His Val Val Asn Ile
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Leu Leu His Ser Gly Ile Ser Val Leu Met Val Asp Val Phe Ser Val
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Leu Phe Gly Gly Leu Gln Tyr Thr Ser Lys Gly Arg Arg Leu His Leu

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Cys Ala Leu Phe Phe Leu Leu Ser Phe Leu Gly Tyr Cys Lys Ala Phe
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Arg Glu Ser Asn Lys Glu Gly Ala His Ser Ser Thr Phe Trp Val Leu
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Leu Ser Ile Phe Leu Gly Ala Val Ala Met Leu Cys Lys Glu Gln Gly
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Ile Thr Val Leu Gly Leu Asn Ala Val Phe Asp Ile Leu Val Ile Gly
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Lys Phe Asn Val Leu Glu Ile Val Gln Lys Val Leu His Lys Asp Lys
                245                 250                 255

Ser Leu Glu Asn Leu Gly Met Leu Arg Asn Gly Gly Leu Leu Phe Arg
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Met Thr Leu Leu Thr Ser Gly Gly Ala Gly Met Leu Tyr Val Arg Trp
        275                 280                 285

Arg Ile Met Gly Thr Gly Pro Pro Ala Phe Thr Glu Val Asp Asn Pro
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Ala Ser Phe Ala Asp Ser Met Leu Val Arg Ala Val Asn Tyr Asn Tyr
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Tyr Tyr Ser Leu Asn Ala Trp Leu Leu Leu Cys Pro Trp Trp Leu Cys
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Phe Asp Trp Ser Met Gly Cys Ile Pro Leu Ile Lys Ser Ile Ser Asp
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Trp Arg Val Ile Ala Leu Ala Ala Leu Trp Phe Cys Leu Ile Gly Leu
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Pro Ser Val Gly Tyr Cys Val Leu Leu Thr Phe Gly Phe Gly Ala Leu
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Ser Lys His Thr Lys Lys Lys Lys Leu Ile Ala Ala Val Val Leu Gly
        435                 440                 445

Ile Leu Phe Ile Asn Thr Leu Arg Cys Val Leu Arg Ser Gly Glu Trp
    450                 455                 460

Arg Ser Glu Glu Gln Leu Phe Arg Ser Ala Leu Ser Val Cys Pro Leu
465                 470                 475                 480

Asn Ala Lys Val His Tyr Asn Ile Gly Lys Asn Leu Ala Asp Lys Gly
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Asn Gln Thr Ala Ala Ile Arg Tyr Tyr Arg Glu Ala Val Arg Leu Asn
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Pro Lys Tyr Val His Ala Met Asn Asn Leu Gly Asn Ile Leu Lys Glu
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Arg Asn Glu Leu Gln Glu Ala Glu Glu Leu Leu Ser Leu Ala Val Gln
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Ile Gln Pro Asp Phe Ala Ala Ala Trp Met Asn Leu Gly Ile Val Gln
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Asn Ser Leu Lys Arg Phe Glu Ala Ala Glu Gln Ser Tyr Arg Thr Ala
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Ile Lys His Arg Arg Lys Tyr Pro Asp Cys Tyr Tyr Asn Leu Gly Arg
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Leu Tyr Ala Asp Leu Asn Arg His Val Asp Ala Leu Asn Ala Trp Arg
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Asn Ala Thr Val Leu Lys Pro Glu His Ser Leu Ala Trp Asn Asn Met
    610                 615                 620

Ile Ile Leu Leu Asp Asn Thr Gly Asn Leu Ala Gln Ala Glu Ala Val
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Gly Arg Glu Ala Leu Glu Leu Ile Pro Asn Asp His Ser Leu Met Phe
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Ser Leu Ala Asn Val Leu Gly Lys Ser Gln Lys Tyr Lys Glu Ser Glu
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Ala Leu Phe Leu Lys Ala Ile Lys Ala Asn Pro Asn Ala Ala Ser Tyr
        675                 680                 685

His Gly Asn Leu Ala Val Leu Tyr His Arg Trp Gly His Leu Asp Leu
    690                 695                 700

Ala Lys Lys His Tyr Glu Ile Ser Leu Gln Leu Asp Pro Thr Ala Ser
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Gly Thr Lys Glu Asn Tyr Gly Leu Leu Arg Arg Lys Leu Glu Leu Met
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Gln Lys Lys Ala Val
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Val Glu Tyr His Thr Pro Trp Tyr Met Ala Glu Leu Phe Pro Phe Ile
                325                 330                 335

Leu Leu Gly Val Phe Gly Gly Leu Trp Gly Thr Leu Phe Ile Arg Cys
            340                 345                 350

Asn Ile Ala Trp Cys Arg Arg Arg Lys Thr Thr Arg Leu Gly Lys Tyr
        355                 360                 365

Pro Val Leu Glu Val Ile Val Val Thr Ala Ile Thr Ala Ile Ile Ala
    370                 375                 380

Tyr Pro Asn Pro Tyr Thr Arg Gln Ser Thr Ser Glu Leu Ile Ser Glu
385                 390                 395                 400

Leu Phe Asn Asp Cys Gly Ala Leu Glu Ser Ser Gln Leu Cys Asp Tyr
                405                 410                 415

Ile Asn Asp Pro Asn Met Thr Arg Pro Val Asp Asp Ile Pro Asp Arg
            420                 425                 430
```

```
Pro Ala Gly Val Gly Val Tyr Thr Ala Met Trp Gln Leu Ala Leu Ala
        435                 440                 445

Leu Ile Phe Lys Ile Val Val Thr Ile Phe Thr Phe Gly Met Lys Ile
    450                 455                 460

Pro Ser Gly Leu Phe Ile Pro Ser Met Ala Val Gly Ala Ile Ala Gly
465                 470                 475                 480

Arg Met Val Gly Ile Gly Val Glu Gln Leu Ala Tyr His His His Asp
                485                 490                 495

Trp Ile Ile Phe Arg Asn Trp Cys Arg Pro Gly Ala Asp Cys Val Thr
            500                 505                 510

Pro Gly Leu Tyr Ala Met Val Gly Ala Ala Ala Cys Leu Gly Gly Val
        515                 520                 525

Thr Arg Met Thr Val Ser Leu Val Val Ile Met Phe Glu Leu Thr Gly
    530                 535                 540

Gly Leu Glu Tyr Ile Val Pro Leu Met Ala Ala Ala Val Thr Ser Lys
545                 550                 555                 560

Trp Val Ala Asp Ala Phe Gly Lys Glu Gly Ile Tyr Glu Ala His Ile
                565                 570                 575

His Leu Asn Gly Tyr Pro Phe Leu Asp Val Lys Asp Glu Phe Thr His
            580                 585                 590

Arg Thr Leu Ala Thr Asp Val Met Arg Pro Arg Arg Gly Glu Pro Pro
        595                 600                 605

Leu Ser Val Leu Thr Gln Asp Ser Met Thr Val Glu Asp Val Glu Thr
    610                 615                 620

Leu Ile Lys Glu Thr Asp Tyr Asn Gly Phe Pro Val Val Val Ser Arg
625                 630                 635                 640

Asp Ser Glu Arg Leu Ile Gly Phe Ala Gln Arg Arg Glu Leu Ile Leu
                645                 650                 655

Ala Ile Lys Asn Ala Arg Gln Arg Gln Glu Gly Ile Val Ser Asn Ser
            660                 665                 670

Ile Met Tyr Phe Thr Glu Glu Pro Pro Glu Leu Pro Ala Asn Ser Pro
        675                 680                 685
```

```
His Pro Leu Lys Leu Arg Arg Ile Leu Asn Leu Ser Pro Phe Thr Val
    690                 695                 700

Thr Asp His Thr Pro Met Glu Thr Val Val Asp Ile Phe Arg Lys Leu
705                 710                 715                 720

Gly Leu Arg Gln Cys Leu Val Thr Arg Ser Gly Arg Leu Leu Gly Ile
                725                 730                 735

Ile Thr Lys Lys Asp Val Leu Arg His Met Ala Gln Met Ala Asn Gln
            740                 745                 750

Asp Pro Glu Ser Ile Met Phe Asn
        755                 760
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<210> 265
<211> 1869
<212> DNA
<213> Homo sapiens

<400> 265

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ggagctgcag cctttcttct ttgggatttt cttaatcatt tacctgataa acttgattgg      120

aaatggatct atattggtga tggttgtttt ggaaccacaa ctccactccc ctatgtattt      180

ttttctggga aacctttctt gtctggatat ttcttattct tcagtgacac tgcccaagct      240

gctcgtaaac ctcgtgtgca gtcgcagggc tatatctttt ctaggctgta tcacccagct      300

acacttcttc cacttttgg gaagcacaga ggccatttta ctggctatca tggcctttga      360

ccgttttgtt gccatctgca atcctcttcg ctacactgtc atcatgaacc cccaggtgtg      420

tattctgttg gcagctgcgg cctggctcat cagcttcttt tacgctctga tgcattctgt      480

catgactgca cacctgagtt tttgtggctc tcagaaactc aatcacttct tctacgatgt      540

caagccgctc ttagaattgg cctgtagtga cacattactc aatcaatggc ttctttccat      600

tgtcacaggc agcatatcca tgggagcttt ctttctgact cttctctcct gcttctatgt      660

aattggcttc cttctgttta agaacaggtc ctgcagaata ctccacaagg ctctgtccac      720

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tcgtcctgct tcagccacct ccatgattca ggaccggata atggccatca tgtatagcgc      840

cgtcacccct gtactgaatc cactaatcta cacccttagg aacaaagaag tgatgatggc      900

tctgaagaaa atctttggta ggaagttgtt taaagactgg cagcaacacc actaggacta      960

atgagggata tctgatttct attaagactg atttccatca cttcactgta agaaatgatt     1020

tgtttacctg gtttatattt ttctttcaaa aattttgagc acatattata ttaggcagtg     1080
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atgtgacaag ctctttgttt cagttggagt gtttgcacaa tttaaatttg ataaattttt 1800

gatagaatta aatttaaatt tatcctccaa ctaaattttt gatagaatta aatttaaatt 1860

tgtcctcca 1869

<210> 266
<211> 316
<212> PRT
<213> Homo sapiens

<400> 266

Met Glu Asn Val Thr Thr Met Asn Glu Phe Leu Leu Leu Gly Leu Thr
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Gly Val Gln Glu Leu Gln Pro Phe Phe Phe Gly Ile Phe Leu Ile Ile
20 25 30

Tyr Leu Ile Asn Leu Ile Gly Asn Gly Ser Ile Leu Val Met Val Val
35 40 45

Leu Glu Pro Gln Leu His Ser Pro Met Tyr Phe Phe Leu Gly Asn Leu
50 55 60

Ser Cys Leu Asp Ile Ser Tyr Ser Ser Val Thr Leu Pro Lys Leu Leu
65 70 75 80

Val Asn Leu Val Cys Ser Arg Arg Ala Ile Ser Phe Leu Gly Cys Ile
85 90 95

Thr Gln Leu His Phe Phe His Phe Leu Gly Ser Thr Glu Ala Ile Leu
100 105 110

```
Leu Ala Ile Met Ala Phe Asp Arg Phe Val Ala Ile Cys Asn Pro Leu
        115                 120                 125

Arg Tyr Thr Val Ile Met Asn Pro Gln Val Cys Ile Leu Leu Ala Ala
    130                 135                 140

Ala Ala Trp Leu Ile Ser Phe Phe Tyr Ala Leu Met His Ser Val Met
145                 150                 155                 160

Thr Ala His Leu Ser Phe Cys Gly Ser Gln Lys Leu Asn His Phe Phe
                165                 170                 175

Tyr Asp Val Lys Pro Leu Leu Glu Leu Ala Cys Ser Asp Thr Leu Leu
            180                 185                 190

Asn Gln Trp Leu Leu Ser Ile Val Thr Gly Ser Ile Ser Met Gly Ala
        195                 200                 205

Phe Phe Leu Thr Leu Leu Ser Cys Phe Tyr Val Ile Gly Phe Leu Leu
    210                 215                 220

Phe Lys Asn Arg Ser Cys Arg Ile Leu His Lys Ala Leu Ser Thr Cys
225                 230                 235                 240

Ala Ser His Phe Met Val Val Cys Leu Phe Tyr Gly Pro Val Gly Phe
                245                 250                 255

Thr Tyr Ile Arg Pro Ala Ser Ala Thr Ser Met Ile Gln Asp Arg Ile
            260                 265                 270

Met Ala Ile Met Tyr Ser Ala Val Thr Pro Val Leu Asn Pro Leu Ile
        275                 280                 285

Tyr Thr Leu Arg Asn Lys Glu Val Met Met Ala Leu Lys Lys Ile Phe
    290                 295                 300

Gly Arg Lys Leu Phe Lys Asp Trp Gln Gln His His
305                 310                 315
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<210> 267
<211> 2239
<212> DNA
<213> Homo sapiens

<400> 267
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gggccagaca agcctgtcca ggccttggtg ggggaggacg cagcattctc ctgtttcctg 360

tctcctaaga ccaatgcaga ggccatggaa gtgcggttct tcaggggcca gttctctagc 420

gtggtccacc tctacaggga cgggaaggac cagccattta tgcagatgcc acagtatcaa 480

ggcaggacaa aactggtgaa ggattctatt gcggaggggc gcatctctct gaggctggaa 540

aacattactg tgttggatgc tggcctctat gggtgcagga ttagttccca gtcttactac 600

cagaaggcca tctgggagct acaggtgtca gcactgggct cagttcctct catttccatc 660

acgggatatg ttgatagaga catccagcta ctctgtcagt cctcgggctg gttcccccgg 720

cccacagcga agtggaaagg tccacaagga caggatttgt ccacagactc caggacaaac 780

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gaaacattac tgggaggtgg acggaggaca caataaaagg tggcgcgtgg gagtgtgccg 1440

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tttcagtaaa aaaaaaaaa 2239

<210> 268
<211> 347
<212> PRT
<213> Homo sapiens

<400> 268

Met Ala Leu Met Leu Ser Leu Val Leu Ser Leu Leu Lys Leu Gly Ser
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Gly Gln Trp Gln Val Phe Gly Pro Asp Lys Pro Val Gln Ala Leu Val
20 25 30

Gly Glu Asp Ala Ala Phe Ser Cys Phe Leu Ser Pro Lys Thr Asn Ala
35 40 45

Glu Ala Met Glu Val Arg Phe Phe Arg Gly Gln Phe Ser Ser Val Val
50 55 60

His Leu Tyr Arg Asp Gly Lys Asp Gln Pro Phe Met Gln Met Pro Gln
65 70 75 80

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

Ile Ser Leu Arg Leu Glu Asn Ile Thr Val Leu Asp Ala Gly Leu Tyr
100 105 110

Gly Cys Arg Ile Ser Ser Gln Ser Tyr Tyr Gln Lys Ala Ile Trp Glu
115 120 125

Leu Gln Val Ser Ala Leu Gly Ser Val Pro Leu Ile Ser Ile Thr Gly
130 135 140

Tyr Val Asp Arg Asp Ile Gln Leu Leu Cys Gln Ser Ser Gly Trp Phe
145 150 155 160

Pro Arg Pro Thr Ala Lys Trp Lys Gly Pro Gln Gly Gln Asp Leu Ser
165 170 175

Thr Asp Ser Arg Thr Asn Arg Asp Met His Gly Leu Phe Asp Val Glu

180 185 190

Ile Ser Leu Thr Val Gln Glu Asn Ala Gly Ser Ile Ser Cys Ser Met
195 200 205

Arg His Ala His Leu Ser Arg Glu Val Glu Ser Arg Val Gln Ile Gly
210 215 220

Asp Thr Phe Phe Glu Pro Ile Ser Trp His Leu Ala Thr Lys Val Leu
225 230 235 240

Gly Ile Leu Cys Cys Gly Leu Phe Phe Gly Ile Val Gly Leu Lys Ile
245 250 255

Phe Phe Ser Lys Phe Gln Cys Lys Arg Glu Arg Glu Ala Trp Ala Gly
260 265 270

Ala Leu Phe Met Val Pro Ala Gly Thr Gly Ser Glu Met Leu Pro His
275 280 285

Pro Ala Ala Ser Leu Leu Leu Val Leu Ala Ser Arg Gly Pro Gly Pro
290 295 300

Lys Lys Glu Asn Pro Gly Gly Thr Gly Leu Glu Lys Lys Ala Arg Thr
305 310 315 320

Gly Arg Ile Glu Arg Arg Pro Glu Thr Arg Ser Gly Gly Asp Ser Gly
325 330 335

Ser Arg Asp Gly Ser Pro Glu Ala Leu Arg Phe
340 345

<210> 269
<211> 10133
<212> DNA
<213> Homo sapiens

<400> 269
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catagggaaa tcagacaagt caacctacaa cgtcaaccac cccaattacg gcaccgtgga 1860

catgaccaca ggcatagaag ctgatgaatc cgaaaatatt tatctcatca agttaaagaa 1920

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aggtttgaaa tagcatagat cattaaaatc cacaggtaag cttcaaacct agattttgct 5820

agctacatgt gcctggcata tagtgtgtat tcaagaaata cctgatgatt gacagaatga 5880

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ctatggcaga tattgatatc gtaagtcaga taaaaatcca gctcttaaga agtagaggaa 6000

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tttgtgctgt gcctccatta agagaaagca aggagctagt ttgcctggag cacatgattt 6480

atgcatgact tatacatgca acaataagaa ataatgctag gaaggcaggt gagggatcac 6540

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aacagtaaaa tctcagctcc aggttttact gagcttgagt gctacttttt ttttttaga 6960

cagagtctca ttctgtcacc caggctggag tgcagtggca tgatcttggc tcactgcaac 7020

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gtgcctttaa atttaaaaat gggtttataa agaaagtcag aaacaaaagt gtcttactat 9840

aaaatatcca tagtaatgta aagcttttac acgagactac caaaaaaaaa gaaagaaaag 9900

aaaaaggagc cttcccatat tttgttaacc ttaaccagta tctgaagtct gttacttttt 9960

ttccattctt aaatggagat gaataagtga atttcgcctt aagtgtttca attgtccttt 10020

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agaataaaac attttaaaaa gtacagctaa tcgactaata aaatttaaat ttg 10133

<210> 270
<211> 771
<212> PRT
<213> Homo sapiens

<400> 270

Met Ser Gly Phe Phe Thr Ser Leu Asp Pro Arg Arg Val Gln Trp Gly
1 5 10 15

Ala Ala Trp Tyr Ala Met His Ser Arg Ile Leu Arg Thr Lys Pro Val
20 25 30

Glu Ser Met Leu Glu Gly Thr Gly Thr Thr Thr Ala His Gly Thr Lys
35 40 45

Leu Ala Gln Val Leu Thr Thr Val Asp Leu Ile Ser Leu Gly Val Gly
50 55 60

Ser Cys Val Gly Thr Gly Met Tyr Val Val Ser Gly Leu Val Ala Lys
65 70 75 80

Glu Met Ala Gly Pro Gly Val Ile Val Ser Phe Ile Ile Ala Ala Val
85 90 95

Ala Ser Ile Leu Ser Gly Val Cys Tyr Ala Glu Phe Gly Val Arg Val
100 105 110

Pro Lys Thr Thr Gly Ser Ala Tyr Thr Tyr Ser Tyr Val Thr Val Gly
115 120 125

Glu Phe Val Ala Phe Phe Ile Gly Trp Asn Leu Ile Leu Glu Tyr Leu
130 135 140

Ile Gly Thr Ala Ala Gly Ala Ser Ala Leu Ser Ser Met Phe Asp Ser
145 150 155 160

Leu Ala Asn His Thr Ile Ser Arg Trp Met Ala Asp Ser Val Gly Thr
165 170 175

Leu Asn Gly Leu Gly Lys Gly Glu Glu Ser Tyr Pro Asp Leu Leu Ala
180 185 190

```
Leu Leu Ile Ala Val Ile Val Thr Ile Ile Val Ala Leu Gly Val Lys
        195                 200                 205

Asn Ser Ile Gly Phe Asn Asn Val Leu Asn Val Leu Asn Leu Ala Val
    210                 215                 220

Trp Val Phe Ile Met Ile Ala Gly Leu Phe Phe Ile Asn Gly Lys Tyr
225                 230                 235                 240

Trp Ala Glu Gly Gln Phe Leu Pro His Gly Trp Ser Gly Val Leu Gln
                245                 250                 255

Gly Ala Ala Thr Cys Phe Tyr Ala Phe Ile Gly Phe Asp Ile Ile Ala
            260                 265                 270

Thr Thr Gly Glu Glu Ala Lys Asn Pro Asn Thr Ser Ile Pro Tyr Ala
        275                 280                 285

Ile Thr Ala Ser Leu Val Ile Cys Leu Thr Ala Tyr Val Ser Val Ser
    290                 295                 300

Val Ile Leu Thr Leu Met Val Pro Tyr Tyr Thr Ile Asp Thr Glu Ser
305                 310                 315                 320

Pro Leu Met Glu Met Phe Val Ala His Gly Phe Tyr Ala Ala Lys Phe
                325                 330                 335

Val Val Ala Ile Gly Ser Val Ala Gly Leu Thr Val Ser Leu Leu Gly
            340                 345                 350

Ser Leu Phe Pro Met Pro Arg Val Ile Tyr Ala Met Ala Gly Asp Gly
        355                 360                 365

Leu Leu Phe Arg Phe Leu Ala His Val Ser Ser Tyr Thr Glu Thr Pro
    370                 375                 380

Val Val Ala Cys Ile Val Ser Gly Phe Leu Ala Ala Leu Leu Ala Leu
385                 390                 395                 400

Leu Val Ser Leu Arg Asp Leu Ile Glu Met Met Ser Ile Gly Thr Leu
                405                 410                 415

Leu Ala Tyr Thr Leu Val Ser Val Cys Val Leu Leu Leu Arg Tyr Gln
            420                 425                 430

Pro Glu Ser Asp Ile Asp Gly Phe Val Lys Phe Leu Ser Glu Glu His
```

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        435                 440                 445

Thr Lys Lys Lys Glu Gly Ile Leu Ala Asp Cys Glu Lys Glu Ala Cys
    450                 455                 460

Ser Pro Val Ser Glu Gly Asp Glu Phe Ser Gly Pro Ala Thr Asn Thr
465                 470                 475                 480

Cys Gly Ala Lys Asn Leu Pro Ser Leu Gly Asp Asn Glu Met Leu Ile
                485                 490                 495

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

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

Tyr Leu Ile Lys Leu Lys Lys Leu Ile Gly Pro His Tyr Tyr Thr Met
    530                 535                 540

Arg Ile Arg Leu Gly Leu Pro Gly Lys Met Asp Arg Pro Thr Ala Ala
545                 550                 555                 560

Thr Gly His Thr Val Thr Ile Cys Val Leu Leu Leu Phe Ile Leu Met
                565                 570                 575

Phe Ile Phe Cys Ser Phe Ile Ile Phe Gly Ser Asp Tyr Ile Ser Glu
            580                 585                 590

Gln Ser Trp Trp Ala Ile Leu Leu Val Val Leu Met Val Leu Leu Ile
        595                 600                 605

Ser Thr Leu Val Phe Val Ile Leu Gln Gln Pro Glu Asn Pro Lys Lys
    610                 615                 620

Leu Pro Tyr Met Ala Pro Cys Leu Pro Phe Val Pro Ala Phe Ala Met
625                 630                 635                 640

Leu Val Asn Ile Tyr Leu Met Leu Lys Leu Ser Thr Ile Thr Trp Ile
                645                 650                 655

Arg Phe Ala Val Trp Cys Phe Val Gly Leu Leu Ile Tyr Phe Gly Tyr
            660                 665                 670

Gly Ile Trp Asn Ser Thr Leu Glu Ile Ser Ala Arg Glu Glu Ala Leu
        675                 680                 685
```

```
His Gln Ser Thr Tyr Gln Arg Tyr Asp Val Asp Asp Pro Phe Ser Val
    690                 695                 700

Glu Glu Gly Phe Ser Tyr Ala Thr Glu Gly Glu Ser Gln Glu Asp Trp
705                 710                 715                 720

Gly Gly Pro Thr Glu Asp Lys Gly Phe Tyr Tyr Gln Gln Met Ser Asp
                725                 730                 735

Ala Lys Ala Asn Gly Arg Thr Ser Ser Lys Ala Lys Ser Lys Ser Lys
            740                 745                 750

His Lys Gln Asn Ser Glu Ala Leu Ile Ala Asn Asp Glu Leu Asp Tyr
        755                 760                 765

Ser Pro Glu
    770
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<210> 271
<211> 939
<212> DNA
<213> Homo sapiens

<400> 271

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atggaagcag aaaaccttac agaattatca aaatttctcc tcctgggact ctcagatgat       60

cctgaactgc agcccgtcct ctttgggctg ttcctgtcca tgtacctggt cacggtgctg      120

gggaacctgc tcatcattct ggccgtcagc tctgactccc acctccacac ccccatgtac      180

ttcttcctct ccaacctgtc ctttgttgac atctgtttca tctccaccac agtccccaag      240

atgctagtga gcatccaggc acggagcaaa gacatctcct acatggggtg cctcactcag      300

gtgtattttt taatgatgtt tgctggaatg gatactttcc tactggccgt gatggcctat      360

gaccggtttg tggccatctg ccacccactg cactacacgg tcatcatgaa cccctgcctc      420

tgtggcctcc tggttctggc atcttggttc atcattttct ggttctccct ggttcatatt      480

ctactgatga agaggttgac cttctccaca ggcactgaga ttccgcattt cttctgtgaa      540

ccggctcagg tcctcaaggt ggcctgctct aacaccctcc tcaataacat tgtcttgtat      600

gtggccacgg cactgctggg tgtgtttcct gtagctggga tcctcttctc ctactctcag      660

attgtctcct ccttaatggg aatgtcctcc accaagggca agtacaaagc cttttccacc      720

tgtggatctc acctctgtgt ggtctccttg ttctatggaa caggacttgg ggtctatctg      780

agttctgctg tgacccattc ttcccagagc agctccaccg cctcagtgat gtacgccatg      840

gtcaccccca tgctgaaccc cttcatctac agcctgagga acaaggatgt gaaggggcc       900

ctggaaagac tcctcagcag ggccgactct tgtccatga                              939
```

