SEQUENCE LISTING

<110> Bioverativ Therapeutics, Inc.

<120> FORMULATIONS OF FACTOR VIII CHIMERIC PROTEINS AND

<130> 730463: SA9-480PC

<150> 63/214,245
<151> 2021-06-23

<150> 63/214,246
<151> 2021-06-23

<150> 63/214,752
<151> 2021-06-24

<150> 63/231,909
<151> 2021-08-11

<160> 24

<170> PatentIn version 3.5

<210> 1
<211> 1946
<212> PRT
<213> Artificial Sequence

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Met Gln Ser Asp Leu Gly Glu Leu Pro Val Asp Ala Arg Phe Pro Pro
20 25 30

Arg Val Pro Lys Ser Phe Pro Phe Asn Thr Ser Val Val Tyr Lys Lys
35 40 45

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

Arg Pro Pro Trp Met Gly Leu Leu Gly Pro Thr Ile Gln Ala Glu Val
65 70 75 80

Tyr Asp Thr Val Val Ile Thr Leu Lys Asn Met Ala Ser His Pro Val

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                85                  90                  95

Ser Leu His Ala Val Gly Val Ser Tyr Trp Lys Ala Ser Glu Gly Ala
            100                 105                 110

Glu Tyr Asp Asp Gln Thr Ser Gln Arg Glu Lys Glu Asp Asp Lys Val
        115                 120                 125

Phe Pro Gly Gly Ser His Thr Tyr Val Trp Gln Val Leu Lys Glu Asn
    130                 135                 140

Gly Pro Met Ala Ser Asp Pro Leu Cys Leu Thr Tyr Ser Tyr Leu Ser
145                 150                 155                 160

His Val Asp Leu Val Lys Asp Leu Asn Ser Gly Leu Ile Gly Ala Leu
                165                 170                 175

Leu Val Cys Arg Glu Gly Ser Leu Ala Lys Glu Lys Thr Gln Thr Leu
            180                 185                 190

His Lys Phe Ile Leu Leu Phe Ala Val Phe Asp Glu Gly Lys Ser Trp
        195                 200                 205

His Ser Glu Thr Lys Asn Ser Leu Met Gln Asp Arg Asp Ala Ala Ser
    210                 215                 220

Ala Arg Ala Trp Pro Lys Met His Thr Val Asn Gly Tyr Val Asn Arg
225                 230                 235                 240

Ser Leu Pro Gly Leu Ile Gly Cys His Arg Lys Ser Val Tyr Trp His
                245                 250                 255

Val Ile Gly Met Gly Thr Thr Pro Glu Val His Ser Ile Phe Leu Glu
            260                 265                 270

Gly His Thr Phe Leu Val Arg Asn His Arg Gln Ala Ser Leu Glu Ile
        275                 280                 285

Ser Pro Ile Thr Phe Leu Thr Ala Gln Thr Leu Leu Met Asp Leu Gly
    290                 295                 300
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```
Gln Phe Leu Leu Phe Cys His Ile Ser Ser His Gln His Asp Gly Met
305                 310                 315                 320

Glu Ala Tyr Val Lys Val Asp Ser Cys Pro Glu Glu Pro Gln Leu Arg
                325                 330                 335

Met Lys Asn Asn Glu Glu Ala Glu Asp Tyr Asp Asp Asp Leu Thr Asp
            340                 345                 350

Ser Glu Met Asp Val Val Arg Phe Asp Asp Asp Asn Ser Pro Ser Phe
        355                 360                 365

Ile Gln Ile Arg Ser Val Ala Lys Lys His Pro Lys Thr Trp Val His
    370                 375                 380

Tyr Ile Ala Ala Glu Glu Glu Asp Trp Asp Tyr Ala Pro Leu Val Leu
385                 390                 395                 400

Ala Pro Asp Asp Arg Ser Tyr Lys Ser Gln Tyr Leu Asn Asn Gly Pro
                405                 410                 415

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

Asp Glu Thr Phe Lys Thr Arg Glu Ala Ile Gln His Glu Ser Gly Ile
        435                 440                 445

Leu Gly Pro Leu Leu Tyr Gly Glu Val Gly Asp Thr Leu Leu Ile Ile
    450                 455                 460

Phe Lys Asn Gln Ala Ser Arg Pro Tyr Asn Ile Tyr Pro His Gly Ile
465                 470                 475                 480

Thr Asp Val Arg Pro Leu Tyr Ser Arg Arg Leu Pro Lys Gly Val Lys
                485                 490                 495

His Leu Lys Asp Phe Pro Ile Leu Pro Gly Glu Ile Phe Lys Tyr Lys
            500                 505                 510