<210> 272
<211> 312
<212> PRT
<213> Homo sapiens

<400> 272

Met Glu Ala Glu Asn Leu Thr Glu Leu Ser Lys Phe Leu Leu Leu Gly
1 5 10 15

Leu Ser Asp Asp Pro Glu Leu Gln Pro Val Leu Phe Gly Leu Phe Leu
20 25 30

Ser Met Tyr Leu Val Thr Val Leu Gly Asn Leu Leu Ile Ile Leu Ala
35 40 45

Val Ser Ser Asp Ser His Leu His Thr Pro Met Tyr Phe Phe Leu Ser
50 55 60

Asn Leu Ser Phe Val Asp Ile Cys Phe Ile Ser Thr Thr Val Pro Lys
65 70 75 80

Met Leu Val Ser Ile Gln Ala Arg Ser Lys Asp Ile Ser Tyr Met Gly
85 90 95

Cys Leu Thr Gln Val Tyr Phe Leu Met Met Phe Ala Gly Met Asp Thr
100 105 110

Phe Leu Leu Ala Val Met Ala Tyr Asp Arg Phe Val Ala Ile Cys His
115 120 125

Pro Leu His Tyr Thr Val Ile Met Asn Pro Cys Leu Cys Gly Leu Leu
130 135 140

Val Leu Ala Ser Trp Phe Ile Ile Phe Trp Phe Ser Leu Val His Ile
145 150 155 160

Leu Leu Met Lys Arg Leu Thr Phe Ser Thr Gly Thr Glu Ile Pro His
165 170 175

Phe Phe Cys Glu Pro Ala Gln Val Leu Lys Val Ala Cys Ser Asn Thr
180 185 190

Leu Leu Asn Asn Ile Val Leu Tyr Val Ala Thr Ala Leu Leu Gly Val
195 200 205

Phe Pro Val Ala Gly Ile Leu Phe Ser Tyr Ser Gln Ile Val Ser Ser
210 215 220

```
Leu Met Gly Met Ser Ser Thr Lys Gly Lys Tyr Lys Ala Phe Ser Thr
225                 230                 235                 240

Cys Gly Ser His Leu Cys Val Val Ser Leu Phe Tyr Gly Thr Gly Leu
                245                 250                 255

Gly Val Tyr Leu Ser Ser Ala Val Thr His Ser Ser Gln Ser Ser Ser
            260                 265                 270

Thr Ala Ser Val Met Tyr Ala Met Val Thr Pro Met Leu Asn Pro Phe
        275                 280                 285

Ile Tyr Ser Leu Arg Asn Lys Asp Val Lys Gly Ala Leu Glu Arg Leu
    290                 295                 300

Leu Ser Arg Ala Asp Ser Cys Pro
305                 310
```

<210> 273
<211> 2872
<212> DNA
<213> Homo sapiens

<400> 273

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aggaacaggc cgcacacaac agcattccct ggcagtacca ccatgccagg cgtcagtcag       60

gaatctacag cttcccacag cagcccaggc tccacagaca caacactgtc ccctggcagt      120

accacagcat catcccttgg tccagaatct actaccttcc acagcggccc aggctccact      180

gaaacaacac tcttacctga caacaccaca gcctccggcc tccttgaagc atctacgccc      240

gtccacagca gcactggatc gccacacaca acactgtccc ctgccggctc tacaacccgt      300

cagggagaat ctaccacctt ccagagctgg cctaactcga aggacactac ccctgcacct      360

cctactacca catcagcctt tgttgagcta tctacaacct cccacggcag cccgagctca      420

actccaacaa cccacttttc tgccagctcc acaaccttgg gccgtagtga ggaatcgaca      480

acagtccaca gcagcccagt tgcaactgca acaacaccct cgcctgcccg ctccacaacc      540

tcaggcctcg ttgaagaatc tacgacctac cacagcagcc cgggctcaac tcaaacaatg      600

cacttccctg aaagcgacac aacttcaggc cgtggtgaag aatcaacaac ttcccacagc      660

agcacaacac acacaatatc ttcagctcct agcaccacat ctgcccttgt tgaagaacct      720

accagctacc acagcagccc gggctcaact gcaacaacac acttccctga cagctccaca      780

acctcaggcc gtagtgagga atcaacagca tcccacagca accaagacgc aacgggaaca      840

atagtcctac ctgcccgctc cacaacctca gttcttcttg gagaatctac gacctcaccc      900

atcagttcag gctcaatgga aacgacagcg ttacccggca gtaccacaac gccaggcctc      960

agtgagaaat ctaccacttt ccacagtagc cccagatcac cagccacaac actctcacct     1020
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gccagcacga caagctcagg cgtcagtgaa gaatccacca cctcccacag ccgaccaggc 1080

tcaacgcaca caacagcatt ccctgacagc accaccacgc caggcctcag tcggcattct 1140

acaacttccc acagcagccc aggctcaacg gatacaacac tgttacctgc cagcaccacc 1200

acctcaggcc ccagtcagga atcaacaact tcccacagca gcccaggttc aactgacaca 1260

gcactgtccc ctggcagtac cacagcctta tcctttggtc aagaatctac aaccttccac 1320

agcagcccag gctccactca cacaacactc ttccctgaca gcaccacaag ctcaggcatc 1380

gttgaagcat ctacacgcgt ccacagcagc actggctcac cacgcacaac actgtcccct 1440

gccagctcca caagccctgg acttcaggga gaatctaccg ccttccagac ccacccagcc 1500

tcaactcaca cgacgccttc aactcctagc accgcaacag cccctgttga agaatctaca 1560

acctaccacc gcagcccaag ctcgactcca acaacacact tccctgccag ctccacaact 1620

tcgggccaca gtgagaaatc aacaatattc cacagcagcc cagatgcaag tggaacaaca 1680

ccctcatctg cccactccac aacctcaggt cgtggagaat ctacaacctc acgcatcagt 1740

ccaggctcaa ctgaaataac aacgttacct ggcagtacca caacaccagg cctcagtgag 1800

gcatctacca ccttctacag cagccccaga tcaccaacca caacactctc acctgccagc 1860

atgacaagcc taggcgtcgg tgaagaatcc accacctccc gtagccaacc aggttctact 1920

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agcccagcct ccacccaaac agggttacct gccacactca caaccgcaga cctcggtgag 2220

gaatcaacta cctttcccag cagctcaggc tcaactggaa caacactctc acctgcccgc 2280

tccaccacct ctggcctcgt tggagaatcc acaccctcac gcctcagtcc aagctcaacc 2340

gaaacaacaa ctttacccgg cagtcccaca acaccaagcc tcagtgagaa atcaaccacc 2400

ttctacacta gccccagatc accagatgca acactctcac ctgcaaccac aacaagctca 2460

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ttccctgaca gcaccaccac ctcaggcctc agtcaggaac ctaaaacttc ccacagcagc 2580

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ttccagagct ggccaagctc aagtgacaca acaccttcac ctcccggccc gg 2872

<210> 274
<211> 957
<212> PRT
<213> Homo sapiens

<400> 274

Arg Asn Arg Pro His Thr Thr Ala Phe Pro Gly Ser Thr Thr Met Pro
1 5 10 15

Gly Val Ser Gln Glu Ser Thr Ala Ser His Ser Ser Pro Gly Ser Thr
20 25 30

Asp Thr Thr Leu Ser Pro Gly Ser Thr Thr Ala Ser Ser Leu Gly Pro
35 40 45

Glu Ser Thr Thr Phe His Ser Gly Pro Gly Ser Thr Glu Thr Thr Leu
50 55 60

Leu Pro Asp Asn Thr Thr Ala Ser Gly Leu Leu Glu Ala Ser Thr Pro
65 70 75 80

Val His Ser Ser Thr Gly Ser Pro His Thr Thr Leu Ser Pro Ala Gly
85 90 95

Ser Thr Thr Arg Gln Gly Glu Ser Thr Thr Phe Gln Ser Trp Pro Asn
100 105 110

Ser Lys Asp Thr Thr Pro Ala Pro Pro Thr Thr Thr Ser Ala Phe Val
115 120 125

Glu Leu Ser Thr Thr Ser His Gly Ser Pro Ser Ser Thr Pro Thr Thr
130 135 140

His Phe Ser Ala Ser Ser Thr Thr Leu Gly Arg Ser Glu Glu Ser Thr
145 150 155 160

Thr Val His Ser Ser Pro Val Ala Thr Ala Thr Thr Pro Ser Pro Ala
165 170 175

Arg Ser Thr Thr Ser Gly Leu Val Glu Glu Ser Thr Thr Tyr His Ser
180 185 190

Ser Pro Gly Ser Thr Gln Thr Met His Phe Pro Glu Ser Asp Thr Thr
195 200 205

Ser Gly Arg Gly Glu Glu Ser Thr Thr Ser His Ser Ser Thr Thr His
210 215 220

```
Thr Ile Ser Ser Ala Pro Ser Thr Thr Ser Ala Leu Val Glu Glu Pro
225                 230                 235                 240

Thr Ser Tyr His Ser Ser Pro Gly Ser Thr Ala Thr Thr His Phe Pro
                245                 250                 255

Asp Ser Ser Thr Thr Ser Gly Arg Ser Glu Glu Ser Thr Ala Ser His
            260                 265                 270

Ser Asn Gln Asp Ala Thr Gly Thr Ile Val Leu Pro Ala Arg Ser Thr
        275                 280                 285

Thr Ser Val Leu Leu Gly Glu Ser Thr Thr Ser Pro Ile Ser Ser Gly
    290                 295                 300

Ser Met Glu Thr Thr Ala Leu Pro Gly Ser Thr Thr Thr Pro Gly Leu
305                 310                 315                 320

Ser Glu Lys Ser Thr Thr Phe His Ser Ser Pro Arg Ser Pro Ala Thr
                325                 330                 335

Thr Leu Ser Pro Ala Ser Thr Thr Ser Ser Gly Val Ser Glu Glu Ser
            340                 345                 350

Thr Thr Ser His Ser Arg Pro Gly Ser Thr His Thr Thr Ala Phe Pro
        355                 360                 365

Asp Ser Thr Thr Thr Pro Gly Leu Ser Arg His Ser Thr Thr Ser His
    370                 375                 380

Ser Ser Pro Gly Ser Thr Asp Thr Thr Leu Leu Pro Ala Ser Thr Thr
385                 390                 395                 400

Thr Ser Gly Pro Ser Gln Glu Ser Thr Thr Ser His Ser Ser Pro Gly
                405                 410                 415

Ser Thr Asp Thr Ala Leu Ser Pro Gly Ser Thr Thr Ala Leu Ser Phe
            420                 425                 430

Gly Gln Glu Ser Thr Thr Phe His Ser Ser Pro Gly Ser Thr His Thr
        435                 440                 445

Thr Leu Phe Pro Asp Ser Thr Thr Ser Ser Gly Ile Val Glu Ala Ser
    450                 455                 460

Thr Arg Val His Ser Ser Thr Gly Ser Pro Arg Thr Thr Leu Ser Pro
465                 470                 475                 480
```

```
Ala Ser Ser Thr Ser Pro Gly Leu Gln Gly Glu Ser Thr Ala Phe Gln
                485                 490                 495

Thr His Pro Ala Ser Thr His Thr Thr Pro Ser Thr Pro Ser Thr Ala
            500                 505                 510

Thr Ala Pro Val Glu Glu Ser Thr Thr Tyr His Arg Ser Pro Ser Ser
        515                 520                 525

Thr Pro Thr Thr His Phe Pro Ala Ser Ser Thr Thr Ser Gly His Ser
    530                 535                 540

Glu Lys Ser Thr Ile Phe His Ser Ser Pro Asp Ala Ser Gly Thr Thr
545                 550                 555                 560

Pro Ser Ser Ala His Ser Thr Thr Ser Gly Arg Gly Glu Ser Thr Thr
                565                 570                 575

Ser Arg Ile Ser Pro Gly Ser Thr Glu Ile Thr Thr Leu Pro Gly Ser
            580                 585                 590

Thr Thr Thr Pro Gly Leu Ser Glu Ala Ser Thr Thr Phe Tyr Ser Ser
        595                 600                 605

Pro Arg Ser Pro Thr Thr Thr Leu Ser Pro Ala Ser Met Thr Ser Leu
    610                 615                 620

Gly Val Gly Glu Glu Ser Thr Thr Ser Arg Ser Gln Pro Gly Ser Thr
625                 630                 635                 640

His Ser Thr Val Ser Pro Ala Ser Thr Thr Thr Pro Gly Leu Ser Glu
                645                 650                 655

Glu Ser Thr Thr Val Tyr Ser Ser Ser Pro Gly Ser Thr Glu Thr Thr
            660                 665                 670

Val Phe Pro Arg Ser Thr Thr Thr Ser Val Arg Gly Glu Glu Pro Thr
        675                 680                 685

Thr Phe His Ser Arg Pro Ala Ser Thr His Thr Thr Leu Phe Thr Glu
    690                 695                 700

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

Ser Pro Ala Ser Thr Gln Thr Gly Leu Pro Ala Thr Leu Thr Thr Ala
```

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                725                 730                 735

Asp Leu Gly Glu Glu Ser Thr Thr Phe Pro Ser Ser Ser Gly Ser Thr
            740                 745                 750

Gly Thr Thr Leu Ser Pro Ala Arg Ser Thr Thr Ser Gly Leu Val Gly
        755                 760                 765

Glu Ser Thr Pro Ser Arg Leu Ser Pro Ser Ser Thr Glu Thr Thr Thr
    770                 775                 780

Leu Pro Gly Ser Pro Thr Thr Pro Ser Leu Ser Glu Lys Ser Thr Thr
785                 790                 795                 800

Phe Tyr Thr Ser Pro Arg Ser Pro Asp Ala Thr Leu Ser Pro Ala Thr
                805                 810                 815

Thr Thr Ser Ser Gly Val Ser Glu Glu Ser Ser Thr Ser His Ser Gln
            820                 825                 830

Pro Gly Ser Thr His Thr Thr Ala Phe Pro Asp Ser Thr Thr Thr Ser
        835                 840                 845

Gly Leu Ser Gln Glu Pro Lys Thr Ser His Ser Ser Gln Gly Ser Thr
    850                 855                 860

Glu Ala Thr Leu Ser Pro Gly Ser Thr Thr Ala Ser Ser Leu Gly Gln
865                 870                 875                 880

Gln Ser Thr Thr Phe His Ser Ser Pro Gly Asp Thr Glu Thr Thr Leu
                885                 890                 895

Leu Pro Asp Asp Thr Ile Thr Ser Gly Leu Val Glu Ala Ser Thr Pro
            900                 905                 910

Thr His Ser Ser Thr Gly Ser Leu His Thr Thr Leu Thr Pro Ala Ser
        915                 920                 925

Ser Thr Ser Ala Gly Leu Gln Glu Glu Ser Thr Thr Phe Gln Ser Trp
    930                 935                 940

Pro Ser Ser Ser Asp Thr Thr Pro Ser Pro Pro Gly Pro
945                 950                 955
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<210> 275
<211> 1757
<212> DNA
<213> Homo sapiens

<400> 275
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atgctctctg atcccaggaa tcctgggtat ggtgtttcgt atctgtgtga cctcaggctg 120

gagtgcaatg gcacgatctc ggctcactgc aatctctgcc tccctggttc aagcaattct 180

cctgcctcag cctcccgagt agctgtgact acaggcacac gccaccatgc ccggataata 240

ttttttgtat gttagtagag acggggtttc actgtgttgc caaagctggt cttgaactcc 300

tgagttcagg caatccacct gcctcagcct ctgaaagtgc taggattaca ggcgtgaccc 360

actgcgcccg gtctttcttt ttttgttgtt gttggttttt tatcttaact tttctttttt 420

ctgttgatgc ttttcaagaa ttactgcctt agaagaaagc aggcaattta tgaggaaaaa 480

ttacaaacta tcacgtgtca caaaacctat attcaaggac ttccaaaaaa gccagaagat 540

gaaattgcta gttcaaagtt gttggattgc tagtcatgtc atgaggatca gaaggttgag 600

atttttgtag aagcttagac cagtgtgata gtagtgattg gatcaagacg tttgcaaaag 660

ggactaagct catagtaact tcgcctgata aacaacttga tgcagatgtt tcccccaagc 720

ccactatttt tcttccttca attgctgaaa caaaactcca gaaggctgga acataccttt 780

gtcttcttga gaaatttttc ccagatatta ttaagataca ttggcaagaa aagaagagca 840

acacgattct gggatcccag gaggggaaca ccatgaagac taacgacaca tacatgaaat 900

ttagctggtt aacggtgcca gaagagtcac tggacaaaga acacagatgt atcgtcagac 960

atgagaataa taaaaacgga attgatcaag aaattatctt tcctccaata aagacagatg 1020

tcaccacagt ggatcccaaa gacagttatt caaaagatgc aaatgatgtc accacagtgg 1080

atcccaaata caattattca aaggatgcaa atgatgtcat cacaatggat cccaaagaca 1140

attggtcaaa agatgcaaat gatacactac tgctgcagct cacaaacacc tctgcatatt 1200

acatgtacct cctcctgctc ctcaagagtg tggtctattt tgccatcatc acctgctgtc 1260

tgcttagaag aacggctttc tgctgcaatg gagagaaatc ataacagacg gtggcacaag 1320

gaggccatct tttcctcatc ggttattgtc cctagaagcg tcttctgagg atctagttgg 1380

gctttctttc tgggtttggg ccatttcagt tctcatgtgt gtactattct atcattattg 1440

tataatggtt ttcaaaccag tgggcacaca gagaacctca ctctgtaata acaatgagga 1500

atagccatgg cgatctccag caccaatctc tccatgtttt ccacagctcc tccagccaac 1560

ccaaatagcg cctgctatag tgtagacagc ctgcggcttc tagccttgtc cctctcttag 1620

tgttctttaa tcagataact gcctggaagc ctttcatttt acacgccctg aagcagtctt 1680

ctttgctagt tgaattatgt ggtgtgtttt tccgtaataa gcaaaataaa tttaaaaaaa 1740

tgaaaaaaaa aaaaaaa 1757

<210> 276
<211> 204
<212> PRT
<213> Homo sapiens

<400> 276

Lys Gln Leu Asp Ala Asp Val Ser Pro Lys Pro Thr Ile Phe Leu Pro
1 5 10 15

Ser Ile Ala Glu Thr Lys Leu Gln Lys Ala Gly Thr Tyr Leu Cys Leu
20 25 30

Leu Glu Lys Phe Phe Pro Asp Ile Ile Lys Ile His Trp Gln Glu Lys
35 40 45

Lys Ser Asn Thr Ile Leu Gly Ser Gln Glu Gly Asn Thr Met Lys Thr
50 55 60

Asn Asp Thr Tyr Met Lys Phe Ser Trp Leu Thr Val Pro Glu Glu Ser
65 70 75 80

Leu Asp Lys Glu His Arg Cys Ile Val Arg His Glu Asn Asn Lys Asn
85 90 95

Gly Ile Asp Gln Glu Ile Ile Phe Pro Pro Ile Lys Thr Asp Val Thr
100 105 110

Thr Val Asp Pro Lys Asp Ser Tyr Ser Lys Asp Ala Asn Asp Val Thr
115 120 125

Thr Val Asp Pro Lys Tyr Asn Tyr Ser Lys Asp Ala Asn Asp Val Ile
130 135 140

Thr Met Asp Pro Lys Asp Asn Trp Ser Lys Asp Ala Asn Asp Thr Leu
145 150 155 160

Leu Leu Gln Leu Thr Asn Thr Ser Ala Tyr Tyr Met Tyr Leu Leu Leu
165 170 175

Leu Leu Lys Ser Val Val Tyr Phe Ala Ile Ile Thr Cys Cys Leu Leu
180 185 190

Gly Arg Thr Ala Phe Cys Cys Asn Gly Glu Lys Ser
195 200

<210> 277
<211> 264
<212> DNA
<213> Homo sapiens

<400> 277
atgagactcc atttgcttct ccttattctc cttctttttt caattctctt atccccagta 60

agaggtggtt tgggtcctgc ggaaggtcat tgtctcaatt tgtttggtgt ttgcagaaca 120

gatgtctgca acatagtaga agatcaaatt ggtgcctgcc gaagaaggat gaagtgctgt 180

agagcatggt ggattttaat gccaattcca acaccactta tcatgtcaga ttatcaagaa 240

ccccttaaac ctaacttgaa atga 264

<210> 278
<211> 87
<212> PRT
<213> Homo sapiens

<400> 278

Met Arg Leu His Leu Leu Leu Leu Ile Leu Leu Leu Phe Ser Ile Leu
1 5 10 15

Leu Ser Pro Val Arg Gly Gly Leu Gly Pro Ala Glu Gly His Cys Leu
20 25 30

Asn Leu Phe Gly Val Cys Arg Thr Asp Val Cys Asn Ile Val Glu Asp
35 40 45

Gln Ile Gly Ala Cys Arg Arg Arg Met Lys Cys Cys Arg Ala Trp Trp
50 55 60

Ile Leu Met Pro Ile Pro Thr Pro Leu Ile Met Ser Asp Tyr Gln Glu
65 70 75 80

Pro Leu Lys Pro Asn Leu Lys
85

<210> 279
<211> 2053
<212> DNA
<213> Homo sapiens

<400> 279
caggcagcag gcagcaggcg ggcgcgctgt ggctccgcgc cgcgcggtcc gggctctgtt 60

cattcatgat tggtactcgg ccctccgaga cccagcccga gcgcagggag gggagccgag 120

tgtgcggcag gaggggcggg cggacggcgg ctcccgcacc gcacgcggcg ctggctcggc 180

agcctcggcc gggcggccgc tctggccccg tgtccagtgc caggcaggct tcagggcacc 240

gtcctcggcc ctgggcgagg gaaccgccgg gccgggtcct cgcgcgggga agcggttccg 300

aaggctcgcg gggagcggct agccctgagt ccctgcatgt gcggggctga agaaggaagc 360

cagaagcctc ctagcctcgc ctccacgctt gctgaatacc aagctgcagg cgagctgccg 420

ggcgcttttc tctcctccaa ttcagagtag acaaaccacg gggatttctt tccagggtag 480

gggaggggcc gggcccgggg tcccaactcg cactcaagtc ttcgctgcca tgggggccgt 540

catgggcacc ttctcatctc tgcaaaccaa acaaaggcga ccctcgaaag acatcgcctg 600

gtggtattac cagtatcaga gagataagat tgaagatgag ctggagatga ccatggtttg 660

ccatcggccc gagggactgg agcagctcga ggcccagacc aacttcacca agagggagct 720

gcaggtcctt tatcgaggct tcaaaaatga gtgccccagt ggtgtggtca acgaagacac 780

attcaagcag atctatgctc agtttttccc tcatggagat gccagcacgt atgcccatta 840

cctcttcaat gccttcgaca ccactcagac aggctccgtg aagttcgagg actttgtaac 900

cgctctgtcg attttattga gaggaactgt ccacgagaaa ctaaggtgga catttaattt 960

gtatgacatc aacaaggacg gatacataaa caaagaggag atgatggaca ttgtcaaagc 1020

catctatgac atgatgggga aatacacata tcctgtgctc aaagaggaca ctccaaggca 1080

gcatgtggac gtcttcttcc agaaaatgga caaaaataaa gatggcatcg taactttaga 1140

tgaatttctt gaatcatgtc aggaggacga caacatcatg aggtctctcc agctgtttca 1200

aaatgtcatg taactggtga cactcagcca ttcagctctc agagacattg tactaaacaa 1260

ccaccttaac accctgatct gcccttgttc tgattttaca caccaactct tgggacagaa 1320

acacctttta cactttggaa gaattctctg ctgaagactt tctatggaac ccagcatcat 1380

gtggctcagt ctctgattgc caactcttcc tctttcttct tcttgagaga gacaagatga 1440

aatttgagtt tgttttggaa gcatgctcat ctcctcacac tgctgcccta tggaaggtcc 1500

ctctgcttaa gcttaaacag tagtgcacaa aatatgctgc ttacgtgccc ccagcccact 1560

gcctccaagt caggcagacc ttggtgaatc tggaagcaag aggacctgag ccagatgcac 1620

accatctctg atggcctccc aaaccaatgt gcctgtttct cttcctttgg tgggaagaat 1680

gagagttatc cagaacaatt aggatctgtc atgaccagat tgggagagcc agcacctaac 1740

atatgtggga taggactgaa ttattaagca tgatattgtc tgatgaccca aactgcccat 1800

gtcatttgtt tccagaaacg aggaccaata attctctcac actggcattt gtgctggtag 1860

tacaagtcct ttaatatgtc caggaaggga gccattgccc agtggtccat atctccacca 1920

catcccctgc ttgagcccag cgctgcatgt ccctcccaag aagtccagaa tgcctgcaaa 1980

ttgctgtaat tttataccat gttctaacca ataaacagaa ctatttctta cactctcaaa 2040

aaaaaaaaaa aaa 2053

<210> 280
<211> 227
<212> PRT
<213> Homo sapiens

<400> 280

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

Arg Pro Ser Lys Asp Ile Ala Trp Trp Tyr Tyr Gln Tyr Gln Arg Asp
20 25 30

Lys Ile Glu Asp Glu Leu Glu Met Thr Met Val Cys His Arg Pro Glu
35 40 45

Gly Leu Glu Gln Leu Glu Ala Gln Thr Asn Phe Thr Lys Arg Glu Leu
50 55 60

Gln Val Leu Tyr Arg Gly Phe Lys Asn Glu Cys Pro Ser Gly Val Val
65 70 75 80

Asn Glu Asp Thr Phe Lys Gln Ile Tyr Ala Gln Phe Phe Pro His Gly
85 90 95

Asp Ala Ser Thr Tyr Ala His Tyr Leu Phe Asn Ala Phe Asp Thr Thr
100 105 110

Gln Thr Gly Ser Val Lys Phe Glu Asp Phe Val Thr Ala Leu Ser Ile
115 120 125

Leu Leu Arg Gly Thr Val His Glu Lys Leu Arg Trp Thr Phe Asn Leu
130 135 140

Tyr Asp Ile Asn Lys Asp Gly Tyr Ile Asn Lys Glu Glu Met Met Asp
145 150 155 160

Ile Val Lys Ala Ile Tyr Asp Met Met Gly Lys Tyr Thr Tyr Pro Val
165 170 175

Leu Lys Glu Asp Thr Pro Arg Gln His Val Asp Val Phe Phe Gln Lys
180 185 190

Met Asp Lys Asn Lys Asp Gly Ile Val Thr Leu Asp Glu Phe Leu Glu
195 200 205

Ser Cys Gln Glu Asp Asp Asn Ile Met Arg Ser Leu Gln Leu Phe Gln
210 215 220

Asn Val Met
225

<210> 281

<211> 1541
<212> DNA
<213> Homo sapiens

<400> 281
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ctccaacctg ccactgaaca cgtcagtgct gtgtgctgcc tcttggacac ctgcccttga 120

aagcctcagg cccctgggag aagcactctg tccagtcctg tccccggggg ggaggcaggg 180

ccactgagcc ctcctcagat ggttagtggc ttccaacagc catcaggagt gtttcttgaa 240

tgccccaggt gtggaggact tggtctgtga ccacctagaa ccccagagct gaacaggaag 300

ccgtccctgc agcaacaaga gggctggaag ggggagctgc aggccaccct cggctctccc 360

actgctgggg cggtgatgtt cgggtgacat gtttgaaaaa tactcttaaa gataccaact 420

gttcccttat atggctaatg gtttgtgcag ccaccagcga tggcggcccc tattagagac 480

caggtttgtt aaaacaccaa atattgctgt ccacactaga cattaaccgg cttcagaaaa 540

gatggacacc ttttcccacg ctgtttcgct tcttaacttt ggtccagctt tagccaccac 600

acagcgtgtg agggactgct gctgcggagt cagcctcgtt tgtccctccg cctcccacca 660

gcacgcgccg cttctgagag acaccagctc cctgcctcca agcctggtgc cacaggcctg 720

tcgtgaggga cccctgcttc cgagagctcc tgggggggtt ctgcccttca ccacctggga 780

gaggtgtcag ttcagttccg agttgaacaa ggcccgtgca cacagcatgt tgggggccca 840

gcccaaagtt cttgtcacct cctcatgcaa agccagccat caccctccgg ccagagctca 900

aggtggcccc ttggccagcc cctccttggg tcctccagga ggactgagca cccctcctag 960

cggcatccct tgccctccac agtgctgcca ggggcacgtc gctctgtgcc gtggactgag 1020

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cccaggcatc tcggaacgaa actatttagt tccattgtga actggccacg ggacagcttt 1140

ttatcaactt attaagttgg agcactgtaa tcgcgcttgc tgagttagca gtggtggtaa 1200

gcgtgtgtta aacacataat gttacgtttt aggagagaga ggtcgtaagg aagtgtcgtg 1260

tcgctcatga ctctcttcta ttagttgggt aacagtggcc tcatgtttgt gtctgtgtgt 1320

acacagagcc cttaggttct gctctgtttc tttgccaggt gaatgtttgt ggcatgcgct 1380

gctgtccgcg cccctctgtc ctgcgcaggg ttcagctgtg cggcgccctg atttcctcca 1440

tgcacacaga acctccttgt gtctgtttct ctgttcctct gtggctgact caataaactt 1500

ttccctctga aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa a 1541

<210> 282
<211> 192
<212> PRT
<213> Homo sapiens

<400> 282

Met Asp Thr Phe Ser His Ala Val Ser Leu Leu Asn Phe Gly Pro Ala
1 5 10 15

Leu Ala Thr Thr Gln Arg Val Arg Asp Cys Cys Cys Gly Val Ser Leu
20 25 30

Val Cys Pro Ser Ala Ser His Gln His Ala Pro Leu Leu Arg Asp Thr
35 40 45

Ser Ser Leu Pro Pro Ser Leu Val Pro Gln Ala Cys Arg Glu Gly Pro
50 55 60

Leu Leu Pro Arg Ala Pro Gly Gly Val Leu Pro Phe Thr Thr Trp Glu
65 70 75 80

Arg Cys Gln Phe Ser Ser Glu Leu Asn Lys Ala Arg Ala His Ser Met
85 90 95

Leu Gly Ala Gln Pro Lys Val Leu Val Thr Ser Ser Cys Lys Ala Ser
100 105 110

His His Pro Pro Ala Arg Ala Gln Gly Gly Pro Leu Ala Ser Pro Ser
115 120 125

Leu Gly Pro Pro Gly Gly Leu Ser Thr Pro Pro Ser Gly Ile Pro Cys
130 135 140

Pro Pro Gln Cys Cys Gln Gly His Val Ala Leu Cys Arg Gly Leu Arg
145 150 155 160

Pro Ser Pro Gly Asp Arg Met Thr Arg Leu Leu Glu Met Pro Arg Cys
165 170 175

Gln Arg Asn Ser Pro Gly Ile Ser Glu Arg Asn Tyr Leu Val Pro Leu
180 185 190

<210> 283
<211> 3936
<212> DNA
<213> Homo sapiens

<400> 283
aaattctgca agtgaacttg actcaggaag gccagcggct caaggtccag cccctggaag 60

agagaatagc tacagattct ccatcctcag tctttgcaag gcgacagctg tgccagccgg 120

gctctggcag gctcctggca gcatggcagt gaagcttggg accctcctgc tggcccttgc 180

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gaacgtcatt attttctcgg atcacggaat gaccgacatt ttctggatgg acaaagtgat 900

tgagctgaat aagtacatca gcctgaatga cctgcagcaa gtgaaggacc gcgggcctgt 960

tgtgagcctt tggccggccc ctgggaaaca ctctgagata tataacaaac tgagcacagt 1020

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gcacggctac gacaacgagc tcatggacat gcggggcatc ttcctggcct tcggacctga 1260

tttcaaatcc aacttcagag ctgctcctat caggtcggtg gacgtctaca atgtcatgtg 1320

caatgtggtg ggcatcaccc cgctgcccaa caacggatcc tggtccaggg tgatgtgcat 1380

gctgaagggc cgcgccagca ctgccccgcc tgtctggccc agccactgtg ccctggcact 1440

gattcttctc ttcctgcttg cataactgat catattgctt gtctcagaaa aaaacaccat 1500

cagcaaagtg ggcctccaaa gccagatgat tttcatttta tgtgtgaata atagcttcat 1560

taacacaatc aagaccatgc acattgtaaa tacattattc ttggataatt ctatacataa 1620

aagttcctac ttgttaaaaa agatacaaac cttgtttttc cagaaggtag gaaaatccta 1680

gctttccatt tgtgcagtta tatgtcattt tctcctttct tttcacgtta ctcaggatga 1740

actctctgag cagggacctg ctcctgcagc aaccaaactt ggagtggtta ttgcagacag 1800

acgtggctct gggcccctct ctgtcccacc ttgcacaaag gacccctca gaccaggccc 1860

ttgtctgtgc cctgtccaca cccaggagcc atcctcagtg tctgtggcca caatcctgta 1920

ctgttccttc catccctgat aaaaggaggt ctacatgaaa gcaaaagcta ctgtctattt 1980

ctgacccagc tcatggaatt ttttcatctt atactgagct ccagaaagga cgtaacttag 2040

catggatcac caatcaatca aaaaataaat aaatcactaa ggattggaga actcatagaa 2100

caaggtgaaa gacatgagtg ccctcccaaa gtctgagtgc acgaaaattt ctctcttgcc 2160

ttgaggagca gaaaagcttc tgatggacat gggcttctgt gagacttatc acacatagtg 2220

tatcgtggca tgaagcccgg cacatagcag gccctgcata ttgatggaca aatggatggc 2280

ctgcctgcct tccctgtccg ttcacctgtg caaaggcttc ctcagacatg ccactctgtg 2340

gctcccaata tagggtgcag acaagagcaa tccctgacat gacattatag cctgggaaag 2400

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aggtgatgca ctaagcctta atcctggaca ccagtacccc tgcagcatgg cttgctcaac 2520

aacagtcttt gagtggcata gaattccaaa gaaaatggtg ctgggtggag aatggagaga 2580

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tttggccaaa gtaccacctt tgagacctaa gttcttttga tacctttgag aagagccact 2700

gagcctgagt tgaaatattt ttagcttagt catctgtgtt tgctatagga gaaattgtaa 2760

cacaagaaat aactcctttt tacatgatca tttatatcta tatacatata tatacttgca 2820

tacactatca ctgcattaaa aaatgagttt gggctgggca tggtggctca cacctataat 2880

cccaacactt tcggaggcca aggagggaca aacgaaccct tgaggccagg agttccagac 2940

taacttgggc aacacagggc gacccccatc tctacaaaac ataaaagatt tttaaaaaat 3000

tagccaggca tggtggcaca tgcctgtggt ctcagctact tgggaggctg aggcaggaga 3060

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cctgggcaac agagcaagac cccatcctcc acccccccca aaaaatagaa agaaaaaaaa 3180

agtttgcact aattgaggta catctgcaag tgagactttt tgtcaggaaa aggcaatata 3240

tcaggtctcc tcaggacgat ggaggcctta tatggtgtgt taccttgaaa actgaatatc 3300

aacgttcacc ttgattcagg aaagctgggt gctgtctcca tgccatgaat catgagagca 3360

aaggatcact gcttaaaaat actgaattta ccttcacaaa agatttctaa agatttatgt 3420

aatgtgtttt aaaagcgcca gtaaaccatc ggatcaattg gaaagaaggc aactcttcag 3480

cctttgttat ctagctgaaa acaaatgaca actttcaaaa cattggcagt agttgttgaa 3540

aaagacgtct attgttcaaa gtttctttct ccttaaagga cggtgttcca atgaattcag 3600

tagagcccac tttcctccac tgtggaggaa gaatccctaa gagatactca aatgattaaa 3660

ttaaaattgg atcatcaaac tcaagagagg cataaactta gacacagtct tgcatttttg 3720

tctttcctga actcttctgc cattttcctc cttcactcgt cctgaaaatc tgcaagttac 3780

ataataaaac tttagatatt tgtctgacaa agtgtaatta ctcaactgaa taaatgactg 3840

agaacaagtt acaaaaggaa tcatgaatcc tggtaaacaa taaagaagat tcagacactg 3900

agggaaaaaa ataaagcttt ttacttaaat aatgca 3936

<210> 284
<211> 440
<212> PRT
<213> Homo sapiens

<400> 284

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Met Ala Val Lys Leu Gly Thr Leu Leu Leu Ala Leu Ala Leu Gly Leu
1               5                  10                  15

Ala Gln Pro Ala Ser Ala Arg Arg Lys Leu Leu Val Phe Leu Leu Asp
            20                  25                  30

Gly Phe Arg Ser Asp Tyr Ile Ser Asp Glu Ala Leu Glu Ser Leu Pro
        35                  40                  45

Gly Phe Lys Glu Ile Val Ser Arg Gly Val Lys Val Asp Tyr Leu Thr
    50                  55                  60

Pro Asp Phe Pro Ser Leu Ser Tyr Pro Asn Tyr Tyr Thr Leu Met Thr
65                  70                  75                  80

Gly Arg His Cys Glu Val His Gln Met Ile Gly Asn Tyr Met Trp Asp
                85                  90                  95

Pro Thr Thr Asn Lys Ser Phe Asp Ile Gly Val Asn Lys Asp Ser Leu
            100                 105                 110

Met Pro Leu Trp Trp Asn Gly Ser Glu Pro Leu Trp Val Thr Leu Thr
        115                 120                 125

Lys Ala Lys Arg Lys Val Tyr Met Tyr Tyr Trp Pro Gly Cys Glu Val
    130                 135                 140

Glu Ile Leu Gly Val Arg Pro Thr Tyr Cys Leu Glu Tyr Lys Asn Val
145                 150                 155                 160

Pro Thr Asp Ile Asn Phe Ala Asn Ala Val Ser Asp Ala Leu Asp Ser
                165                 170                 175

Phe Lys Ser Gly Arg Ala Asp Leu Ala Ala Ile Tyr His Glu Arg Ile
            180                 185                 190

Asp Val Glu Gly His His Tyr Gly Pro Ala Ser Pro Gln Arg Lys Asp
        195                 200                 205

Ala Leu Lys Ala Val Asp Thr Val Leu Lys Tyr Met Thr Lys Trp Ile
    210                 215                 220
```

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Gln Glu Arg Gly Leu Gln Asp Arg Leu Asn Val Ile Ile Phe Ser Asp
225                 230                 235                 240

His Gly Met Thr Asp Ile Phe Trp Met Asp Lys Val Ile Glu Leu Asn
                245                 250                 255

Lys Tyr Ile Ser Leu Asn Asp Leu Gln Gln Val Lys Asp Arg Gly Pro
            260                 265                 270

Val Val Ser Leu Trp Pro Ala Pro Gly Lys His Ser Glu Ile Tyr Asn
        275                 280                 285

Lys Leu Ser Thr Val Glu His Met Thr Val Tyr Glu Lys Glu Ala Ile
    290                 295                 300

Pro Ser Arg Phe Tyr Tyr Lys Lys Gly Lys Phe Val Ser Pro Leu Thr
305                 310                 315                 320

Leu Val Ala Asp Glu Gly Trp Phe Ile Thr Glu Asn Arg Glu Met Leu
                325                 330                 335

Pro Phe Trp Met Asn Ser Thr Gly Arg Arg Glu Gly Trp Gln Arg Gly
            340                 345                 350

Trp His Gly Tyr Asp Asn Glu Leu Met Asp Met Arg Gly Ile Phe Leu
        355                 360                 365

Ala Phe Gly Pro Asp Phe Lys Ser Asn Phe Arg Ala Ala Pro Ile Arg
    370                 375                 380

Ser Val Asp Val Tyr Asn Val Met Cys Asn Val Val Gly Ile Thr Pro
385                 390                 395                 400

Leu Pro Asn Asn Gly Ser Trp Ser Arg Val Met Cys Met Leu Lys Gly
                405                 410                 415

Arg Ala Ser Thr Ala Pro Pro Val Trp Pro Ser His Cys Ala Leu Ala
            420                 425                 430

Leu Ile Leu Leu Phe Leu Leu Ala
        435                 440


<210>  285
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<212>  DNA
<213>  Homo sapiens

<400>  285
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tcagatactg gggactttac agtcccacag aaccgtcctc ccaggaagct gaattcagca 180

agaacaatgg aggccagcgg gaagctcatt tgcagacaaa ggcaagtcct tttttccttt 240

ctccttttgg gcttatctct ggcgggcgcg gcggaaccta gaagctattc tgtggtggag 300

gaaactgagg gcagctcctt tgtcaccaat ttagcaaagg acctgggtct ggagcagagg 360

gaattctcca ggcggggggt tagggttgtt tccagaggga acaaactaca tttgcagctc 420

aatcaggaga ccgcggattt gttgctaaat gagaaattgg accgtgagga tctgtgcggt 480

cacacagagc cctgtgtgct acgtttccaa gtgttgctag agagtccctt cgagtttttt 540

caagctgagc tgcaagtaat agacataaac gaccactctc cagtatttct ggacaaacaa 600

atgttggtga aagtatcaga gagcagtcct cctgggactg cgtttcctct gaagaatgct 660

gaagacttag atataggcca aaacaatatt gagaactata taatcagccc caactcctat 720

tttcgggtcc tcacccgcaa acgcagtgat ggcaggaaat acccagagct ggtgctggac 780

aacgcgctgg accgagagga agaagctgag ctcaggttaa cactcacagc actggatggt 840

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aatgcccctg aatttcagca gcctttctat agggtgcaga tctctgagga cagtccaata 960

agcttcctgg ttgtgaaggt ctctgccacg gatgtagaca caggagtcaa cggagagatt 1020

tcctattcac ttttccaagc ttcagatgag ataagcaaaa cttttaaggt cgatttcttg 1080

acaggagaaa ttcgactaaa gaaacaactt gatttcgaaa aatttcagtc ctatgaagtc 1140

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gagaatgcgc ctgaaactgt ggttgcactt ttcagtgttt cagaccttga ttcaggagaa 1320

aatgggaaaa taagttgctc cattcaggag gatctaccct tcctcctgaa atcttctgtg 1380

gggaactttt acaccctact aacagagaca ccactagaca gagaaagcag agccgagtac 1440

aacgtcacta tcaccgtcac tgacttaggg acacccaggc tgacaacaca tctcaatatg 1500

accgtgctgg tgtcggacgt caatgacaac gcccccgcct tcacccaaac ctcctacacc 1560

ctgttcgtcc gcgagaacaa cagccccgcc ctgcacatcg gcagcgtcag cgccacagac 1620

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cagaacgcct ggctgtcgta ccagctgctc aaggccacgg agcccgggct gttcggtgtg 2040

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gacgtgaggg gcaccgggag cctgtctcag aactatcagt acgaggtgtg cctggcagga 2460

ggctcaggga cgaatgagtt ccagttcctg aaaccagtat tacctaatat tcagggccat 2520

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<210> 286
<211> 801
<212> PRT
<213> Homo sapiens

<400> 286

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Ser Phe Leu Leu Leu Gly Leu Ser Leu Ala Gly Ala Ala Glu Pro Arg
20 25 30

Ser Tyr Ser Val Val Glu Glu Thr Glu Gly Ser Ser Phe Val Thr Asn
35 40 45

Leu Ala Lys Asp Leu Gly Leu Glu Gln Arg Glu Phe Ser Arg Arg Gly
50 55 60

Val Arg Val Val Ser Arg Gly Asn Lys Leu His Leu Gln Leu Asn Gln
65 70 75 80

Glu Thr Ala Asp Leu Leu Leu Asn Glu Lys Leu Asp Arg Glu Asp Leu
85 90 95

Cys Gly His Thr Glu Pro Cys Val Leu Arg Phe Gln Val Leu Leu Glu
100 105 110

Ser Pro Phe Glu Phe Phe Gln Ala Glu Leu Gln Val Ile Asp Ile Asn
115 120 125

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Asp His Ser Pro Val Phe Leu Asp Lys Gln Met Leu Val Lys Val Ser
    130                 135                 140

Glu Ser Ser Pro Pro Gly Thr Ala Phe Pro Leu Lys Asn Ala Glu Asp
145                 150                 155                 160

Leu Asp Ile Gly Gln Asn Asn Ile Glu Asn Tyr Ile Ile Ser Pro Asn
                165                 170                 175

Ser Tyr Phe Arg Val Leu Thr Arg Lys Arg Ser Asp Gly Arg Lys Tyr
            180                 185                 190

Pro Glu Leu Val Leu Asp Asn Ala Leu Asp Arg Glu Glu Glu Ala Glu
        195                 200                 205

Leu Arg Leu Thr Leu Thr Ala Leu Asp Gly Gly Ser Pro Pro Arg Ser
    210                 215                 220

Gly Thr Ala Gln Val Tyr Ile Glu Val Val Asp Val Asn Asp Asn Ala
225                 230                 235                 240

Pro Glu Phe Gln Gln Pro Phe Tyr Arg Val Gln Ile Ser Glu Asp Ser
                245                 250                 255

Pro Ile Ser Phe Leu Val Val Lys Val Ser Ala Thr Asp Val Asp Thr
            260                 265                 270

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

Ile Ser Lys Thr Phe Lys Val Asp Phe Leu Thr Gly Glu Ile Arg Leu
    290                 295                 300

Lys Lys Gln Leu Asp Phe Glu Lys Phe Gln Ser Tyr Glu Val Asn Ile
305                 310                 315                 320

Glu Ala Arg Asp Ala Gly Gly Phe Ser Gly Lys Cys Thr Val Leu Ile
                325                 330                 335

Gln Val Ile Asp Val Asn Asp His Ala Pro Glu Val Thr Met Ser Ala
            340                 345                 350

Phe Thr Ser Pro Ile Pro Glu Asn Ala Pro Glu Thr Val Val Ala Leu
        355                 360                 365

Phe Ser Val Ser Asp Leu Asp Ser Gly Glu Asn Gly Lys Ile Ser Cys
    370                 375                 380
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Ser Ile Gln Glu Asp Leu Pro Phe Leu Leu Lys Ser Ser Val Gly Asn
385                 390                 395                 400

Phe Tyr Thr Leu Leu Thr Glu Thr Pro Leu Asp Arg Glu Ser Arg Ala
                405                 410                 415

Glu Tyr Asn Val Thr Ile Thr Val Thr Asp Leu Gly Thr Pro Arg Leu
            420                 425                 430

Thr Thr His Leu Asn Met Thr Val Leu Val Ser Asp Val Asn Asp Asn
        435                 440                 445

Ala Pro Ala Phe Thr Gln Thr Ser Tyr Thr Leu Phe Val Arg Glu Asn
    450                 455                 460

Asn Ser Pro Ala Leu His Ile Gly Ser Val Ser Ala Thr Asp Arg Asp
465                 470                 475                 480

Ser Gly Thr Asn Ala Gln Val Thr Tyr Ser Leu Leu Pro Pro Gln Asp
                485                 490                 495

Pro His Leu Pro Leu Ala Ser Leu Val Ser Ile Asn Thr Asp Asn Gly
            500                 505                 510

His Leu Phe Ala Leu Arg Ser Leu Asp Tyr Glu Ala Leu Gln Ala Phe
        515                 520                 525

Glu Phe Arg Val Gly Ala Ser Asp Arg Gly Ser Pro Ala Leu Ser Ser
    530                 535                 540

Glu Ala Leu Val Arg Val Leu Val Leu Asp Ala Asn Asp Asn Ser Pro
545                 550                 555                 560

Phe Val Leu Tyr Pro Leu Gln Asn Gly Ser Ala Pro Cys Thr Glu Leu
                565                 570                 575

Val Pro Arg Ala Ala Glu Pro Gly Tyr Leu Val Thr Lys Val Val Ala
            580                 585                 590

Val Asp Gly Asp Ser Gly Gln Asn Ala Trp Leu Ser Tyr Gln Leu Leu
        595                 600                 605

Lys Ala Thr Glu Pro Gly Leu Phe Gly Val Trp Ala His Asn Gly Glu
    610                 615                 620

Val Arg Thr Ala Arg Leu Leu Ser Glu Arg Asp Ala Ala Lys Gln Arg
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625 630 635 640

Leu Val Val Leu Val Lys Asp Asn Gly Glu Pro Pro Cys Ser Ala Thr
645 650 655

Ala Thr Leu His Leu Leu Leu Val Asp Gly Phe Ser Gln Pro Tyr Leu
660 665 670

Pro Leu Pro Glu Ala Ala Pro Ala Gln Gly Gln Ala Asp Ser Leu Thr
675 680 685

Val Tyr Leu Val Val Ala Leu Ala Ser Val Ser Ser Leu Phe Leu Phe
690 695 700

Ser Val Leu Leu Phe Val Ala Val Leu Leu Cys Arg Arg Ser Arg Ala
705 710 715 720

Ala Ser Val Gly Arg Cys Ser Val Pro Glu Gly Pro Phe Pro Gly His
725 730 735

Leu Val Asp Val Arg Gly Thr Gly Ser Leu Ser Gln Asn Tyr Gln Tyr
740 745 750

Glu Val Cys Leu Ala Gly Gly Ser Gly Thr Asn Glu Phe Gln Phe Leu
755 760 765

Lys Pro Val Leu Pro Asn Ile Gln Gly His Ser Phe Gly Pro Glu Met
770 775 780

Glu Gln Asn Ser Asn Phe Arg Asn Gly Phe Gly Phe Ser Leu Gln Leu
785 790 795 800

Lys

<210> 287
<211> 957
<212> DNA
<213> Homo sapiens

<400> 287
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ttgatggccc tcactgggaa tgccctcctc atcctcctca tccactcaga gccccgcctc 180

cacaccccca tgtacttctt catcagccag ctcgcgctca tggatctcat gtacctatgc 240

gtgactgtgc ccaagatgct tgtgggccag gtcactggag atgataccat ttccccgtca 300

ggctgtggga tccagatgtt cttctacctg accctggctg gagctgaggt ttcctcctg 360

gctgccatgg cctatgaccg atatgctgct gtttgcagac ctctccatta cccactgctg 420

atgaaccaga gggtgtgcca gctcctggtg tcagcctgct gggttttggg aatggttgat 480

ggtttgttgc tcacccccat taccatgagc ttccccttt gccagtctag gaaaatcctg 540

agttttttct gtgagactcc tgccctgctg aagctctcct gctctgacgt ctccctctat 600

aagacgctca tgtacctgtg ctgcatcctc atgcttctcg cccccatcat ggtcatctcc 660

agctcataca ccctcatcct gcatctcatc cacaggatga attctgccgc cggccacagg 720

aaggccttgg ccacctgctc ctcccacatg atcatagtgc tgctgctctt cggtgcttcc 780

ttctacacct acatgctccc gagttcctac cacacagctg agcaggacat gatggtgtct 840

gccttttaca ccatcttcac tcctgtgctg aacccctca tttacagtct ccgcaacaaa 900

gatgtcacca gggctctgag gagcatgatg cagtcaagaa tgaaccaaga aaagtag 957

<210> 288
<211> 318
<212> PRT
<213> Homo sapiens

<400> 288

Met Cys Ser Gly Asn Gln Thr Ser Gln Asn Gln Thr Ala Ser Thr Asp
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Phe Thr Leu Thr Gly Leu Phe Ala Glu Ser Lys His Ala Ala Leu Leu
20 25 30

Tyr Thr Val Thr Phe Leu Leu Phe Leu Met Ala Leu Thr Gly Asn Ala
35 40 45

Leu Leu Ile Leu Leu Ile His Ser Glu Pro Arg Leu His Thr Pro Met
50 55 60

Tyr Phe Phe Ile Ser Gln Leu Ala Leu Met Asp Leu Met Tyr Leu Cys
65 70 75 80

Val Thr Val Pro Lys Met Leu Val Gly Gln Val Thr Gly Asp Asp Thr
85 90 95

Ile Ser Pro Ser Gly Cys Gly Ile Gln Met Phe Phe Tyr Leu Thr Leu
100 105 110

Ala Gly Ala Glu Val Phe Leu Leu Ala Ala Met Ala Tyr Asp Arg Tyr
115 120 125

Ala Ala Val Cys Arg Pro Leu His Tyr Pro Leu Leu Met Asn Gln Arg

```
    130                 135                 140

Val Cys Gln Leu Leu Val Ser Ala Cys Trp Val Leu Gly Met Val Asp
145                 150                 155                 160

Gly Leu Leu Leu Thr Pro Ile Thr Met Ser Phe Pro Phe Cys Gln Ser
                165                 170                 175

Arg Lys Ile Leu Ser Phe Phe Cys Glu Thr Pro Ala Leu Leu Lys Leu
            180                 185                 190

Ser Cys Ser Asp Val Ser Leu Tyr Lys Thr Leu Met Tyr Leu Cys Cys
        195                 200                 205

Ile Leu Met Leu Leu Ala Pro Ile Met Val Ile Ser Ser Ser Tyr Thr
    210                 215                 220

Leu Ile Leu His Leu Ile His Arg Met Asn Ser Ala Ala Gly His Arg
225                 230                 235                 240

Lys Ala Leu Ala Thr Cys Ser Ser His Met Ile Ile Val Leu Leu Leu
                245                 250                 255

Phe Gly Ala Ser Phe Tyr Thr Tyr Met Leu Pro Ser Ser Tyr His Thr
            260                 265                 270

Ala Glu Gln Asp Met Met Val Ser Ala Phe Tyr Thr Ile Phe Thr Pro
        275                 280                 285

Val Leu Asn Pro Leu Ile Tyr Ser Leu Arg Asn Lys Asp Val Thr Arg
    290                 295                 300

Ala Leu Arg Ser Met Met Gln Ser Arg Met Asn Gln Glu Lys
305                 310                 315
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<210> 289
<211> 948
<212> DNA
<213> Homo sapiens

<400> 289

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ccagtgctag agaagatcct gtttggggtg ttcctggcga tctacctaat cacactggca      120

ggcaacctgt gcatgatcct gctgatcagg accaattccc aactgcaaac acccatgtat      180

ttcttccttg gtcacctctc ctttgtagac atttgctatt cttccaatgt tactccaaat      240

atgctgcaca atttcctctc agaacagaag accatctcct acgctggatg cttcacacag      300
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tgtcttctct tcatcgccct agtgatcact gagttttact tccttgcttc aatggcattg 360

gatcgctatg tagccatttg cagcccttta cattacagtt ccaggatgtc caagaacatt 420

tgcatctctc tggtcactgt gccttacatg tatggcttcc ttaatgggct ctctcagaca 480

ctgctgacct ttcacttatc cttctgtggc tcccttgaaa tcaatcattt ctactgcgct 540

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aggcctccat cagagaagtc tgtagaggag tccaaaataa ttgcagtctt ttatactttt 840

ttgagcccaa tgctgaaccc attgatctat agcctacgga acagagatgt aatccttgcc 900

atacaacaaa tgattagggg aaaatccttt tgtaaaattg cagtttag 948

<210> 290
<211> 315
<212> PRT
<213> Homo sapiens

<400> 290

Met Leu Ser Pro Asn His Thr Ile Val Thr Glu Phe Ile Leu Leu Gly
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Leu Thr Asp Asp Pro Val Leu Glu Lys Ile Leu Phe Gly Val Phe Leu
20 25 30

Ala Ile Tyr Leu Ile Thr Leu Ala Gly Asn Leu Cys Met Ile Leu Leu
35 40 45

Ile Arg Thr Asn Ser Gln Leu Gln Thr Pro Met Tyr Phe Phe Leu Gly
50 55 60

His Leu Ser Phe Val Asp Ile Cys Tyr Ser Ser Asn Val Thr Pro Asn
65 70 75 80

Met Leu His Asn Phe Leu Ser Glu Gln Lys Thr Ile Ser Tyr Ala Gly
85 90 95

Cys Phe Thr Gln Cys Leu Leu Phe Ile Ala Leu Val Ile Thr Glu Phe
100 105 110

Tyr Phe Leu Ala Ser Met Ala Leu Asp Arg Tyr Val Ala Ile Cys Ser
115 120 125

Pro Leu His Tyr Ser Ser Arg Met Ser Lys Asn Ile Cys Ile Ser Leu

130 135 140

Val Thr Val Pro Tyr Met Tyr Gly Phe Leu Asn Gly Leu Ser Gln Thr
145 150 155 160

Leu Leu Thr Phe His Leu Ser Phe Cys Gly Ser Leu Glu Ile Asn His
165 170 175

Phe Tyr Cys Ala Asp Pro Pro Leu Ile Met Leu Ala Cys Ser Asp Thr
180 185 190

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

Ser Ser Leu Phe Ile Ile Leu Leu Ser Tyr Leu Phe Ile Phe Ala Ala
210 215 220

Ile Phe Arg Ile Arg Ser Ala Glu Gly Arg His Lys Ala Phe Ser Thr
225 230 235 240

Cys Ala Ser His Leu Thr Ile Val Thr Leu Phe Tyr Gly Thr Leu Phe
245 250 255

Cys Met Tyr Val Arg Pro Pro Ser Glu Lys Ser Val Glu Glu Ser Lys
260 265 270

Ile Ile Ala Val Phe Tyr Thr Phe Leu Ser Pro Met Leu Asn Pro Leu
275 280 285

Ile Tyr Ser Leu Arg Asn Arg Asp Val Ile Leu Ala Ile Gln Gln Met
290 295 300

Ile Arg Gly Lys Ser Phe Cys Lys Ile Ala Val
305 310 315

<210> 291
<211> 930
<212> DNA
<213> Homo sapiens

<400> 291
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atgcagcata catgctttgt ggtattcttc ctctttcatg tgctcactgt cctggggaac 120

cttctggtca tcatcaccat caatgctaga aagaccctga agtctcccat gtatttcttc 180

ctgagccagt tgtcttttgc tgacatatgt tatccatcca ctaccatacc caagatgatt 240

gctgacactt ttgtggagca taagatcatc tccttcaatg gctgcatgac ccagctcttt 300

tctgcccact tctttggtgg cactgagatc ttcctcctta cagccatggc ctatgaccgc 360

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acggttcagc tgccttttg tgggcccaat gagatagaca acttcttctg tgatgttcat 540

cccctgctca agttggcctg tgcagacacc tacatggtag gtctcatcgt ggtggccaac 600

agcggtatga tttctttagc atccttttt atccttatca tttcctatgt tatcatctta 660

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cacgtaatca ctgtcctttt ggttctcatg ccccccatgt tcatgtacat tcgtccctcc 780

accaccctgg ctgctgacaa acttatcatc ctctttaaca ttgtgatgcc acctttgctg 840

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agggtcaaga ggagcttagg ggagaagtga 930

<210> 292
<211> 309
<212> PRT
<213> Homo sapiens

<400> 292

Met Gly Ala Lys Asn Asn Val Thr Glu Phe Val Leu Phe Gly Leu Phe
1 5 10 15

Glu Ser Arg Glu Met Gln His Thr Cys Phe Val Val Phe Phe Leu Phe
20 25 30

His Val Leu Thr Val Leu Gly Asn Leu Leu Val Ile Ile Thr Ile Asn
35 40 45

Ala Arg Lys Thr Leu Lys Ser Pro Met Tyr Phe Phe Leu Ser Gln Leu
50 55 60

Ser Phe Ala Asp Ile Cys Tyr Pro Ser Thr Thr Ile Pro Lys Met Ile
65 70 75 80

Ala Asp Thr Phe Val Glu His Lys Ile Ile Ser Phe Asn Gly Cys Met
85 90 95

Thr Gln Leu Phe Ser Ala His Phe Phe Gly Gly Thr Glu Ile Phe Leu
100 105 110

Leu Thr Ala Met Ala Tyr Asp Arg Tyr Val Ala Ile Cys Arg Pro Leu
115 120 125

His Tyr Thr Ala Ile Met Asp Cys Arg Lys Cys Gly Leu Leu Ala Gly

130 135 140

Ala Ser Trp Leu Ala Gly Phe Leu His Ser Ile Leu Gln Thr Leu Leu
145 150 155 160

Thr Val Gln Leu Pro Phe Cys Gly Pro Asn Glu Ile Asp Asn Phe Phe
165 170 175

Cys Asp Val His Pro Leu Leu Lys Leu Ala Cys Ala Asp Thr Tyr Met
180 185 190

Val Gly Leu Ile Val Val Ala Asn Ser Gly Met Ile Ser Leu Ala Ser
195 200 205

Phe Phe Ile Leu Ile Ile Ser Tyr Val Ile Ile Leu Leu Asn Leu Arg
210 215 220

Ser Gln Ser Ser Glu Asp Arg Arg Lys Ala Val Ser Thr Cys Gly Ser
225 230 235 240

His Val Ile Thr Val Leu Leu Val Leu Met Pro Pro Met Phe Met Tyr
245 250 255

Ile Arg Pro Ser Thr Thr Leu Ala Ala Asp Lys Leu Ile Ile Leu Phe
260 265 270

Asn Ile Val Met Pro Pro Leu Leu Asn Pro Leu Ile Tyr Thr Leu Arg
275 280 285

Asn Asn Asp Val Lys Asn Ala Met Arg Lys Leu Phe Arg Val Lys Arg
290 295 300

Ser Leu Gly Glu Lys
305

<210> 293
<211> 4300
<212> DNA
<213> Homo sapiens

<400> 293
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cctcgggacg gccttgtatg ctgtgcgccc cgcaccccgg ctgcgcgctc cgatcccagc 120

gggaggggac gcccggcccg caggctccca ggggaggggt ggctcctgca aaatggtccc 180

tcacctcttg ctgctctgtc tcctcccctt ggtgcgagcc accgagcccc acgagggccg 240

ggccgacgag cagagcgcgg aggcggccct ggccgtgccc aatgcctcgc acttcttctc 300

ttggaacaac tacaccttct ccgactggca gaactttgtg ggcaggaggc gctacggcgc 360

tgagtcccag aaccccacgg tgaaagccct gctcattgtg gcttactcct tcatcattgt 420

cttctcactc tttggcaacg tcctggtctg tcatgtcatc ttcaagaacc agcgaatgca 480

ctcggccacc agcctcttca tcgtcaacct ggcagttgcc gacataatga tcacgctgct 540

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caagaaactg tggctgtgta atatgattgg cgatgtgacc acagagcagt actttgccct 1020

gcggcgcaaa aagaagaaga ccatcaagat gttgatgctg gtggtagtcc tctttgccct 1080

ctgctggttc cccctcaact gctacgtcct cctcctgtcc agcaaggtca tccgcaccaa 1140

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<212> PRT
<213> Homo sapiens

<400> 294

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35 40 45

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

Ser Gln Asn Pro Thr Val Lys Ala Leu Leu Ile Val Ala Tyr Ser Phe
65 70 75 80

Ile Ile Val Phe Ser Leu Phe Gly Asn Val Leu Val Cys His Val Ile
85 90 95

Phe Lys Asn Gln Arg Met His Ser Ala Thr Ser Leu Phe Ile Val Asn
100 105 110

Leu Ala Val Ala Asp Ile Met Ile Thr Leu Leu Asn Thr Pro Phe Thr
115 120 125

Leu Val Arg Phe Val Asn Ser Thr Trp Ile Phe Gly Lys Gly Met Cys
130 135 140

His Val Ser Arg Phe Ala Gln Tyr Cys Ser Leu His Val Ser Ala Leu
145 150 155 160

Thr Leu Thr Ala Ile Ala Val Asp Arg His Gln Val Ile Met His Pro
165 170 175

Leu Lys Pro Arg Ile Ser Ile Thr Lys Gly Val Ile Tyr Ile Ala Val
180 185 190

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Ile Trp Thr Met Ala Thr Phe Phe Ser Leu Pro His Ala Ile Cys Gln
        195                 200                 205

Lys Leu Phe Thr Phe Lys Tyr Ser Glu Asp Ile Val Arg Ser Leu Cys
    210                 215                 220

Leu Pro Asp Phe Pro Glu Pro Ala Asp Leu Phe Trp Lys Tyr Leu Asp
225                 230                 235                 240

Leu Ala Thr Phe Ile Leu Leu Tyr Ile Leu Pro Leu Leu Ile Ile Ser
                245                 250                 255

Val Ala Tyr Ala Arg Val Ala Lys Lys Leu Trp Leu Cys Asn Met Ile
            260                 265                 270

Gly Asp Val Thr Thr Glu Gln Tyr Phe Ala Leu Arg Arg Lys Lys Lys
        275                 280                 285

Lys Thr Ile Lys Met Leu Met Leu Val Val Val Leu Phe Ala Leu Cys
    290                 295                 300

Trp Phe Pro Leu Asn Cys Tyr Val Leu Leu Leu Ser Ser Lys Val Ile
305                 310                 315                 320

Arg Thr Asn Asn Ala Leu Tyr Phe Ala Phe His Trp Phe Ala Met Ser
                325                 330                 335

Ser Thr Cys Tyr Asn Pro Phe Ile Tyr Cys Trp Leu Asn Glu Asn Phe
            340                 345                 350

Arg Ile Glu Leu Lys Ala Leu Leu Ser Met Cys Gln Arg Pro Pro Lys
        355                 360                 365

Pro Gln Glu Asp Arg Pro Pro Ser Pro Val Pro Ser Phe Arg Val Ala
    370                 375                 380

Trp Thr Glu Lys Asn Asp Gly Gln Arg Ala Pro Leu Ala Asn Asn Leu
385                 390                 395                 400

Leu Pro Thr Ser Gln Leu Gln Ser Gly Lys Thr Asp Leu Ser Ser Val
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ctcctgcttt gccaaactgt tgcaatcatg tatccttcat tccactcatt catcctgatt 840

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<210> 296
<211> 299
<212> PRT
<213> Homo sapiens

<400> 296

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Phe Val Leu Gly Asn Val Ala Asn Gly Phe Ile Ala Leu Val Asn Val
20 25 30

Ile Asp Trp Val Asn Thr Arg Lys Ile Ser Ser Ala Glu Gln Ile Leu
35 40 45

Thr Ala Leu Val Val Ser Arg Ile Gly Leu Leu Trp Val Met Leu Phe
50 55 60

Leu Trp Tyr Ala Thr Val Phe Asn Ser Ala Leu Tyr Gly Leu Glu Val
65 70 75 80

Arg Ile Val Ala Ser Asn Ala Trp Ala Val Thr Asn His Phe Ser Met

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                85                  90                  95

Trp Leu Ala Ala Ser Leu Ser Ile Phe Cys Leu Leu Lys Ile Ala Asn
            100                 105                 110

Phe Ser Asn Leu Ile Ser Leu His Leu Lys Lys Arg Ile Lys Ser Val
        115                 120                 125

Val Leu Val Ile Leu Leu Gly Pro Leu Val Phe Leu Ile Cys Asn Leu
    130                 135                 140

Ala Val Ile Thr Met Asp Glu Arg Val Trp Thr Lys Glu Tyr Glu Gly
145                 150                 155                 160

Asn Val Thr Trp Lys Ile Lys Leu Arg Asn Ala Ile His Leu Ser Ser
                165                 170                 175

Leu Thr Val Thr Thr Leu Ala Asn Leu Ile Pro Phe Thr Leu Ser Leu
            180                 185                 190

Ile Cys Phe Leu Leu Leu Ile Cys Ser Leu Cys Lys His Leu Lys Lys
        195                 200                 205

Met Arg Leu His Ser Lys Gly Ser Gln Asp Pro Ser Thr Lys Val His
    210                 215                 220

Ile Lys Ala Leu Gln Thr Val Thr Ser Phe Leu Met Leu Phe Ala Ile
225                 230                 235                 240

Tyr Phe Leu Cys Ile Ile Thr Ser Thr Trp Asn Leu Arg Thr Gln Gln
                245                 250                 255

Ser Lys Leu Val Leu Leu Leu Cys Gln Thr Val Ala Ile Met Tyr Pro
            260                 265                 270

Ser Phe His Ser Phe Ile Leu Ile Met Gly Ser Arg Lys Leu Lys Gln
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Thr Phe Leu Ser Val Leu Trp Gln Met Thr Arg
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<211> 680
<212> PRT
<213> Homo sapiens

<400> 298

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

Cys Ala Ser Arg Cys Leu Ser Leu Gln Ile Thr Arg Ile Ser Ala Phe
50 55 60

Phe Gln His Phe Gln Asn Asn Gly Ser Leu Val Trp Cys Gln Asn His
65 70 75 80

Lys Gln Cys Ser Lys Cys Leu Glu Pro Cys Lys Glu Ser Gly Asp Leu
85 90 95

Arg Lys His Gln Cys Gln Ser Phe Cys Glu Pro Leu Phe Pro Lys Lys
100 105 110

Ser Tyr Glu Cys Leu Thr Ser Cys Glu Phe Leu Lys Tyr Ile Leu Leu
115 120 125

Val Lys Gln Gly Asp Cys Pro Ala Pro Glu Lys Ala Ser Gly Phe Ala
130 135 140

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Ala Ala Cys Val Glu Ser Cys Glu Val Asp Asn Glu Cys Ser Gly Val
145                 150                 155                 160

Lys Lys Cys Cys Ser Asn Gly Cys Gly His Thr Cys Gln Val Pro Lys
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Thr Leu Tyr Lys Gly Val Pro Leu Lys Pro Arg Lys Glu Leu Arg Phe
            180                 185                 190

Thr Glu Leu Gln Ser Gly Gln Leu Glu Val Lys Trp Ser Ser Lys Phe
        195                 200                 205

Asn Ile Ser Ile Glu Pro Val Ile Tyr Val Val Gln Arg Arg Trp Asn
    210                 215                 220

Tyr Gly Ile His Pro Ser Glu Asp Asp Ala Thr His Trp Gln Thr Val
225                 230                 235                 240

Ala Gln Thr Thr Asp Glu Arg Val Gln Leu Thr Asp Ile Arg Pro Ser
                245                 250                 255

Arg Trp Tyr Gln Phe Arg Val Ala Ala Val Asn Val His Gly Thr Arg
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Gly Phe Thr Ala Pro Ser Lys His Phe Arg Ser Ser Lys Asp Pro Ser
        275                 280                 285

Ala Pro Pro Ala Pro Ala Asn Leu Arg Leu Ala Asn Ser Thr Val Asn
    290                 295                 300

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

Pro Asp Ile Pro Val His His Tyr Lys Val Phe Trp Ser Trp Met Val
                325                 330                 335

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

Asp Gly Phe Gln Asn Ser Val Ile Leu Glu Lys Leu Gln Pro Asp Cys
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Asp Tyr Val Val Glu Leu Gln Ala Ile Thr Tyr Trp Gly Gln Thr Arg
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Leu Lys Ser Ala Lys Val Ser Leu His Phe Thr Ser Thr His Ala Thr
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Gln Leu Pro Phe Gln Arg Arg Arg Pro Thr Arg Pro Leu Glu Val Gly
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Ala Pro Phe Tyr Gln Asp Gly Gln Leu Gln Val Lys Val Tyr Trp Lys
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Lys Thr Glu Asp Pro Thr Val Asn Arg Tyr His Val Arg Trp Phe Pro
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Glu Ala Cys Ala His Asn Arg Thr Thr Gly Ser Glu Ala Ser Ser Gly
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Met Thr His Glu Asn Tyr Ile Ile Leu Gln Asp Leu Ser Phe Ser Cys
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Lys Tyr Lys Val Thr Val Gln Pro Ile Arg Pro Lys Ser His Ser Lys
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Ala Glu Ala Val Phe Phe Thr Thr Pro Pro Cys Ser Ala Leu Lys Gly
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Lys Ser His Lys Pro Val Gly Cys Leu Gly Glu Ala Gly His Val Leu
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Ser Lys Val Leu Ala Lys Pro Glu Asn Leu Ser Ala Ser Phe Ile Val
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Gln Asp Val Asn Ile Thr Gly His Phe Ser Trp Lys Met Ala Lys Ala
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Asn Leu Tyr Gln Pro Met Thr Gly Phe Gln Val Thr Trp Ala Glu Val
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Thr Thr Glu Ser Arg Gln Asn Ser Leu Pro Asn Ser Ile Ile Ser Gln
595 600 605

Ser Gln Ile Leu Pro Ser Asp His Tyr Val Leu Thr Val Pro Asn Leu
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Arg Pro Ser Thr Leu Tyr Arg Leu Glu Val Gln Val Leu Thr Pro Gly
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Gly Glu Gly Pro Ala Thr Ile Lys Thr Phe Arg Thr Pro Glu Leu Pro
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Lys Ile Ser Ile Thr Gln Ile Glu Arg Arg Phe Asp Ile Ser Ser Ser
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Leu Ala Gly Leu Ile Asp Gly Ser Phe Glu Ile Gly Asn Leu Leu Val
65                  70                  75                  80

Ile Val Phe Val Ser Tyr Phe Gly Ser Lys Leu His Arg Pro Lys Leu
                85                  90                  95

Ile Gly Ile Gly Cys Leu Leu Met Gly Thr Gly Ser Ile Leu Thr Ser
            100                 105                 110

Leu Pro His Phe Phe Met Gly Tyr Tyr Arg Tyr Ser Lys Glu Thr His
        115                 120                 125

Ile Asn Pro Ser Glu Asn Ser Thr Ser Ser Leu Ser Thr Cys Leu Ile
    130                 135                 140

Asn Gln Thr Leu Ser Phe Asn Gly Thr Ser Pro Glu Ile Val Glu Lys
145                 150                 155                 160

Asp Cys Val Lys Glu Ser Gly Ser His Met Trp Ile Tyr Val Phe Met
                165                 170                 175

Gly Asn Met Leu Arg Gly Ile Gly Glu Thr Pro Ile Val Pro Leu Gly
            180                 185                 190

Ile Ser Tyr Ile Asp Asp Phe Ala Lys Glu Gly His Ser Ser Leu Tyr
        195                 200                 205

Leu Gly Ser Leu Asn Ala Ile Gly Met Ile Gly Pro Val Ile Gly Phe
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Ala Leu Gly Ser Leu Phe Ala Lys Met Tyr Val Asp Ile Gly Tyr Val
225                 230                 235                 240

Asp Leu Ser Thr Ile Arg Ile Thr Pro Lys Asp Ser Arg Trp Val Gly
                245                 250                 255

Ala Trp Trp Leu Gly Phe Leu Val Ser Gly Leu Phe Ser Ile Ile Ser
            260                 265                 270

Ser Ile Pro Phe Phe Phe Leu Pro Lys Asn Pro Asn Lys Pro Gln Lys
        275                 280                 285
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Arg Asn Gln Thr Ala Asn Leu Thr Asn Gln Gly Lys Asn Val Thr Lys
305                 310                 315                 320

Asn Val Thr Gly Phe Phe Gln Ser Leu Lys Ser Ile Leu Thr Asn Pro
                325                 330                 335

Leu Tyr Val Ile Phe Leu Leu Leu Thr Leu Leu Gln Val Ser Ser Phe
            340                 345                 350

Ile Gly Ser Phe Thr Tyr Val Phe Lys Tyr Met Glu Gln Gln Tyr Gly
        355                 360                 365

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

Thr Val Ala Thr Gly Met Phe Leu Gly Gly Phe Ile Ile Lys Lys Phe
385                 390                 395                 400

Lys Leu Ser Leu Val Gly Ile Ala Lys Phe Ser Phe Leu Thr Ser Met
                405                 410                 415

Ile Ser Phe Leu Phe Gln Leu Leu Tyr Phe Pro Leu Ile Cys Glu Ser
            420                 425                 430

Lys Ser Val Ala Gly Leu Thr Leu Thr Tyr Asp Gly Asn Asn Ser Val
        435                 440                 445

Ala Ser His Val Asp Val Pro Leu Ser Tyr Cys Asn Ser Glu Cys Asn
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Cys Asp Glu Ser Gln Trp Glu Pro Val Cys Gly Asn Asn Gly Ile Thr
465                 470                 475                 480

Tyr Leu Ser Pro Cys Leu Ala Gly Cys Lys Ser Ser Ser Gly Ile Lys
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Lys His Thr Val Phe Tyr Asn Cys Ser Cys Val Glu Val Thr Gly Leu
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Gln Asn Arg Asn Tyr Ser Ala His Leu Gly Glu Cys Pro Arg Asp Asn
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Thr Cys Thr Arg Lys Phe Phe Ile Tyr Val Ala Ile Gln Val Ile Asn
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Met Val Ile Arg Thr Leu Gly Gly Ile Leu Ala Pro Ile Tyr Phe Gly
            580                 585                 590

Ala Leu Ile Asp Lys Thr Cys Met Lys Trp Ser Thr Asn Ser Cys Gly
        595                 600                 605

Ala Gln Gly Ala Cys Arg Ile Tyr Asn Ser Val Phe Phe Gly Arg Val
    610                 615                 620

Tyr Leu Gly Leu Ser Ile Ala Leu Arg Phe Pro Ala Leu Val Leu Tyr
625                 630                 635                 640

Ile Val Phe Ile Phe Ala Met Lys Lys Lys Phe Gln Gly Lys Asp Thr
                645                 650                 655

Lys Ala Ser Asp Asn Glu Arg Lys Val Met Asp Glu Ala Asn Leu Glu
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Phe Leu Asn Asn Gly Glu His Phe Val Pro Ser Ala Gly Thr Asp Ser
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Ile Ser Tyr Thr Val Thr Ile Phe Gly Asn Leu Thr Ile Ile Leu Val
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Ser Arg Leu Asp Thr Lys Leu His Thr Pro Met Tyr Phe Phe Leu Thr
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Asn Leu Ser Leu Leu Asp Leu Cys Tyr Thr Thr Cys Thr Val Pro Gln
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Ser Val Tyr Leu Gln Pro Pro Ser Pro Ser Ser Lys Asp Gln Gly Lys
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<210> 306
<211> 583
<212> PRT
<213> Homo sapiens

<400> 306

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Ser Ala Tyr Gly Asp Thr Ile Ile Ile Pro Cys Arg Leu Asp Val Pro
35 40 45

Gln Asn Leu Met Phe Gly Lys Trp Lys Tyr Glu Lys Pro Asp Gly Ser
50 55 60

Pro Val Phe Ile Ala Phe Arg Ser Ser Thr Lys Lys Ser Val Gln Tyr
65 70 75 80

Asp Asp Val Pro Glu Tyr Lys Asp Arg Leu Asn Leu Ser Glu Asn Tyr
85 90 95

Thr Leu Ser Ile Ser Asn Ala Arg Ile Ser Asp Glu Lys Arg Phe Val
100 105 110

```
Cys Met Leu Val Thr Glu Asp Asn Val Phe Glu Ala Pro Thr Ile Val
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Lys Val Phe Lys Gln Pro Ser Lys Pro Glu Ile Val Ser Lys Ala Leu
    130                 135                 140

Phe Leu Glu Thr Glu Gln Leu Lys Lys Leu Gly Asp Cys Ile Ser Glu
145                 150                 155                 160

Asp Ser Tyr Pro Asp Gly Asn Ile Thr Trp Tyr Arg Asn Gly Lys Val
                165                 170                 175

Leu His Pro Leu Glu Gly Ala Val Val Ile Ile Phe Lys Lys Glu Met
            180                 185                 190

Asp Pro Val Thr Gln Leu Tyr Thr Met Thr Ser Thr Leu Glu Tyr Lys
        195                 200                 205

Thr Thr Lys Ala Asp Ile Gln Met Pro Phe Thr Cys Ser Val Thr Tyr
    210                 215                 220

Tyr Gly Pro Ser Gly Gln Lys Thr Ile His Ser Glu Gln Ala Val Phe
225                 230                 235                 240

Asp Ile Tyr Tyr Pro Thr Glu Gln Val Thr Ile Gln Val Leu Pro Pro
                245                 250                 255

Lys Asn Ala Ile Lys Glu Gly Asp Asn Ile Thr Leu Lys Cys Leu Gly
            260                 265                 270

Asn Gly Asn Pro Pro Pro Glu Glu Phe Leu Phe Tyr Leu Pro Gly Gln
        275                 280                 285

Pro Glu Gly Ile Arg Ser Ser Asn Thr Tyr Thr Leu Thr Asp Val Arg
    290                 295                 300

Arg Asn Ala Thr Gly Asp Tyr Lys Cys Ser Leu Ile Asp Lys Lys Ser
305                 310                 315                 320

Met Ile Ala Ser Thr Ala Ile Thr Val His Tyr Leu Asp Leu Ser Leu
                325                 330                 335

Asn Pro Ser Gly Glu Val Thr Arg Gln Ile Gly Asp Ala Leu Pro Val
            340                 345                 350

Ser Cys Thr Ile Ser Ala Ser Arg Asn Ala Thr Val Val Trp Met Lys
        355                 360                 365
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Asp Asn Ile Arg Leu Arg Ser Ser Pro Ser Phe Ser Ser Leu His Tyr
    370                 375                 380

Gln Asp Ala Gly Asn Tyr Val Cys Glu Thr Ala Leu Gln Glu Val Glu
385                 390                 395                 400

Gly Leu Lys Lys Arg Glu Ser Leu Thr Leu Ile Val Glu Gly Lys Pro
                405                 410                 415

Gln Ile Lys Met Thr Lys Lys Thr Asp Pro Ser Gly Leu Ser Lys Thr
            420                 425                 430

Ile Ile Cys His Val Glu Gly Phe Pro Lys Pro Ala Ile Gln Trp Thr
        435                 440                 445

Ile Thr Gly Ser Gly Ser Val Ile Asn Gln Thr Glu Glu Ser Pro Tyr
    450                 455                 460

Ile Asn Gly Arg Tyr Tyr Ser Lys Ile Ile Ile Ser Pro Glu Glu Asn
465                 470                 475                 480

Val Thr Leu Thr Cys Thr Ala Glu Asn Gln Leu Glu Arg Thr Val Asn
                485                 490                 495

Ser Leu Asn Val Ser Ala Ile Ser Ile Pro Glu His Asp Glu Ala Asp
            500                 505                 510

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

Ile Val Gly Ile Val Val Gly Leu Leu Leu Ala Ala Leu Val Ala Gly
    530                 535                 540

Val Val Tyr Trp Leu Tyr Met Lys Lys Ser Lys Thr Ala Ser Lys His
545                 550                 555                 560

Val Asn Lys Asp Leu Gly Asn Met Glu Glu Asn Lys Lys Leu Glu Glu
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Asn Asn His Lys Thr Glu Ala
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aacaattcag gcttcgctgc gactcagacc tcagctccaa catatgcatt ctgaagaaag 180

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<210> 308
<211> 311
<212> PRT
<213> Homo sapiens

<400> 308

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Met Trp Phe Phe Tyr Ala Leu Ile Pro Cys Leu Leu Thr Asp Glu Val
20 25 30

Ala Ile Leu Pro Ala Pro Gln Asn Leu Ser Val Leu Ser Thr Asn Met
35 40 45

Lys His Leu Leu Met Trp Ser Pro Val Ile Ala Pro Gly Glu Thr Val
50 55 60

Tyr Tyr Ser Val Glu Tyr Gln Gly Glu Tyr Glu Ser Leu Tyr Thr Ser
65 70 75 80

His Ile Trp Ile Pro Ser Ser Trp Cys Ser Leu Thr Glu Gly Pro Glu
85 90 95

Cys Asp Val Thr Asp Asp Ile Thr Ala Thr Val Pro Tyr Asn Leu Arg
100 105 110

Val Arg Ala Thr Leu Gly Ser Gln Thr Ser Ala Trp Ser Ile Leu Lys
115 120 125

His Pro Phe Asn Arg Asn Ser Thr Ile Leu Thr Arg Pro Gly Met Glu
130 135 140

Ile Thr Lys Asp Gly Phe His Leu Val Ile Glu Leu Glu Asp Leu Gly
145 150 155 160

Pro Gln Phe Glu Phe Leu Val Ala Tyr Trp Arg Arg Glu Pro Gly Ala
165 170 175

Glu Glu His Val Lys Met Val Arg Ser Gly Gly Ile Pro Val His Leu
180 185 190

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Glu Thr Met Glu Pro Gly Ala Ala Tyr Cys Val Lys Ala Gln Thr Phe
        195                 200                 205

Val Lys Ala Ile Gly Arg Tyr Ser Ala Phe Ser Gln Thr Glu Cys Val
    210                 215                 220

Glu Val Gln Gly Glu Ala Ile Pro Leu Val Leu Ala Leu Phe Ala Phe
225                 230                 235                 240

Val Gly Phe Met Leu Ile Leu Val Val Val Pro Leu Phe Val Trp Lys
                245                 250                 255

Met Gly Arg Leu Leu Gln Tyr Ser Cys Cys Pro Val Val Val Leu Pro
            260                 265                 270

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

Arg Glu Glu Val Asp Ala Cys Ala Thr Ala Val Met Ser Pro Glu Glu
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Leu Leu Arg Ala Trp Ile Ser
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<210> 309
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<212> DNA
<213> Homo sapiens

<400> 309

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aagatgatgt ggtgactcca ggaaccagcg aagaccgcta taagtctggc ttgacaactc      300

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aaagcacagt ccacgcgcaa gaacaaagtc caagcgccac agcctcaaac gtggccacca      420

gtcactccac ggagaaagtg gatggagaca cacagacaac agttgagaaa gatggtttgt      480

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ggttacgccc tgctgccaac gtgcttaaaa aaagaccgtt tctgactctg tgccctgtcc      660

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<210> 310
<211> 120
<212> PRT
<213> Homo sapiens

<400> 310

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Arg Tyr Lys Ser Gly Leu Thr Thr Leu Val Ala Thr Ser Val Asn Ser
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Val Thr Gly Ile Arg Ile Glu Asp Leu Pro Thr Ser Glu Ser Thr Val
35 40 45

His Ala Gln Glu Gln Ser Pro Ser Ala Thr Ala Ser Asn Val Ala Thr
50 55 60

Ser His Ser Thr Glu Lys Val Asp Gly Asp Thr Gln Thr Thr Val Glu
65 70 75 80

Lys Asp Gly Leu Ser Thr Val Thr Leu Val Gly Ile Ile Val Gly Val
85 90 95

Leu Leu Ala Ile Gly Phe Ile Gly Ala Ile Ile Val Val Val Met Arg
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Lys Met Ser Gly Arg Tyr Ser Pro
115 120

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<211> 2757
<212> DNA
<213> Homo sapiens

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cgagagccat ctactccatc gtgctcaagc ttccgggtca cagcaccatc ctcaactcca 1920

ccaagttacc ctcatcggac aacctgcagg tgcctgagga ggagctgggg atggtggact 1980

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<211> 590
<212> PRT
<213> Homo sapiens

<400> 312

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Thr Val Thr His Phe Gly Ser Tyr Asn Val Ser Arg Ala Ala Gly Asn
35 40 45

Phe Ser Ser Pro Asp Gly Thr Thr Asp Asp Pro Leu Gly Gly His Thr
50 55 60

Val Trp Gln Val Val Phe Ile Ala Phe Leu Thr Gly Ile Leu Ala Leu
65 70 75 80

Val Thr Ile Ile Gly Asn Ile Leu Val Ile Val Ser Phe Lys Val Asn
85 90 95

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

Ala Asp Leu Ile Ile Gly Val Ile Ser Met Asn Leu Phe Thr Thr Tyr
115 120 125

Ile Ile Met Asn Arg Trp Ala Leu Gly Asn Leu Ala Cys Asp Leu Trp
130 135 140

Leu Ala Ile Asp Tyr Val Ala Ser Asn Ala Ser Val Met Asn Leu Leu
145 150 155 160

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Val Ile Ser Phe Asp Arg Tyr Phe Ser Ile Thr Arg Pro Leu Thr Tyr
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Arg Ala Lys Arg Thr Thr Lys Arg Ala Gly Val Met Ile Gly Leu Ala
            180                 185                 190

Trp Val Ile Ser Phe Val Leu Trp Ala Pro Ala Ile Leu Phe Trp Gln
        195                 200                 205

Tyr Phe Val Gly Lys Arg Thr Val Pro Pro Gly Glu Cys Phe Ile Gln
    210                 215                 220

Phe Leu Ser Glu Pro Thr Ile Thr Phe Gly Thr Ala Ile Ala Ala Phe
225                 230                 235                 240

Tyr Met Pro Val Thr Ile Met Thr Ile Leu Tyr Trp Arg Ile Tyr Lys
                245                 250                 255

Glu Thr Glu Lys Arg Thr Lys Glu Leu Ala Gly Leu Gln Ala Ser Gly
            260                 265                 270

Thr Glu Ala Glu Thr Glu Asn Phe Val His Pro Thr Gly Ser Ser Arg
        275                 280                 285

Ser Cys Ser Ser Tyr Glu Leu Gln Gln Gln Ser Met Lys Arg Ser Asn
    290                 295                 300

Arg Arg Lys Tyr Gly Arg Cys His Phe Trp Phe Thr Thr Lys Ser Trp
305                 310                 315                 320

Lys Pro Ser Ser Glu Gln Met Asp Gln Asp His Ser Ser Ser Asp Ser
                325                 330                 335

Trp Asn Asn Asn Asp Ala Ala Ala Ser Leu Glu Asn Ser Ala Ser Ser
            340                 345                 350

Asp Glu Glu Asp Ile Gly Ser Glu Thr Arg Ala Ile Tyr Ser Ile Val
        355                 360                 365

Leu Lys Leu Pro Gly His Ser Thr Ile Leu Asn Ser Thr Lys Leu Pro
    370                 375                 380

Ser Ser Asp Asn Leu Gln Val Pro Glu Glu Glu Leu Gly Met Val Asp
385                 390                 395                 400

Leu Glu Arg Lys Ala Asp Lys Leu Gln Ala Gln Lys Ser Val Asp Asp
                405                 410                 415
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Gly Gly Ser Phe Pro Lys Ser Phe Ser Lys Leu Pro Ile Gln Leu Glu
            420                 425                 430

Ser Ala Val Asp Thr Ala Lys Thr Ser Asp Val Asn Ser Ser Val Gly
        435                 440                 445

Lys Ser Thr Ala Thr Leu Pro Leu Ser Phe Lys Glu Ala Thr Leu Ala
    450                 455                 460

Lys Arg Phe Ala Leu Lys Thr Arg Ser Gln Ile Thr Lys Arg Lys Arg
465                 470                 475                 480

Met Ser Leu Val Lys Glu Lys Lys Ala Ala Gln Thr Leu Ser Ala Ile
                485                 490                 495

Leu Leu Ala Phe Ile Ile Thr Trp Thr Pro Tyr Asn Ile Met Val Leu
            500                 505                 510

Val Asn Thr Phe Cys Asp Ser Cys Ile Pro Lys Thr Phe Trp Asn Leu
        515                 520                 525

Gly Tyr Trp Leu Cys Tyr Ile Asn Ser Thr Val Asn Pro Val Cys Tyr
    530                 535                 540

Ala Leu Cys Asn Lys Thr Phe Arg Thr Thr Phe Lys Met Leu Leu Leu
545                 550                 555                 560

Cys Gln Cys Asp Lys Lys Lys Arg Arg Lys Gln Gln Tyr Gln Gln Arg
                565                 570                 575

Gln Ser Val Ile Phe His Lys Arg Ala Pro Glu Gln Ala Leu
            580                 585                 590
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<210> 313
<211> 3879
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<400> 313

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cacccgggag gccccgccag cccgcgggag aggcccagcg ggagtcgcgg aacagcaggc      180

ccgagcccac cgcgccgggc cccggacgcc gcgcggaaaa gatgaattta caaccaattt      240

tctggattgg actgatcagt tcagtttgct gtgtgtttgc tcaaacagat gaaaatagat      300

gtttaaaagc aaatgccaaa tcatgtggag aatgtataca agcagggcca aattgtgggt      360
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ggtgcacaaa ttcaacattt ttacaggaag gaatgcctac ttctgcacga tgtgatgatt 420

tagaagcctt aaaaaagaag ggttgccctc cagatgacat agaaaatccc agaggctcca 480

aagatataaa gaaaaataaa aatgtaacca accgtagcaa aggaacagca gagaagctca 540

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<210> 314
<211> 798
<212> PRT
<213> Homo sapiens

<400> 314

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Cys Val Phe Ala Gln Thr Asp Glu Asn Arg Cys Leu Lys Ala Asn Ala
            20                  25                  30

Lys Ser Cys Gly Glu Cys Ile Gln Ala Gly Pro Asn Cys Gly Trp Cys
        35                  40                  45

Thr Asn Ser Thr Phe Leu Gln Glu Gly Met Pro Thr Ser Ala Arg Cys
    50                  55                  60

Asp Asp Leu Glu Ala Leu Lys Lys Lys Gly Cys Pro Pro Asp Asp Ile
65                  70                  75                  80

Glu Asn Pro Arg Gly Ser Lys Asp Ile Lys Lys Asn Lys Asn Val Thr
                85                  90                  95

Asn Arg Ser Lys Gly Thr Ala Glu Lys Leu Lys Pro Glu Asp Ile Thr
            100                 105                 110

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

Gln Thr Phe Thr Leu Lys Phe Lys Arg Ala Glu Asp Tyr Pro Ile Asp
    130                 135                 140

Leu Tyr Tyr Leu Met Asp Leu Ser Tyr Ser Met Lys Asp Asp Leu Glu
145                 150                 155                 160

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

Thr Ser Asp Phe Arg Ile Gly Phe Gly Ser Phe Val Glu Lys Thr Val
            180                 185                 190

Met Pro Tyr Ile Ser Thr Thr Pro Ala Lys Leu Arg Asn Pro Cys Thr
        195                 200                 205

Ser Glu Gln Asn Cys Thr Ser Pro Phe Ser Tyr Lys Asn Val Leu Ser
    210                 215                 220

Leu Thr Asn Lys Gly Glu Val Phe Asn Glu Leu Val Gly Lys Gln Arg
225                 230                 235                 240

Ile Ser Gly Asn Leu Asp Ser Pro Glu Gly Gly Phe Asp Ala Ile Met
                245                 250                 255
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Gln Val Ala Val Cys Gly Ser Leu Ile Gly Trp Arg Asn Val Thr Arg
            260                 265                 270

Leu Leu Val Phe Ser Thr Asp Ala Gly Phe His Phe Ala Gly Asp Gly
        275                 280                 285

Lys Leu Gly Gly Ile Val Leu Pro Asn Asp Gly Gln Cys His Leu Glu
    290                 295                 300

Asn Asn Met Tyr Thr Met Ser His Tyr Tyr Asp Tyr Pro Ser Ile Ala
305                 310                 315                 320

His Leu Val Gln Lys Leu Ser Glu Asn Asn Ile Gln Thr Ile Phe Ala
                325                 330                 335

Val Thr Glu Glu Phe Gln Pro Val Tyr Lys Glu Leu Lys Asn Leu Ile
            340                 345                 350

Pro Lys Ser Ala Val Gly Thr Leu Ser Ala Asn Ser Ser Asn Val Ile
        355                 360                 365

Gln Leu Ile Ile Asp Ala Tyr Asn Ser Leu Ser Ser Glu Val Ile Leu
    370                 375                 380

Glu Asn Gly Lys Leu Ser Glu Gly Val Thr Ile Ser Tyr Lys Ser Tyr
385                 390                 395                 400

Cys Lys Asn Gly Val Asn Gly Thr Gly Glu Asn Gly Arg Lys Cys Ser
                405                 410                 415

Asn Ile Ser Ile Gly Asp Glu Val Gln Phe Glu Ile Ser Ile Thr Ser
            420                 425                 430

Asn Lys Cys Pro Lys Lys Asp Ser Asp Ser Phe Lys Ile Arg Pro Leu
        435                 440                 445

Gly Phe Thr Glu Glu Val Glu Val Ile Leu Gln Tyr Ile Cys Glu Cys
    450                 455                 460

Glu Cys Gln Ser Glu Gly Ile Pro Glu Ser Pro Lys Cys His Glu Gly
465                 470                 475                 480

Asn Gly Thr Phe Glu Cys Gly Ala Cys Arg Cys Asn Glu Gly Arg Val
                485                 490                 495

Gly Arg His Cys Glu Cys Ser Thr Asp Glu Val Asn Ser Glu Asp Met
            500                 505                 510
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Asp Ala Tyr Cys Arg Lys Glu Asn Ser Ser Glu Ile Cys Ser Asn Asn
        515                 520                 525

Gly Glu Cys Val Cys Gly Gln Cys Val Cys Arg Lys Arg Asp Asn Thr
    530                 535                 540

Asn Glu Ile Tyr Ser Gly Lys Phe Cys Glu Cys Asp Asn Phe Asn Cys
545                 550                 555                 560

Asp Arg Ser Asn Gly Leu Ile Cys Gly Gly Asn Gly Val Cys Lys Cys
                565                 570                 575

Arg Val Cys Glu Cys Asn Pro Asn Tyr Thr Gly Ser Ala Cys Asp Cys
            580                 585                 590

Ser Leu Asp Thr Ser Thr Cys Glu Ala Ser Asn Gly Gln Ile Cys Asn
        595                 600                 605

Gly Arg Gly Ile Cys Glu Cys Gly Val Cys Lys Cys Thr Asp Pro Lys
    610                 615                 620

Phe Gln Gly Gln Thr Cys Glu Met Cys Gln Thr Cys Leu Gly Val Cys
625                 630                 635                 640

Ala Glu His Lys Glu Cys Val Gln Cys Arg Ala Phe Asn Lys Gly Glu
                645                 650                 655

Lys Lys Asp Thr Cys Thr Gln Glu Cys Ser Tyr Phe Asn Ile Thr Lys
            660                 665                 670

Val Glu Ser Arg Asp Lys Leu Pro Gln Pro Val Gln Pro Asp Pro Val
        675                 680                 685

Ser His Cys Lys Glu Lys Asp Val Asp Asp Cys Trp Phe Tyr Phe Thr
    690                 695                 700

Tyr Ser Val Asn Gly Asn Asn Glu Val Met Val His Val Val Glu Asn
705                 710                 715                 720

Pro Glu Cys Pro Thr Gly Pro Asp Ile Ile Pro Ile Val Ala Gly Val
                725                 730                 735

Val Ala Gly Ile Val Leu Ile Gly Leu Ala Leu Leu Leu Ile Trp Lys
            740                 745                 750

Leu Leu Met Ile Ile His Asp Arg Arg Glu Phe Ala Lys Phe Glu Lys
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755 760 765

Glu Lys Met Asn Ala Lys Trp Asp Thr Gly Glu Asn Pro Ile Tyr Lys
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Ser Ala Val Thr Thr Val Val Asn Pro Lys Tyr Glu Gly Lys
785 790 795

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<211> 2967
<212> DNA
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tataaattaa aaaaaaaaaa aaaaaaa 2967

<210> 316
<211> 499
<212> PRT
<213> Homo sapiens

<400> 316

Met Leu Leu Leu Leu Leu Leu Leu Pro Leu Leu Trp Gly Thr Lys Gly

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            20                  25                  30

Glu Leu Val Thr Val Gln Glu Gly Leu Cys Val His Val Pro Cys Ser
        35                  40                  45

Phe Ser Tyr Pro Gln Asp Gly Trp Thr Asp Ser Asp Pro Val His Gly
    50                  55                  60

Tyr Trp Phe Arg Ala Gly Asp Arg Pro Tyr Gln Asp Ala Pro Val Ala
65                  70                  75                  80

Thr Asn Asn Pro Asp Arg Glu Val Gln Ala Glu Thr Gln Gly Arg Phe
                85                  90                  95

Gln Leu Leu Gly Asp Ile Trp Ser Asn Asp Cys Ser Leu Ser Ile Arg
            100                 105                 110

Asp Ala Arg Lys Arg Asp Lys Gly Ser Tyr Phe Phe Arg Leu Glu Arg
        115                 120                 125

Gly Ser Met Lys Trp Ser Tyr Lys Ser Gln Leu Asn Tyr Lys Thr Lys
    130                 135                 140

Gln Leu Ser Val Phe Val Thr Ala Leu Thr His Arg Pro Asp Ile Leu
145                 150                 155                 160

Ile Leu Gly Thr Leu Glu Ser Gly His Ser Arg Asn Leu Thr Cys Ser
                165                 170                 175

Val Pro Trp Ala Cys Lys Gln Gly Thr Pro Pro Met Ile Ser Trp Ile
            180                 185                 190

Gly Ala Ser Val Ser Ser Pro Gly Pro Thr Thr Ala Arg Ser Ser Val
        195                 200                 205

Leu Thr Leu Thr Pro Lys Pro Gln Asp His Gly Thr Ser Leu Thr Cys
    210                 215                 220

Gln Val Thr Leu Pro Gly Thr Gly Val Thr Thr Thr Ser Thr Val Arg
225                 230                 235                 240

Leu Asp Val Ser Tyr Pro Pro Trp Asn Leu Thr Met Thr Val Phe Gln
                245                 250                 255
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Gly Asp Ala Thr Ala Ser Thr Ala Leu Gly Asn Gly Ser Ser Leu Ser
            260                 265                 270

Val Leu Glu Gly Gln Ser Leu Arg Leu Val Cys Ala Val Asn Ser Asn
        275                 280                 285

Pro Pro Ala Arg Leu Ser Trp Thr Arg Gly Ser Leu Thr Leu Cys Pro
    290                 295                 300

Ser Arg Ser Ser Asn Pro Gly Leu Leu Glu Leu Pro Arg Val His Val
305                 310                 315                 320

Arg Asp Glu Gly Glu Phe Thr Cys Arg Ala Gln Asn Ala Gln Gly Ser
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Ser Arg Pro Val Ser Gln Val Thr Leu Ala Ala Val Gly Gly Ala Gly
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Ala Thr Ala Leu Ala Phe Leu Ser Phe Cys Ile Ile Phe Ile Ile Val
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Arg Ser Cys Arg Lys Lys Ser Ala Arg Pro Ala Ala Gly Val Gly Asp
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Thr Gly Met Glu Asp Ala Lys Ala Ile Arg Gly Ser Ala Ser Gln Gly
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Pro Leu Thr Glu Ser Trp Lys Asp Gly Asn Pro Leu Lys Lys Pro Pro
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Pro Ala Val Ala Pro Ser Ser Gly Glu Glu Gly Glu Leu His Tyr Ala
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Thr Leu Ser Phe His Lys Val Lys Pro Gln Asp Pro Gln Gly Gln Glu
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Ala Thr Asp Ser Glu Tyr Ser Glu Ile Lys Ile His Lys Arg Glu Thr
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gagatgaact tcagggcctt ccgacgcctt gtctcaggaa catgctttga gaaaaatggt 10620

agcatccttt ccataactca gtctctcttc cctagtttcc ctgaagtgtg acgttttagt 10680

atctggagct cagtgatccc catgaatgag ggataaagtt tcactcttgg tattttctaa 10740

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ccccaaacag aacagatatt cttgcgtgtg taagggcaga agggacaagc tctctatccc 11100

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tcctcttgac acactggaat ctgtattata tatattttta agaaaataca atgatggttg 11220

tctggttttg ttgtttttac aggtgttgtg gaataaaaac tgtaagaaaa ttaagtattt 11280

aaaatgttcc aataaagtgg ggtttttttgt tattctaata tattattgtg tacctattgt 11340

aaatatgaaa cactcctatt ttgcaagctg aggacacaat ttgtactgtt gttatatata 11400

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<210> 320
<211> 1894
<212> PRT
<213> Homo sapiens

<400> 320

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Ser Val Val Leu Leu Ser Val Val Trp Val Leu Leu Ala Pro Pro Ala
20 25 30

Ala Gly Met Pro Gln Phe Ser Thr Phe His Ser Glu Asn Arg Asp Trp
35 40 45

Thr Phe Asn His Leu Thr Val His Gln Gly Thr Gly Ala Val Tyr Val
50 55 60

Gly Ala Ile Asn Arg Val Tyr Lys Leu Thr Gly Asn Leu Thr Ile Gln
65 70 75 80

Val Ala His Lys Thr Gly Pro Glu Glu Asp Asn Lys Ser Cys Tyr Pro
85 90 95

Pro Leu Ile Val Gln Pro Cys Ser Glu Val Leu Thr Leu Thr Asn Asn
100 105 110

Val Asn Lys Leu Leu Ile Ile Asp Tyr Ser Glu Asn Arg Leu Leu Ala
115 120 125

Cys Gly Ser Leu Tyr Gln Gly Val Cys Lys Leu Leu Arg Leu Asp Asp
130 135 140

Leu Phe Ile Leu Val Glu Pro Ser His Lys Lys Glu His Tyr Leu Ser
145 150 155 160

Ser Val Asn Lys Thr Gly Thr Met Tyr Gly Val Ile Val Arg Ser Glu
165 170 175

```
Gly Glu Asp Gly Lys Leu Phe Ile Gly Thr Ala Val Asp Gly Lys Gln
            180                 185                 190

Asp Tyr Phe Pro Thr Leu Ser Ser Arg Lys Leu Pro Arg Asp Pro Glu
        195                 200                 205

Ser Ser Ala Met Leu Asp Tyr Glu Leu His Ser Asp Phe Val Ser Ser
    210                 215                 220

Leu Ile Lys Ile Pro Ser Asp Thr Leu Ala Leu Val Ser His Phe Asp
225                 230                 235                 240

Ile Phe Tyr Ile Tyr Gly Phe Ala Ser Gly Gly Phe Val Tyr Phe Leu
                245                 250                 255

Thr Val Gln Pro Glu Thr Pro Glu Gly Val Ala Ile Asn Ser Ala Gly
            260                 265                 270

Asp Leu Phe Tyr Thr Ser Arg Ile Val Arg Leu Cys Lys Asp Asp Pro
        275                 280                 285

Lys Phe His Ser Tyr Val Ser Leu Pro Phe Gly Cys Thr Arg Ala Gly
    290                 295                 300

Val Glu Tyr Arg Leu Leu Gln Ala Ala Tyr Leu Ala Lys Pro Gly Asp
305                 310                 315                 320

Ser Leu Ala Gln Ala Phe Asn Ile Thr Ser Gln Asp Asp Val Leu Phe
                325                 330                 335

Ala Ile Phe Ser Lys Gly Gln Lys Gln Tyr His His Pro Pro Asp Asp
            340                 345                 350

Ser Ala Leu Cys Ala Phe Pro Ile Arg Ala Ile Asn Leu Gln Ile Lys
        355                 360                 365

Glu Arg Leu Gln Ser Cys Tyr Gln Gly Glu Gly Asn Leu Glu Leu Asn
    370                 375                 380

Trp Leu Leu Gly Lys Asp Val Gln Cys Thr Lys Ala Pro Val Pro Ile
385                 390                 395                 400

Asp Asp Asn Phe Cys Gly Leu Asp Ile Asn Gln Pro Leu Gly Gly Ser
                405                 410                 415

Thr Pro Val Glu Gly Leu Thr Leu Tyr Thr Thr Ser Arg Asp Arg Met
            420                 425                 430
```

```
Thr Ser Val Ala Ser Tyr Val Tyr Asn Gly Tyr Ser Val Val Phe Val
        435                 440                 445

Gly Thr Lys Ser Gly Lys Leu Lys Lys Ile Arg Ala Asp Gly Pro Pro
    450                 455                 460

His Gly Gly Val Gln Tyr Glu Met Val Ser Val Leu Lys Asp Gly Ser
465                 470                 475                 480

Pro Ile Leu Arg Asp Met Ala Phe Ser Ile Asp Gln Arg Tyr Leu Tyr
                485                 490                 495

Val Met Ser Glu Arg Gln Val Thr Arg Val Pro Val Glu Ser Cys Glu
            500                 505                 510

Gln Tyr Thr Thr Cys Gly Glu Cys Leu Ser Ser Gly Asp Pro His Cys
        515                 520                 525

Gly Trp Cys Ala Leu His Asn Met Cys Ser Arg Arg Asp Lys Cys Gln
    530                 535                 540

Gln Ala Trp Glu Pro Asn Arg Phe Ala Ala Ser Ile Ser Gln Cys Val
545                 550                 555                 560

Ser Leu Ala Val His Pro Ser Ser Ile Ser Val Ser Glu His Ser Arg
                565                 570                 575

Leu Leu Ser Leu Val Val Ser Asp Ala Pro Asp Leu Ser Ala Gly Ile
            580                 585                 590

Ala Cys Ala Phe Gly Asn Leu Thr Glu Val Glu Gly Gln Val Ser Gly
        595                 600                 605

Ser Gln Val Ile Cys Ile Ser Pro Gly Pro Lys Asp Val Pro Val Ile
    610                 615                 620

Pro Leu Asp Gln Asp Trp Phe Gly Leu Glu Leu Gln Leu Arg Ser Lys
625                 630                 635                 640

Glu Thr Gly Lys Ile Phe Val Ser Thr Glu Phe Lys Phe Tyr Asn Cys
                645                 650                 655

Ser Ala His Gln Leu Cys Leu Ser Cys Val Asn Ser Ala Phe Arg Cys
            660                 665                 670

His Trp Cys Lys Tyr Arg Asn Leu Cys Thr His Asp Pro Thr Thr Cys
        675                 680                 685
```

```
Ser Phe Gln Glu Gly Arg Ile Asn Ile Ser Glu Asp Cys Pro Gln Leu
    690                 695                 700

Val Pro Thr Glu Glu Ile Leu Ile Pro Val Gly Glu Val Lys Pro Ile
705                 710                 715                 720

Thr Leu Lys Ala Arg Asn Leu Pro Gln Pro Gln Ser Gly Gln Arg Gly
                725                 730                 735

Tyr Glu Cys Val Leu Asn Ile Gln Gly Ala Ile His Arg Val Pro Ala
            740                 745                 750

Leu Arg Phe Asn Ser Ser Ser Val Gln Cys Gln Asn Ser Ser Tyr Gln
        755                 760                 765

Tyr Asp Gly Met Asp Ile Ser Asn Leu Ala Val Asp Phe Ala Val Val
    770                 775                 780

Trp Asn Gly Asn Phe Ile Ile Asp Asn Pro Gln Asp Leu Lys Val His
785                 790                 795                 800

Leu Tyr Lys Cys Ala Ala Gln Arg Glu Ser Cys Gly Leu Cys Leu Lys
                805                 810                 815

Ala Asp Arg Lys Phe Glu Cys Gly Trp Cys Ser Gly Glu Arg Arg Cys
            820                 825                 830

Thr Leu His Gln His Cys Thr Ser Pro Ser Ser Pro Trp Leu Asp Trp
        835                 840                 845

Ser Ser His Asn Val Lys Cys Ser Asn Pro Gln Ile Thr Glu Ile Leu
    850                 855                 860

Thr Val Ser Gly Pro Pro Glu Gly Gly Thr Arg Val Thr Ile His Gly
865                 870                 875                 880

Val Asn Leu Gly Leu Asp Phe Ser Glu Ile Ala His His Val Gln Val
                885                 890                 895

Ala Gly Val Pro Cys Thr Pro Leu Pro Gly Glu Tyr Ile Ile Ala Glu
            900                 905                 910

Gln Ile Val Cys Glu Met Gly His Ala Leu Val Gly Thr Thr Ser Gly
        915                 920                 925

Pro Val Arg Leu Cys Ile Gly Glu Cys Lys Pro Glu Phe Met Thr Lys
```

```
    930                 935                 940

Ser His Gln Gln Tyr Thr Phe Val Asn Pro Ser Val Leu Ser Leu Asn
945                 950                 955                 960

Pro Ile Arg Gly Pro Glu Ser Gly Gly Thr Met Val Thr Ile Thr Gly
                965                 970                 975

His Tyr Leu Gly Ala Gly Ser Ser Val Ala Val Tyr Leu Gly Asn Gln
            980                 985                 990

Thr Cys Glu Phe Tyr Gly Arg Ser  Met Ser Glu Ile Val  Cys Val Ser
        995                 1000                1005

Pro Pro  Ser Ser Asn Gly Leu  Gly Pro Val Pro Val  Ser Val Ser
    1010                1015                1020

Val Asp  Arg Ala His Val Asp  Ser Asn Leu Gln Phe  Glu Tyr Ile
    1025                1030                1035

Asp Asp  Pro Arg Val Gln Arg  Ile Glu Pro Glu Trp  Ser Ile Ala
    1040                1045                1050

Ser Gly  His Thr Pro Leu Thr  Ile Thr Gly Phe Asn  Leu Asp Val
    1055                1060                1065

Ile Gln  Glu Pro Arg Ile Arg  Val Lys Phe Asn Gly  Lys Glu Ser
    1070                1075                1080

Val Asn  Val Cys Lys Val Val  Asn Thr Thr Thr Leu  Thr Cys Leu
    1085                1090                1095

Ala Pro  Ser Leu Thr Thr Asp  Tyr Arg Pro Gly Leu  Asp Thr Val
    1100                1105                1110

Glu Arg  Pro Asp Glu Phe Gly  Phe Val Phe Asn Asn  Val Gln Ser
    1115                1120                1125

Leu Leu  Ile Tyr Asn Asp Thr  Lys Phe Ile Tyr Tyr  Pro Asn Pro
    1130                1135                1140

Thr Phe  Glu Leu Leu Ser Pro  Thr Gly Val Leu Asp  Gln Lys Pro
    1145                1150                1155

Gly Ser  Pro Ile Ile Leu Lys  Gly Lys Asn Leu Cys  Pro Pro Ala
    1160                1165                1170
```

```
Ser Gly  Gly Ala Lys Leu Asn  Tyr Thr Val Leu Ile  Gly Glu Thr
    1175                1180                1185

Pro Cys  Ala Val Thr Val Ser  Glu Thr Gln Leu Leu  Cys Glu Pro
    1190                1195                1200

Pro Asn  Leu Thr Gly Gln His  Lys Val Met Val His  Val Gly Gly
    1205                1210                1215

Met Val  Phe Ser Pro Gly Ser  Val Ser Val Ile Ser  Asp Ser Leu
    1220                1225                1230

Leu Thr  Leu Pro Ala Ile Val  Ser Ile Ala Ala Gly  Gly Ser Leu
    1235                1240                1245

Leu Leu  Ile Ile Val Ile Ile  Val Leu Ile Ala Tyr  Lys Arg Lys
    1250                1255                1260

Ser Arg  Glu Asn Asp Leu Thr  Leu Lys Arg Leu Gln  Met Gln Met
    1265                1270                1275

Asp Asn  Leu Glu Ser Arg Val  Ala Leu Glu Cys Lys  Glu Ala Phe
    1280                1285                1290

Ala Glu  Leu Gln Thr Asp Ile  Asn Glu Leu Thr Ser  Asp Leu Asp
    1295                1300                1305

Arg Ser  Gly Ile Pro Tyr Leu  Asp Tyr Arg Thr Tyr  Ala Met Arg
    1310                1315                1320

Val Leu  Phe Pro Gly Ile Glu  Asp His Pro Val Leu  Arg Glu Leu
    1325                1330                1335

Glu Val  Gln Gly Asn Gly Gln  Gln His Val Glu Lys  Ala Leu Lys
    1340                1345                1350

Leu Phe  Ala Gln Leu Ile Asn  Asn Lys Val Phe Leu  Leu Thr Phe
    1355                1360                1365

Ile Arg  Thr Leu Glu Leu Gln  Arg Ser Phe Ser Met  Arg Asp Arg
    1370                1375                1380

Gly Asn  Val Ala Ser Leu Ile  Met Thr Gly Leu Gln  Gly Arg Leu
    1385                1390                1395

Glu Tyr  Ala Thr Asp Val Leu  Lys Gln Leu Leu Ser  Asp Leu Ile
    1400                1405                1410
```

```
Asp Lys  Asn Leu Glu Asn Lys  Asn His Pro Lys Leu  Leu Leu Arg
    1415                 1420                 1425

Arg Thr  Glu Ser Val Ala Glu  Lys Met Leu Thr Asn  Trp Phe Ala
    1430                 1435                 1440

Phe Leu  Leu His Lys Phe Leu  Lys Glu Cys Ala Gly  Glu Pro Leu
    1445                 1450                 1455

Phe Met  Leu Tyr Cys Ala Ile  Lys Gln Gln Met Glu  Lys Gly Pro
    1460                 1465                 1470

Ile Asp  Ala Ile Thr Gly Glu  Ala Arg Tyr Ser Leu  Ser Glu Asp
    1475                 1480                 1485

Lys Leu  Ile Arg Gln Gln Ile  Glu Tyr Lys Thr Leu  Ile Leu Asn
    1490                 1495                 1500

Cys Val  Asn Pro Asp Asn Glu  Asn Ser Pro Glu Ile  Pro Val Lys
    1505                 1510                 1515

Val Leu  Asn Cys Asp Thr Ile  Thr Gln Val Lys Glu  Lys Ile Leu
    1520                 1525                 1530

Asp Ala  Val Tyr Lys Asn Val  Pro Tyr Ser Gln Arg  Pro Arg Ala
    1535                 1540                 1545

Val Asp  Met Asp Leu Glu Trp  Arg Gln Gly Arg Ile  Ala Arg Val
    1550                 1555                 1560

Val Leu  Gln Asp Glu Asp Ile  Thr Thr Lys Ile Glu  Gly Asp Trp
    1565                 1570                 1575

Lys Arg  Leu Asn Thr Leu Met  His Tyr Gln Val Ser  Asp Arg Ser
    1580                 1585                 1590

Val Val  Ala Leu Val Pro Lys  Gln Thr Ser Ser Tyr  Asn Ile Pro
    1595                 1600                 1605

Ala Ser  Ala Ser Ile Ser Arg  Thr Ser Ile Ser Arg  Tyr Asp Ser
    1610                 1615                 1620

Ser Phe  Arg Tyr Thr Gly Ser  Pro Asp Ser Leu Arg  Ser Arg Ala
    1625                 1630                 1635

Pro Met  Ile Thr Pro Asp Leu  Glu Ser Gly Val Lys  Val Trp His
    1640                 1645                 1650
```

```
Leu Val  Lys Asn His Asp His  Gly Asp Gln Lys Glu  Gly Asp Arg
    1655                 1660                 1665

Gly Ser  Lys Met Val Ser Glu  Ile Tyr Leu Thr Arg  Leu Leu Ala
    1670                 1675                 1680

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

Leu Phe  Ser Thr Val His Arg  Gly Ser Ala Leu Pro  Leu Ala Ile
    1700                 1705                 1710

Lys Tyr  Met Phe Asp Phe Leu  Asp Glu Gln Ala Asp  Arg His Ser
    1715                 1720                 1725

Ile His  Asp Thr Asp Val Arg  His Thr Trp Lys Ser  Asn Cys Leu
    1730                 1735                 1740

Pro Leu  Arg Phe Trp Val Asn  Val Ile Lys Asn Pro  Gln Phe Val
    1745                 1750                 1755

Phe Asp  Ile His Lys Gly Ser  Ile Thr Asp Ala Cys  Leu Ser Val
    1760                 1765                 1770

Val Ala  Gln Thr Phe Met Asp  Ser Cys Ser Thr Ser  Glu His Arg
    1775                 1780                 1785

Leu Gly  Lys Asp Ser Pro Ser  Asn Lys Leu Leu Tyr  Ala Lys Asp
    1790                 1795                 1800

Ile Pro  Ser Tyr Lys Ser Trp  Val Glu Arg Tyr Tyr  Ala Asp Ile
    1805                 1810                 1815

Ala Lys  Leu Pro Ala Ile Ser  Asp Gln Asp Met Asn  Ala Tyr Leu
    1820                 1825                 1830

Ala Glu  Gln Ser Arg Leu His  Ala Val Glu Phe Asn  Met Leu Ser
    1835                 1840                 1845

Ala Leu  Asn Glu Ile Tyr Ser  Tyr Val Ser Lys Tyr  Ser Glu Glu
    1850                 1855                 1860

Leu Ile  Gly Ala Leu Glu Gln  Asp Glu Gln Ala Arg  Arg Gln Arg
    1865                 1870                 1875

Leu Ala  Tyr Lys Val Glu Gln  Leu Ile Asn Ala Met  Ser Ile Glu
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1880 1885 1890

Ser

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<211> 1302
<212> DNA
<213> Homo sapiens

<400> 321
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accttccctc ctggcccacc caggtcccct ggtgaaatca gaagagacag tcatcctgca 180

atgttggtca gatgtcaggt ttcagcactt ccttctgcac agagaaggga agtttaagga 240

cactttgcac ctcattggag agcaccatga tggggtctcc aaggccaact tctccatcgg 300

tcccatgatg caagaccttg cagggaccta cagatgctac ggttctgtta ctcactcccc 360

ctatcagttg tcagctccga gtgacccact gcttgtttct gtcacaggaa acccttcaaa 420

tagttggcct tcacccactg aaccaagctc cgaaaccggt aaccccagac acctgcatgt 480

tctgattggg acctcagtgg tcatcatcct cttcatcctc ctcctcttct ttctccttca 540

tcgctggtgc tgcaacaaaa aaaatgctgt tgtaatggac caagagcctg cagggaacag 600

aacagtgaac agggaggact ctgatgaaca agaccctcag gaggtgacat atgcacagtt 660

gaatcactgc gttttcacac agagaaaaat cactcgccct tctcagaggc ccaagacacc 720

cccaacagat atcatcgtgt acacggaact tccaaatgct gagccctgat ccaaagttgt 780

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ctcttaacac ggcacttaga cacgtgctgt tccaccttcc ctcatgctgt tccacctccc 1200

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caatgtagtt ttccctcctt caaataaaca tgtctgccct ca 1302

<210> 322
<211> 243
<212> PRT
<213> Homo sapiens

<400> 322

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Met Ser Leu Met Val Val Ser Met Val Cys Val Gly Phe Phe Leu Leu
1               5                  10                  15

Gln Gly Ala Trp Pro His Glu Gly Val His Arg Lys Pro Ser Leu Leu
            20                  25                  30

Ala His Pro Gly Pro Leu Val Lys Ser Glu Glu Thr Val Ile Leu Gln
        35                  40                  45

Cys Trp Ser Asp Val Arg Phe Gln His Phe Leu Leu His Arg Glu Gly
    50                  55                  60

Lys Phe Lys Asp Thr Leu His Leu Ile Gly Glu His His Asp Gly Val
65                  70                  75                  80

Ser Lys Ala Asn Phe Ser Ile Gly Pro Met Met Gln Asp Leu Ala Gly
                85                  90                  95

Thr Tyr Arg Cys Tyr Gly Ser Val Thr His Ser Pro Tyr Gln Leu Ser
            100                 105                 110

Ala Pro Ser Asp Pro Leu Leu Val Ser Val Thr Gly Asn Pro Ser Asn
        115                 120                 125

Ser Trp Pro Ser Pro Thr Glu Pro Ser Ser Glu Thr Gly Asn Pro Arg
    130                 135                 140

His Leu His Val Leu Ile Gly Thr Ser Val Val Ile Ile Leu Phe Ile
145                 150                 155                 160

Leu Leu Leu Phe Phe Leu Leu His Arg Trp Cys Cys Asn Lys Lys Asn
                165                 170                 175

Ala Val Val Met Asp Gln Glu Pro Ala Gly Asn Arg Thr Val Asn Arg
            180                 185                 190

Glu Asp Ser Asp Glu Gln Asp Pro Gln Glu Val Thr Tyr Ala Gln Leu
        195                 200                 205

Asn His Cys Val Phe Thr Gln Arg Lys Ile Thr Arg Pro Ser Gln Arg
    210                 215                 220

Pro Lys Thr Pro Pro Thr Asp Ile Ile Val Tyr Thr Glu Leu Pro Asn
225                 230                 235                 240

Ala Glu Pro
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<210> 323
<211> 1593
<212> DNA
<213> Homo sapiens

<400> 323
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ttttatccac aagaatcaag atcttccctc tctgagcagg aatcctttgt gcattgaaga 120

ctttagattc ctctctgcgg tagacgtgca cttataagta tttgatgggg tggattcgtg 180

gtcggaggtc tcgacacagc tgggagatga gtgaatttca taattataac ttggatctga 240

agaagagtga tttttcaaca cgatggcaaa agcaaagatg tccagtagtc aaaagcaaat 300

gtagagaaaa tgcatctcca tttttttttct gctgcttcat cgctgtagcc atgggaatcc 360

gtttcattat tatggtaaca atatggagtg ctgtattcct aaactcatta ttcaaccaag 420

aagttcaaat tcccttgacc gaaagttact gtggcccatg tcctaaaaac tggatatgtt 480

acaaaaataa ctgctaccaa ttttttgatg agagtaaaaa ctggtatgag agccaggctt 540

cttgtatgtc tcaaaatgcc agccttctga aagtatacag caaagaggac caggatttac 600

ttaaactggt gaagtcatat cattggatgg gactagtaca cattccaaca aatggatctt 660

ggcagtggga agatggctcc attctctcac ccaacctact aacaataatt gaaatgcaga 720

agggagactg tgcactctat gcctcgagct ttaaaggcta tatagaaaac tgttcaactc 780

caaatacgta catctgcatg caaaggactg tgtaaagatg atcaaccatc tcaataaaag 840

ccaggaacag agaagagatt acaccagcgg taacactgcc aactgagact aaaggaaaca 900

aacaaaaaca ggacaaaatg accaaagact gtcagatttc ttagactcca caggaccaaa 960

ccatagaaca atttcactgc aaacatgcat gattctccaa gacaaaagaa gagagatcct 1020

aaaggcaatt cagatatccc caaggctgcc tctcccacca caagcccaga gtggatgggc 1080

tgggggaggg gtgctgtttt aatttctaaa ggtaggacca acacccaggg gatcagtgaa 1140

ggaagagaag gccagcagat cactgagagt gcaaccccac cctccacagg aaattgcctc 1200

atgggcaggg ccacagcaga gagacacagc atgggcagtg ccttccctgc ctgtgggggt 1260

catgctgcca cttttaatgg gtcctccacc caacggggtc agggaggtgg tgctgcccca 1320

gtgggccatg attatcttaa aggcattatt ctccagcctt aagtaagatc ttaggacgtt 1380

tcctttgcta tgatttgtac ttgcttgagt cccatgactg tttctcttcc tctctttctt 1440

ccttttggaa tagtaatatc catcctatgt ttgtcccact attgtatttt ggaagcacat 1500

aacttgtttg gtttcacagg ttcacagtta agaaggaatt ttgcctctga ataaatagaa 1560

tcttgagtct catgcaaaaa aaaaaaaaaa aaa 1593

<210> 324
<211> 216
<212> PRT
<213> Homo sapiens

<400> 324

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Met Gly Trp Ile Arg Gly Arg Arg Ser Arg His Ser Trp Glu Met Ser
1               5                   10                  15


Glu Phe His Asn Tyr Asn Leu Asp Leu Lys Lys Ser Asp Phe Ser Thr
            20                  25                  30


Arg Trp Gln Lys Gln Arg Cys Pro Val Val Lys Ser Lys Cys Arg Glu
        35                  40                  45


Asn Ala Ser Pro Phe Phe Phe Cys Cys Phe Ile Ala Val Ala Met Gly
    50                  55                  60


Ile Arg Phe Ile Ile Met Val Thr Ile Trp Ser Ala Val Phe Leu Asn
65                  70                  75                  80


Ser Leu Phe Asn Gln Glu Val Gln Ile Pro Leu Thr Glu Ser Tyr Cys
                85                  90                  95


Gly Pro Cys Pro Lys Asn Trp Ile Cys Tyr Lys Asn Asn Cys Tyr Gln
            100                 105                 110


Phe Phe Asp Glu Ser Lys Asn Trp Tyr Glu Ser Gln Ala Ser Cys Met
        115                 120                 125


Ser Gln Asn Ala Ser Leu Leu Lys Val Tyr Ser Lys Glu Asp Gln Asp
    130                 135                 140


Leu Leu Lys Leu Val Lys Ser Tyr His Trp Met Gly Leu Val His Ile
145                 150                 155                 160


Pro Thr Asn Gly Ser Trp Gln Trp Glu Asp Gly Ser Ile Leu Ser Pro
                165                 170                 175


Asn Leu Leu Thr Ile Ile Glu Met Gln Lys Gly Asp Cys Ala Leu Tyr
            180                 185                 190


Ala Ser Ser Phe Lys Gly Tyr Ile Glu Asn Cys Ser Thr Pro Asn Thr
        195                 200                 205


Tyr Ile Cys Met Gln Arg Thr Val
    210                 215
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<210> 325
<211> 3108
<212> DNA
<213> Homo sapiens

<400> 325
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aaaactttga gtacgatgat ttggctgagg cctgttatat tggggacatc gtggtctttg 180

ggactgtgtt cctgtccata ttctactccg tcatctttgc cattggcctg gtgggaaatt 240

tgttggtagt gtttgccctc accaacagca agaagcccaa gagtgtcacc gacatttacc 300

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tccgcaatgt ggaaacaaat tttcttggct tcctactccc cctgctcatt atgagttatt 720

gctacttcag aatcatccag acgctgtttt cctgcaagaa ccacaagaaa gccaaagcca 780

ttaaactgat ccttctggtg gtcatcgtgt ttttcctctt ctggacaccc tacaacgtta 840

tgattttcct ggagacgctt aagctctatg acttctttcc cagttgtgac atgaggaagg 900

atctgaggct ggccctcagt gtgactgaga cggttgcatt tagccattgt tgcctgaatc 960

ctctcatcta tgcatttgct ggggagaagt tcagaagata cctttaccac ctgtatggga 1020

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aaaggagcag gcatggaagt gttctgagca gcaattttac ttaccacacg agtgatggag 1140

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actgacaccc atgtttctct ggccccaagg gcaaaattcc cagggaagtg ctctgatagg 1680

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<211> 355
<212> PRT
<213> Homo sapiens

<400> 326

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Leu Ala Glu Ala Cys Tyr Ile Gly Asp Ile Val Val Phe Gly Thr Val
20 25 30

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Phe Leu Ser Ile Phe Tyr Ser Val Ile Phe Ala Ile Gly Leu Val Gly
        35                  40                  45

Asn Leu Leu Val Val Phe Ala Leu Thr Asn Ser Lys Lys Pro Lys Ser
    50                  55                  60

Val Thr Asp Ile Tyr Leu Leu Asn Leu Ala Leu Ser Asp Leu Leu Phe
65                  70                  75                  80

Val Ala Thr Leu Pro Phe Trp Thr His Tyr Leu Ile Asn Glu Lys Gly
                85                  90                  95

Leu His Asn Ala Met Cys Lys Phe Thr Thr Ala Phe Phe Phe Ile Gly
            100                 105                 110

Phe Phe Gly Ser Ile Phe Phe Ile Thr Val Ile Ser Ile Asp Arg Tyr
        115                 120                 125

Leu Ala Ile Val Leu Ala Ala Asn Ser Met Asn Asn Arg Thr Val Gln
    130                 135                 140

His Gly Val Thr Ile Ser Leu Gly Val Trp Ala Ala Ala Ile Leu Val
145                 150                 155                 160

Ala Ala Pro Gln Phe Met Phe Thr Lys Gln Lys Glu Asn Glu Cys Leu
                165                 170                 175

Gly Asp Tyr Pro Glu Val Leu Gln Glu Ile Trp Pro Val Leu Arg Asn
            180                 185                 190

Val Glu Thr Asn Phe Leu Gly Phe Leu Leu Pro Leu Leu Ile Met Ser
        195                 200                 205

Tyr Cys Tyr Phe Arg Ile Ile Gln Thr Leu Phe Ser Cys Lys Asn His
    210                 215                 220

Lys Lys Ala Lys Ala Ile Lys Leu Ile Leu Leu Val Val Ile Val Phe
225                 230                 235                 240

Phe Leu Phe Trp Thr Pro Tyr Asn Val Met Ile Phe Leu Glu Thr Leu
                245                 250                 255

Lys Leu Tyr Asp Phe Phe Pro Ser Cys Asp Met Arg Lys Asp Leu Arg
            260                 265                 270

Leu Ala Leu Ser Val Thr Glu Thr Val Ala Phe Ser His Cys Cys Leu
        275                 280                 285
```

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Asn Pro Leu Ile Tyr Ala Phe Ala Gly Glu Lys Phe Arg Arg Tyr Leu
    290                 295                 300

Tyr His Leu Tyr Gly Lys Cys Leu Ala Val Leu Cys Gly Arg Ser Val
305                 310                 315                 320

His Val Asp Phe Ser Ser Ser Glu Ser Gln Arg Ser Arg His Gly Ser
                325                 330                 335

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

Leu Leu Leu
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<210> 327
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<212> DNA
<213> Homo sapiens

<400> 327

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attcttgtgc caggtctcat agggaatata ttagccctgt gggtattcta tggttatatg      180

aaagaaacaa aacgagctgt gatatttatg ataaacttag ccattgctga cttactacaa      240

gttctttcct tgccactgag gatcttctac tacttgaatc atgactggcc atttgggcct      300

ggtctctgca tgttctgttt ctacctgaag tatgtcaaca tgtatgcaag catctacttc      360

ttggtctgca tcagtgtgcg acgattttgg tttctcatgt acccctttcg cttccatgac      420

tgcaaacaga aatatgacct gtacatcagc attgctggct ggctgatcat ctgccttgcc      480

tgtgtactct ttccactcct cagaaccagt gatgatacct ctggcaatag gaccaaatgc      540

tttgtggatc ttcctaccag gaatgtcaac ctggcccagt ccgttgttat gatgaccatt      600

ggcgagttga ttgggtttgt aactccgctt ctgattgtcc tatattgtac ctggaagacg      660

gttttatcac tgcaagataa atatcccatg gcccaagatc ttggagagaa acagaaagcc      720

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agttttcctt tagatttcct ggtgaagtcc aatgaaatta aaagctgcct agccagaagg      840

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ccagtcatat actacttttc cactaatgag ttccgaagac ggctttcaag acaagatttg      960

catgacagca tccaactcca tgcaaaatcc tttgtgagta accatacagc ttccaccatg     1020

acacctgaat tatgctaaaa caaaaaacca aactgaatgt gacctgaaat gcaagtacat     1080
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cagaacatat ctgcaatacc caagccacag ggaagaactt gcaaaacaac acagctttc 1140

agttctgctc tatcttactg ctatggggaa ttcacttctt caaagcagga cctatttgga 1200

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<210> 328
<211> 333
<212> PRT
<213> Homo sapiens

<400> 328

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Phe Arg Tyr Phe Ile Tyr Ala Val Thr Tyr Thr Val Ile Leu Val Pro
20 25 30

Gly Leu Ile Gly Asn Ile Leu Ala Leu Trp Val Phe Tyr Gly Tyr Met
35 40 45

Lys Glu Thr Lys Arg Ala Val Ile Phe Met Ile Asn Leu Ala Ile Ala
50 55 60

Asp Leu Leu Gln Val Leu Ser Leu Pro Leu Arg Ile Phe Tyr Tyr Leu
65 70 75 80

Asn His Asp Trp Pro Phe Gly Pro Gly Leu Cys Met Phe Cys Phe Tyr
85 90 95

Leu Lys Tyr Val Asn Met Tyr Ala Ser Ile Tyr Phe Leu Val Cys Ile
100 105 110

Ser Val Arg Arg Phe Trp Phe Leu Met Tyr Pro Phe Arg Phe His Asp
115 120 125

Cys Lys Gln Lys Tyr Asp Leu Tyr Ile Ser Ile Ala Gly Trp Leu Ile
130 135 140

Ile Cys Leu Ala Cys Val Leu Phe Pro Leu Leu Arg Thr Ser Asp Asp
145 150 155 160

Thr Ser Gly Asn Arg Thr Lys Cys Phe Val Asp Leu Pro Thr Arg Asn
165 170 175

Val Asn Leu Ala Gln Ser Val Val Met Met Thr Ile Gly Glu Leu Ile
180 185 190

```
Gly Phe Val Thr Pro Leu Leu Ile Val Leu Tyr Cys Thr Trp Lys Thr
        195                 200                 205

Val Leu Ser Leu Gln Asp Lys Tyr Pro Met Ala Gln Asp Leu Gly Glu
    210                 215                 220

Lys Gln Lys Ala Leu Lys Met Ile Leu Thr Cys Ala Gly Val Phe Leu
225                 230                 235                 240

Ile Cys Phe Ala Pro Tyr His Phe Ser Phe Pro Leu Asp Phe Leu Val
                245                 250                 255

Lys Ser Asn Glu Ile Lys Ser Cys Leu Ala Arg Arg Val Ile Leu Ile
            260                 265                 270

Phe His Ser Val Ala Leu Cys Leu Ala Ser Leu Asn Ser Cys Leu Asp
        275                 280                 285

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

Arg Gln Asp Leu His Asp Ser Ile Gln Leu His Ala Lys Ser Phe Val
305                 310                 315                 320

Ser Asn His Thr Ala Ser Thr Met Thr Pro Glu Leu Cys
                325                 330
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<210> 329
<211> 3927
<212> DNA
<213> Homo sapiens

<400> 329

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cgcctggggg acgggtatgg gcgggaggta ggggcgcggc tccgcgtgcc agttgggtgc      120

ccgcgcgtca cgtggtgagg aaggaggcgg aggtctgagt ttcgaaggag gggggagag       180

aagagggaac gagcaaggga aggaaagcgg ggaaaggagg aaggaaacga acgaggggga      240

gggaggtccc tgttttggag gagctaggag cgttgccggc ccctgaagtg gagcgagagg      300

gaggtgcttc gccgtttctc ctgccagggg aggtcccggc ttcccgtgga ggctccggac      360

caagcccctt cagcttctcc ctccggatcg atgtgctgct gttaacccgt gaggaggcgg      420

cggcggcggc agcggcagcg gaagatggtg ttgctgagag tgttaattct gctcctctcc      480

tgggcggcgg ggatgggagg tcagtatggg aatcctttaa ataaatatat cagacattat      540

gaaggattat cttacaatgt ggattcatta caccaaaaac accagcgtgc caaaagagca      600

gtctcacatg aagaccaatt tttacgtcta gatttccatg cccatggaag acatttcaac      660
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ggcacatttt atgttgagcc agcagagaga tatattaaag accgaactct gccatttcac 900

tctgtcattt atcatgaaga tgatattaac tatccccata aatacggtcc tcaggggggc 960

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cgtacaactt cagctgaaaa aaatacttgt cagctttata ttcagactga tcatttgttc 1140

tttaaatatt acggaacacg agaagctgtg attgcccaga tatccagtca tgttaaagcg 1200

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ccaaatattg gtgtggagaa gtttctggaa ttgaattctg agcagaatca tgatgactac 1380

tgtttggcct atgtcttcac agaccgagat tttgatgatg gcgtacttgg tctggcttgg 1440

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gcacagtgtg cattcaagtc aaagtctgag aagtgtcggg atgattcaga ctgtgcaagg 2040

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gatgtaaata attggcattt taaagag 3927

<210> 330
<211> 748
<212> PRT
<213> Homo sapiens

<400> 330

Met Val Leu Leu Arg Val Leu Ile Leu Leu Leu Ser Trp Ala Ala Gly
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Met Gly Gly Gln Tyr Gly Asn Pro Leu Asn Lys Tyr Ile Arg His Tyr
20 25 30

```
Glu Gly Leu Ser Tyr Asn Val Asp Ser Leu His Gln Lys His Gln Arg
        35                  40                  45

Ala Lys Arg Ala Val Ser His Glu Asp Gln Phe Leu Arg Leu Asp Phe
    50                  55                  60

His Ala His Gly Arg His Phe Asn Leu Arg Met Lys Arg Asp Thr Ser
65                  70                  75                  80

Leu Phe Ser Asp Glu Phe Lys Val Glu Thr Ser Asn Lys Val Leu Asp
                85                  90                  95

Tyr Asp Thr Ser His Ile Tyr Thr Gly His Ile Tyr Gly Glu Glu Gly
            100                 105                 110

Ser Phe Ser His Gly Ser Val Ile Asp Gly Arg Phe Glu Gly Phe Ile
        115                 120                 125

Gln Thr Arg Gly Gly Thr Phe Tyr Val Glu Pro Ala Glu Arg Tyr Ile
    130                 135                 140

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

Ile Asn Tyr Pro His Lys Tyr Gly Pro Gln Gly Gly Cys Ala Asp His
                165                 170                 175

Ser Val Phe Glu Arg Met Arg Lys Tyr Gln Met Thr Gly Val Glu Glu
            180                 185                 190

Val Thr Gln Ile Pro Gln Glu Glu His Ala Ala Asn Gly Pro Glu Leu
        195                 200                 205

Leu Arg Lys Lys Arg Thr Thr Ser Ala Glu Lys Asn Thr Cys Gln Leu
    210                 215                 220

Tyr Ile Gln Thr Asp His Leu Phe Phe Lys Tyr Tyr Gly Thr Arg Glu
225                 230                 235                 240

Ala Val Ile Ala Gln Ile Ser Ser His Val Lys Ala Ile Asp Thr Ile
                245                 250                 255

Tyr Gln Thr Thr Asp Phe Ser Gly Ile Arg Asn Ile Ser Phe Met Val
            260                 265                 270

Lys Arg Ile Arg Ile Asn Thr Thr Ala Asp Glu Lys Asp Pro Thr Asn
        275                 280                 285
```

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Pro Phe Arg Phe Pro Asn Ile Gly Val Glu Lys Phe Leu Glu Leu Asn
    290                 295                 300

Ser Glu Gln Asn His Asp Asp Tyr Cys Leu Ala Tyr Val Phe Thr Asp
305                 310                 315                 320

Arg Asp Phe Asp Asp Gly Val Leu Gly Leu Ala Trp Val Gly Ala Pro
                325                 330                 335

Ser Gly Ser Ser Gly Gly Ile Cys Glu Lys Ser Lys Leu Tyr Ser Asp
            340                 345                 350

Gly Lys Lys Lys Ser Leu Asn Thr Gly Ile Ile Thr Val Gln Asn Tyr
        355                 360                 365

Gly Ser His Val Pro Pro Lys Val Ser His Ile Thr Phe Ala His Glu
    370                 375                 380

Val Gly His Asn Phe Gly Ser Pro His Asp Ser Gly Thr Glu Cys Thr
385                 390                 395                 400

Pro Gly Glu Ser Lys Asn Leu Gly Gln Lys Glu Asn Gly Asn Tyr Ile
                405                 410                 415

Met Tyr Ala Arg Ala Thr Ser Gly Asp Lys Leu Asn Asn Asn Lys Phe
            420                 425                 430

Ser Leu Cys Ser Ile Arg Asn Ile Ser Gln Val Leu Glu Lys Lys Arg
        435                 440                 445

Asn Asn Cys Phe Val Glu Ser Gly Gln Pro Ile Cys Gly Asn Gly Met
    450                 455                 460

Val Glu Gln Gly Glu Glu Cys Asp Cys Gly Tyr Ser Asp Gln Cys Lys
465                 470                 475                 480

Asp Glu Cys Cys Phe Asp Ala Asn Gln Pro Glu Gly Arg Lys Cys Lys
                485                 490                 495

Leu Lys Pro Gly Lys Gln Cys Ser Pro Ser Gln Gly Pro Cys Cys Thr
            500                 505                 510

Ala Gln Cys Ala Phe Lys Ser Lys Ser Glu Lys Cys Arg Asp Asp Ser
        515                 520                 525

Asp Cys Ala Arg Glu Gly Ile Cys Asn Gly Phe Thr Ala Leu Cys Pro
```

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    530                 535                 540

Ala Ser Asp Pro Lys Pro Asn Phe Thr Asp Cys Asn Arg His Thr Gln
545                 550                 555                 560

Val Cys Ile Asn Gly Gln Cys Ala Gly Ser Ile Cys Glu Lys Tyr Gly
                565                 570                 575

Leu Glu Glu Cys Thr Cys Ala Ser Ser Asp Gly Lys Asp Asp Lys Glu
            580                 585                 590

Leu Cys His Val Cys Cys Met Lys Lys Met Asp Pro Ser Thr Cys Ala
        595                 600                 605

Ser Thr Gly Ser Val Gln Trp Ser Arg His Phe Ser Gly Arg Thr Ile
    610                 615                 620

Thr Leu Gln Pro Gly Ser Pro Cys Asn Asp Phe Arg Gly Tyr Cys Asp
625                 630                 635                 640

Val Phe Met Arg Cys Arg Leu Val Asp Ala Asp Gly Pro Leu Ala Arg
                645                 650                 655

Leu Lys Lys Ala Ile Phe Ser Pro Glu Leu Tyr Glu Asn Ile Ala Glu
            660                 665                 670

Trp Ile Val Ala His Trp Trp Ala Val Leu Leu Met Gly Ile Ala Leu
        675                 680                 685

Ile Met Leu Met Ala Gly Phe Ile Lys Ile Cys Ser Val His Thr Pro
    690                 695                 700

Ser Ser Asn Pro Lys Leu Pro Pro Pro Lys Pro Leu Pro Gly Thr Leu
705                 710                 715                 720

Lys Arg Arg Arg Pro Pro Gln Pro Ile Gln Gln Pro Gln Arg Gln Arg
                725                 730                 735

Pro Arg Glu Ser Tyr Gln Met Gly His Met Arg Arg
            740                 745

<210>  331
<211>  1818
<212>  DNA
<213>  Homo sapiens

<400>  331
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ccaaatctaa acacaccagg acttctccca tccgtcgcct tgggactggc cataaaccac 960

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35 40 45

Ser Ala Thr Leu Arg Cys Ala Met Thr Ser Leu Ile Pro Val Gly Pro
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Ile Met Trp Phe Arg Gly Ala Gly Ala Gly Arg Glu Leu Ile Tyr Asn
65 70 75 80

Gln Lys Glu Gly His Phe Pro Arg Val Thr Thr Val Ser Glu Leu Thr
85 90 95

Lys Arg Asn Asn Leu Asp Phe Ser Ile Ser Ile Ser Asn Ile Thr Pro
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Ala Asp Ala Gly Thr Tyr Tyr Cys Val Lys Phe Arg Lys Gly Ser Pro
115 120 125

Asp Asp Val Glu Phe Lys Ser Gly Ala Gly Thr Glu Leu Ser Val Arg
130 135 140

Glu Ala Ala Leu Ala Pro Thr Ala Pro Leu Leu Val Ala Leu Leu Leu
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20 25 30

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35 40 45

Trp Asp Cys Gln Glu Asn Thr Thr Phe Ser Lys Cys Phe Leu Thr Asp
50 55 60

Lys Lys Asn Arg Val Val Glu Pro Arg Leu Ser Asn Asn Glu Cys Ser
65 70 75 80

Cys Thr Phe Arg Glu Ile Cys Leu His Glu Gly Val Thr Phe Glu Val
85 90 95

His Val Asn Thr Ser Gln Arg Gly Phe Gln Gln Lys Leu Leu Tyr Pro
100 105 110

Asn Ser Gly Arg Glu Gly Thr Ala Ala Gln Asn Phe Ser Cys Phe Ile
115 120 125

Tyr Asn Ala Asp Leu Met Asn Cys Thr Trp Ala Arg Gly Pro Thr Ala
130 135 140

Pro Arg Asp Val Gln Tyr Phe Leu Tyr Ile Arg Asn Ser Lys Arg Arg
145 150 155 160

Arg Glu Ile Arg Cys Pro Tyr Tyr Ile Gln Asp Ser Gly Thr His Val
165 170 175

Gly Cys His Leu Asp Asn Leu Ser Gly Leu Thr Ser Arg Asn Tyr Phe
180 185 190

Leu Val Asn Gly Thr Ser Arg Glu Ile Gly Ile Gln Phe Phe Asp Ser
195 200 205

Leu Leu Asp Thr Lys Lys Ile Glu Arg Phe Asn Pro Pro Ser Asn Val
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Thr Val Arg Cys Asn Thr Thr His Cys Leu Val Arg Trp Lys Gln Pro
225 230 235 240

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Arg Thr Tyr Gln Lys Leu Ser Tyr Leu Asp Phe Gln Tyr Gln Leu Asp
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Val His Arg Lys Asn Thr Gln Pro Gly Thr Glu Asn Leu Leu Ile Asn
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Val Ser Gly Asp Leu Glu Asn Arg Tyr Asn Phe Pro Ser Ser Glu Pro
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Arg Ala Lys His Ser Val Lys Ile Arg Ala Ala Asp Val Arg Ile Leu
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Asn Trp Ser Ser Trp Ser Glu Ala Ile Glu Phe Gly Ser Asp Asp Gly
305                 310                 315                 320

Asn Leu Gly Ser Val Tyr Ile Tyr Val Leu Leu Ile Val Gly Thr Leu
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Val Cys Gly Ile Val Leu Gly Phe Leu Phe Lys Arg Phe Leu Arg Ile
            340                 345                 350

Gln Arg Leu Phe Pro Pro Val Pro Gln Ile Lys Asp Lys Leu Asn Asp
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<400> 336

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Trp Val Lys Asn Thr Val Ser His Thr Val Ser Gln Met Ala Ser Gln
35 40 45

Val Ala Ser Pro Ser Thr Ser Leu His Thr Thr Ser Ser Ser Thr Thr

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Leu Ser Thr Pro Ala Leu Ser Pro Ser Ser Pro Ser Gln Leu Ser Pro
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Asp Asp Leu Glu Leu Leu Ala Lys Leu Glu Glu Gln Asn Arg Leu Leu
                85                  90                  95

Glu Thr Asp Ser Lys Ser Leu Arg Ser Val Asn Gly Ser Arg Arg Asn
            100                 105                 110

Ser Gly Ser Ser Leu Val Ser Ser Ser Ser Ala Ser Ser Asn Leu Ser
        115                 120                 125

His Leu Glu Glu Asp Ser Trp Ile Leu Trp Gly Arg Ile Val Asn Glu
    130                 135                 140

Trp Glu Asp Val Arg Lys Lys Lys Glu Lys Gln Val Lys Glu Leu Val
145                 150                 155                 160

His Lys Gly Ile Pro His His Phe Arg Ala Ile Val Trp Gln Leu Leu
                165                 170                 175

Cys Ser Ala Gln Ser Met Pro Ile Lys Asp Gln Tyr Ser Glu Leu Leu
            180                 185                 190

Lys Met Thr Ser Pro Cys Glu Lys Leu Ile Arg Arg Asp Ile Ala Arg
        195                 200                 205

Thr Tyr Pro Glu His Asn Phe Phe Lys Glu Lys Asp Ser Leu Gly Gln
    210                 215                 220

Glu Val Leu Phe Asn Val Met Lys Ala Tyr Ser Leu Val Asp Arg Glu
225                 230                 235                 240

Val Gly Tyr Cys Gln Gly Ser Ala Phe Ile Val Gly Leu Leu Leu Met
                245                 250                 255

Gln Met Pro Glu Glu Glu Ala Phe Cys Val Phe Val Lys Leu Met Gln
            260                 265                 270

Asp Tyr Arg Leu Arg Glu Leu Phe Lys Pro Ser Met Ala Glu Leu Gly
        275                 280                 285

Leu Cys Met Tyr Gln Phe Glu Cys Met Ile Gln Glu His Leu Pro Glu
    290                 295                 300
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Ser Ser Trp Phe Leu Thr Ile Phe Leu Thr Thr Phe Pro Leu Pro Ile
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Ala Thr Arg Ile Phe Asp Ile Phe Met Ser Glu Gly Leu Glu Ile Val
            340                 345                 350

Phe Arg Val Gly Leu Ala Leu Leu Gln Met Asn Gln Ala Glu Leu Met
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Gln Leu Asp Met Glu Gly Met Leu Gln His Phe Gln Lys Val Ile Pro
    370                 375                 380

His Gln Phe Asp Gly Val Pro Asp Lys Leu Ile Gln Ala Ala Tyr Gln
385                 390                 395                 400

Val Lys Tyr Asn Ser Lys Lys Met Lys Lys Leu Glu Lys Glu Tyr Thr
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Thr Ile Lys Thr Lys Glu Met Glu Glu Gln Val Glu Ile Lys Arg Leu
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Arg Thr Glu Asn Arg Leu Leu Lys Gln Arg Ile Glu Thr Leu Glu Lys
        435                 440                 445

His Lys Cys Ser Ser Asn Tyr Asn Glu Asp Phe Val Leu Gln Leu Glu
    450                 455                 460

Lys Glu Leu Val Gln Ala Arg Leu Ser Glu Ala Glu Ser Gln Cys Ala
465                 470                 475                 480

Leu Lys Glu Met Gln Asp Lys Val Leu Asp Ile Glu Lys Arg Asn Asn
                485                 490                 495

Ser Leu Pro Asp Glu Asn Asn Ile Ala Arg Leu Gln Glu Glu Leu Ile
            500                 505                 510

Ala Val Lys Leu Arg Glu Ala Glu Ala Ile Met Gly Leu Lys Glu Leu
        515                 520                 525

Arg Gln Gln Val Lys Asp Leu Glu Glu His Trp Gln Arg His Leu Ala
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Arg Thr Thr Gly Arg Trp Lys Asp Pro Pro Lys Lys Asn Ala Met Asn
545                 550                 555                 560
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Glu Leu Gln Asp Glu Leu Met Thr Ile Arg Leu Arg Glu Ala Glu Thr
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Gln Ala Glu Ile Arg Glu Ile Lys Gln Arg Met Met Glu Met Glu Thr
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Gln Asn Gln Ile Asn Ser Asn His Leu Arg Arg Ala Glu Gln Glu Val
        595                 600                 605

Ile Ser Leu Gln Glu Lys Val Gln Tyr Leu Ser Ala Gln Asn Lys Gly
    610                 615                 620

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

Cys Lys Asn Lys Glu Glu Val Met Ala Val Arg Leu Arg Glu Ala Asp
                645                 650                 655

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

Ile Gln Lys Glu Glu Gly Lys Leu Gln Gly Gln Leu Asn Lys Ser Asp
        675                 680                 685

Ser Asn Gln Tyr Ile Gly Glu Leu Lys Asp Gln Ile Ala Glu Leu Asn
    690                 695                 700

His Glu Leu Arg Cys Leu Lys Gly Gln Arg Gly Phe Ser Gly Gln Pro
705                 710                 715                 720

Pro Phe Asp Gly Ile His Ile Val Asn His Leu Ile Gly Asp Asp Glu
                725                 730                 735

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

Thr Gly Val Gly Phe Pro Leu His Gly Lys Ser Gly Ser Met Ser Leu
        755                 760                 765

Asp Pro Ala Val Ala Asp Gly Ser Glu Ser Glu Thr Glu Asp Ser Val
    770                 775                 780

Leu Glu Thr Arg Glu Ser Asn Gln Val Val Gln Lys Glu Arg Pro Pro
785                 790                 795                 800

Arg Arg Arg Glu Ser Tyr Ser Thr Thr Val
                805                 810
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<210> 337
<211> 3657
<212> DNA
<213> Homo sapiens

<400> 337
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tatcttggcc tcagctgtcc ttgaagtcac catggcgtgg tccccaccag ccaccctctt 180

tctgttcctg ctgctgctag gccagccccc tcccagcagg ccacagtcac tgggcaccac 240

taagctccgg ctggtgggcc cagagagcaa gccagaggag ggccgcctgg aggtgctgca 300

ccagggccag tggggcaccg tgtgtgatga caactttgct atccaggagg ccacagtggc 360

ttgccgccag ctgggcttcg aagctgcctt gacctgggcc cacagtgcca agtacggcca 420

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ccagtgcggg tctaatggct ggggagtcag tgactgcagt cactcagaag acgtaggggt 540

gatatgccac ccccggcgcc atcgtggcta cctttctgaa actgtctcca atgcccttgg 600

gccccagggc cggcggctgg aggaggtgcg gctcaagccc atccttgcca gtgccaagca 660

gcatagccca gtgaccgagg gagccgtgga ggtgaagtat gagggccact ggcggcaggt 720

gtgtgaccag ggctggacca tgaacaacag cagggtggtg tgcgggatgc tgggcttccc 780

cagcgaggtg cctgtcgaca gccactacta caggaaagtc tgggatctga agatgaggga 840

ccctaagtct aggctgaaga gcctgacgaa taagaactcc ttctggatcc accaggtcac 900

ctgcctgggg acagagcccc acatggccaa ctgccaggtg caggtggctc cagcccgggg 960

caagctgcgg ccagcctgcc caggtggcat gcacgctgtg gtcagctgtg tggcagggcc 1020

tcacttccgc ccaccgaaga caaagccaca acgcaaaggg tcctgggcag aggagccgag 1080

ggtgcgcctg cgctccgggg cccaggtggg cgagggccgg gtggaagtgc tcatgaaccg 1140

ccagtggggc acggtctgtg accacaggtg gaacctcatc tctgccagtg tcgtgtgtcg 1200

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cagtgaaaac tgggggctca ccgaagccat ggtggcctgc cgacagctcg gcctgggttt 1560

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<210> 338
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<212> PRT
<213> Homo sapiens

<400> 338

Met Ala Trp Ser Pro Pro Ala Thr Leu Phe Leu Phe Leu Leu Leu Leu
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Gly Gln Pro Pro Pro Ser Arg Pro Gln Ser Leu Gly Thr Thr Lys Leu
20 25 30

Arg Leu Val Gly Pro Glu Ser Lys Pro Glu Glu Gly Arg Leu Glu Val
35 40 45

Leu His Gln Gly Gln Trp Gly Thr Val Cys Asp Asp Asn Phe Ala Ile
50 55 60

Gln Glu Ala Thr Val Ala Cys Arg Gln Leu Gly Phe Glu Ala Ala Leu
65 70 75 80

Thr Trp Ala His Ser Ala Lys Tyr Gly Gln Gly Glu Gly Pro Ile Trp
85 90 95

Leu Asp Asn Val Arg Cys Val Gly Thr Glu Ser Ser Leu Asp Gln Cys
100 105 110

Gly Ser Asn Gly Trp Gly Val Ser Asp Cys Ser His Ser Glu Asp Val
115 120 125

Gly Val Ile Cys His Pro Arg Arg His Arg Gly Tyr Leu Ser Glu Thr
130 135 140

Val Ser Asn Ala Leu Gly Pro Gln Gly Arg Arg Leu Glu Glu Val Arg
145 150 155 160

Leu Lys Pro Ile Leu Ala Ser Ala Lys Gln His Ser Pro Val Thr Glu
165 170 175

Gly Ala Val Glu Val Lys Tyr Glu Gly His Trp Arg Gln Val Cys Asp
180 185 190

Gln Gly Trp Thr Met Asn Asn Ser Arg Val Val Cys Gly Met Leu Gly
195 200 205

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Phe Pro Ser Glu Val Pro Val Asp Ser His Tyr Tyr Arg Lys Val Trp
    210                 215                 220

Asp Leu Lys Met Arg Asp Pro Lys Ser Arg Leu Lys Ser Leu Thr Asn
225                 230                 235                 240

Lys Asn Ser Phe Trp Ile His Gln Val Thr Cys Leu Gly Thr Glu Pro
                245                 250                 255

His Met Ala Asn Cys Gln Val Gln Val Ala Pro Ala Arg Gly Lys Leu
            260                 265                 270

Arg Pro Ala Cys Pro Gly Gly Met His Ala Val Val Ser Cys Val Ala
        275                 280                 285

Gly Pro His Phe Arg Pro Pro Lys Thr Lys Pro Gln Arg Lys Gly Ser
    290                 295                 300

Trp Ala Glu Glu Pro Arg Val Arg Leu Arg Ser Gly Ala Gln Val Gly
305                 310                 315                 320

Glu Gly Arg Val Glu Val Leu Met Asn Arg Gln Trp Gly Thr Val Cys
                325                 330                 335

Asp His Arg Trp Asn Leu Ile Ser Ala Ser Val Val Cys Arg Gln Leu
            340                 345                 350

Gly Phe Gly Ser Ala Arg Glu Ala Leu Phe Gly Ala Arg Leu Gly Gln
        355                 360                 365

Gly Leu Gly Pro Ile His Leu Ser Glu Val Arg Cys Arg Gly Tyr Glu
    370                 375                 380

Arg Thr Leu Ser Asp Cys Pro Ala Leu Glu Gly Ser Gln Asn Gly Cys
385                 390                 395                 400

Gln His Glu Asn Asp Ala Ala Val Arg Cys Asn Val Pro Asn Met Gly
                405                 410                 415

Phe Gln Asn Gln Val Arg Leu Ala Gly Gly Arg Ile Pro Glu Glu Gly
            420                 425                 430

Leu Leu Glu Val Gln Val Glu Val Asn Gly Val Pro Arg Trp Gly Ser
        435                 440                 445

Val Cys Ser Glu Asn Trp Gly Leu Thr Glu Ala Met Val Ala Cys Arg
    450                 455                 460
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Gln Leu Gly Leu Gly Phe Ala Ile His Ala Tyr Lys Glu Thr Trp Phe
465                 470                 475                 480

Trp Ser Gly Thr Pro Arg Ala Gln Glu Val Val Met Ser Gly Val Arg
                485                 490                 495

Cys Ser Gly Thr Glu Leu Ala Leu Gln Gln Cys Gln Arg His Gly Pro
            500                 505                 510

Val His Cys Ser His Gly Gly Gly Arg Phe Leu Ala Gly Val Ser Cys
        515                 520                 525

Met Asp Ser Ala Pro Asp Leu Val Met Asn Ala Gln Leu Val Gln Glu
    530                 535                 540

Thr Ala Tyr Leu Glu Asp Arg Pro Leu Ser Gln Leu Tyr Cys Ala His
545                 550                 555                 560

Glu Glu Asn Cys Leu Ser Lys Ser Ala Asp His Met Asp Trp Pro Tyr
                565                 570                 575

Gly Tyr Arg Arg Leu Leu Arg Phe Ser Thr Gln Ile Tyr Asn Leu Gly
            580                 585                 590

Arg Thr Asp Phe Arg Pro Lys Thr Gly Arg Asp Ser Trp Val Trp His
        595                 600                 605

Gln Cys His Arg His Tyr His Ser Ile Glu Val Phe Thr His Tyr Asp
    610                 615                 620

Leu Leu Thr Leu Asn Gly Ser Lys Val Ala Glu Gly His Lys Ala Ser
625                 630                 635                 640

Phe Cys Leu Glu Asp Thr Asn Cys Pro Thr Gly Leu Gln Arg Arg Tyr
                645                 650                 655

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

Thr Tyr Arg His Asp Ile Asp Cys Gln Trp Val Asp Ile Thr Asp Val
        675                 680                 685

Gly Pro Gly Asn Tyr Ile Phe Gln Val Ile Val Asn Pro His Tyr Glu
    690                 695                 700

Val Ala Glu Ser Asp Phe Ser Asn Asn Met Leu Gln Cys Arg Cys Lys
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705 710 715 720

Tyr Asp Gly His Arg Val Trp Leu His Asn Cys His Thr Gly Asn Ser
725 730 735

Tyr Pro Ala Asn Ala Glu Leu Ser Leu Glu Gln Glu Gln Arg Leu Arg
740 745 750

Asn Asn Leu Ile
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<210> 339
<211> 2488
<212> DNA
<213> Homo sapiens

<400> 339
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ttaaaaaaaa aaaaaaaaaa aaaaaaaa 2488

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<211> 692
<212> PRT
<213> Homo sapiens

<400> 340

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Val Gly Trp Arg Asn Arg Ser Gly Thr Ala Thr Ala Ala Ser Gln Gly
20 25 30

Val Cys Lys Leu Val Gly Gly Ala Ala Asp Cys Arg Gly Gln Ser Leu
35 40 45

Ala Ser Val Pro Ser Ser Leu Pro Pro His Ala Arg Met Leu Thr Leu

50 55 60

Asp Ala Asn Pro Leu Lys Thr Leu Trp Asn His Ser Leu Gln Pro Tyr
65 70 75 80

Pro Leu Leu Glu Ser Leu Ser Leu His Ser Cys His Leu Glu Arg Ile
85 90 95

Ser Arg Gly Ala Phe Gln Glu Gln Gly His Leu Arg Ser Leu Val Leu
100 105 110

Gly Asp Asn Cys Leu Ser Glu Asn Tyr Glu Glu Thr Ala Ala Ala Leu
115 120 125

His Ala Leu Pro Gly Leu Arg Arg Leu Asp Leu Ser Gly Asn Ala Leu
130 135 140

Thr Glu Asp Met Ala Ala Leu Met Leu Gln Asn Leu Ser Ser Leu Arg
145 150 155 160

Ser Val Ser Leu Ala Gly Asn Thr Ile Met Arg Leu Asp Asp Ser Val
165 170 175

Phe Glu Gly Leu Glu Arg Leu Arg Glu Leu Asp Leu Gln Arg Asn Tyr
180 185 190

Ile Phe Glu Ile Glu Gly Gly Ala Phe Asp Gly Leu Ala Glu Leu Arg
195 200 205

His Leu Asn Leu Ala Phe Asn Asn Leu Pro Cys Ile Val Asp Phe Gly
210 215 220

Leu Thr Arg Leu Arg Val Leu Asn Val Ser Tyr Asn Val Leu Glu Trp
225 230 235 240

Phe Leu Ala Thr Gly Gly Glu Ala Ala Phe Glu Leu Glu Thr Leu Asp
245 250 255

Leu Ser His Asn Gln Leu Leu Phe Phe Pro Leu Leu Pro Gln Tyr Ser
260 265 270

Lys Leu Arg Thr Leu Leu Leu Arg Asp Asn Asn Met Gly Phe Tyr Arg
275 280 285

Asp Leu Tyr Asn Thr Ser Ser Pro Arg Glu Met Val Ala Gln Phe Leu
290 295 300

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

Glu Phe Ser Ser Ser Asp Leu Ala Asp Leu Arg Phe Leu Asp Met Ser
                325                 330                 335

Gln Asn Gln Phe Gln Tyr Leu Pro Asp Gly Phe Leu Arg Lys Met Pro
            340                 345                 350

Ser Leu Ser His Leu Asn Leu His Gln Asn Cys Leu Met Thr Leu His
        355                 360                 365

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

His Asn Gln Leu Ser Glu Leu His Leu Ala Pro Gly Leu Ala Ser Cys
385                 390                 395                 400

Leu Gly Ser Leu Arg Leu Phe Asn Leu Ser Ser Asn Gln Leu Leu Gly
                405                 410                 415

Val Pro Pro Gly Leu Phe Ala Asn Ala Arg Asn Ile Thr Thr Leu Asp
            420                 425                 430

Met Ser His Asn Gln Ile Ser Leu Cys Pro Leu Pro Ala Ala Ser Asp
        435                 440                 445

Arg Val Gly Pro Pro Ser Cys Val Asp Phe Arg Asn Met Ala Ser Leu
    450                 455                 460

Arg Ser Leu Ser Leu Glu Gly Cys Gly Leu Gly Ala Leu Pro Asp Cys
465                 470                 475                 480

Pro Phe Gln Gly Thr Ser Leu Thr Tyr Leu Asp Leu Ser Ser Asn Trp
                485                 490                 495

Gly Val Leu Asn Gly Ser Leu Ala Pro Leu Gln Asp Val Ala Pro Met
            500                 505                 510

Leu Gln Val Leu Ser Leu Arg Asn Met Gly Leu His Ser Ser Phe Met
        515                 520                 525

Ala Leu Asp Phe Ser Gly Phe Gly Asn Leu Arg Asp Leu Asp Leu Ser
    530                 535                 540

Gly Asn Cys Leu Thr Thr Phe Pro Arg Phe Gly Gly Ser Leu Ala Leu
545                 550                 555                 560
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Glu Thr Leu Asp Leu Arg Arg Asn Ser Leu Thr Ala Leu Pro Gln Lys
                565                 570                 575

Ala Val Ser Glu Gln Leu Ser Arg Gly Leu Arg Thr Ile Tyr Leu Ser
            580                 585                 590

Gln Asn Pro Tyr Asp Cys Cys Gly Val Asp Gly Trp Gly Ala Leu Gln
        595                 600                 605

His Gly Gln Thr Val Ala Asp Trp Ala Met Val Thr Cys Asn Leu Ser
    610                 615                 620

Ser Lys Ile Ile Arg Val Thr Glu Leu Pro Gly Gly Val Pro Arg Asp
625                 630                 635                 640

Cys Lys Trp Glu Arg Leu Asp Leu Gly Leu Leu Tyr Leu Val Leu Ile
                645                 650                 655

Leu Pro Ser Cys Leu Thr Leu Leu Val Ala Cys Thr Val Ile Val Leu
            660                 665                 670

Thr Phe Lys Lys Pro Leu Leu Gln Val Ile Lys Ser Arg Cys His Trp
        675                 680                 685

Ser Ser Val Tyr
    690
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