Trp Thr Val Thr Val Glu Asp Gly Pro Thr Lys Ser Asp Pro Arg Cys
        515                 520                 525
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Leu Thr Arg Tyr Tyr Ser Ser Phe Val Asn Met Glu Arg Asp Leu Ala
    530                 535                 540

Ser Gly Leu Ile Gly Pro Leu Leu Ile Cys Tyr Lys Glu Ser Val Asp
545                 550                 555                 560

Gln Arg Gly Asn Gln Ile Met Ser Asp Lys Arg Asn Val Ile Leu Phe
                565                 570                 575

Ser Val Phe Asp Glu Asn Arg Ser Trp Tyr Leu Thr Glu Asn Ile Gln
            580                 585                 590

Arg Phe Leu Pro Asn Pro Ala Gly Val Gln Leu Glu Asp Pro Glu Phe
        595                 600                 605

Gln Ala Ser Asn Ile Met His Ser Ile Asn Gly Tyr Val Phe Asp Ser
    610                 615                 620

Leu Gln Leu Ser Val Cys Leu His Glu Val Ala Tyr Trp Tyr Ile Leu
625                 630                 635                 640

Ser Ile Gly Ala Gln Thr Asp Phe Leu Ser Val Phe Phe Ser Gly Tyr
                645                 650                 655

Thr Phe Lys His Lys Met Val Tyr Glu Asp Thr Leu Thr Leu Phe Pro
            660                 665                 670

Phe Ser Gly Glu Thr Val Phe Met Ser Met Glu Asn Pro Gly Leu Trp
        675                 680                 685

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

Leu Leu Lys Val Ser Ser Cys Asp Lys Asn Thr Gly Asp Tyr Tyr Glu
705                 710                 715                 720

Asp Ser Tyr Glu Asp Ile Ser Ala Tyr Leu Leu Ser Lys Asn Asn Ala
                725                 730                 735

Ile Glu Pro Arg Ser Phe Ser Gln Asn Gly Thr Ser Glu Ser Ala Thr
            740                 745                 750
```

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Pro Glu Ser Gly Pro Gly Ser Glu Pro Ala Thr Ser Gly Ser Glu Thr
        755                 760                 765

Pro Gly Thr Ser Glu Ser Ala Thr Pro Glu Ser Gly Pro Gly Ser Glu
    770                 775                 780

Pro Ala Thr Ser Gly Ser Glu Thr Pro Gly Thr Ser Glu Ser Ala Thr
785                 790                 795                 800

Pro Glu Ser Gly Pro Gly Thr Ser Thr Glu Pro Ser Glu Gly Ser Ala
                805                 810                 815

Pro Gly Ser Pro Ala Gly Ser Pro Thr Ser Thr Glu Glu Gly Thr Ser
            820                 825                 830

Glu Ser Ala Thr Pro Glu Ser Gly Pro Gly Ser Glu Pro Ala Thr Ser
        835                 840                 845

Gly Ser Glu Thr Pro Gly Thr Ser Glu Ser Ala Thr Pro Glu Ser Gly
    850                 855                 860

Pro Gly Ser Pro Ala Gly Ser Pro Thr Ser Thr Glu Glu Gly Ser Pro
865                 870                 875                 880

Ala Gly Ser Pro Thr Ser Thr Glu Glu Gly Thr Ser Thr Glu Pro Ser
                885                 890                 895

Glu Gly Ser Ala Pro Gly Thr Ser Glu Ser Ala Thr Pro Glu Ser Gly
            900                 905                 910

Pro Gly Thr Ser Glu Ser Ala Thr Pro Glu Ser Gly Pro Gly Thr Ser
        915                 920                 925

Glu Ser Ala Thr Pro Glu Ser Gly Pro Gly Ser Glu Pro Ala Thr Ser
    930                 935                 940

Gly Ser Glu Thr Pro Gly Ser Glu Pro Ala Thr Ser Gly Ser Glu Thr
945                 950                 955                 960

Pro Gly Ser Pro Ala Gly Ser Pro Thr Ser Thr Glu Glu Gly Thr Ser
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               965                 970                 975

Thr Glu Pro Ser Glu Gly Ser Ala Pro Gly Thr Ser Thr Glu Pro Ser
            980                 985                 990

Glu Gly Ser Ala Pro Gly Ser Glu  Pro Ala Thr Ser Gly  Ser Glu Thr
        995                 1000                1005

Pro Gly  Thr Ser Glu Ser Ala  Thr Pro Glu Ser Gly  Pro Gly Thr
    1010                1015                1020

Ser Thr  Glu Pro Ser Glu Gly  Ser Ala Pro Ala Ser  Ser Glu Ile
    1025                1030                1035

Thr Arg  Thr Thr Leu Gln Ser  Asp Gln Glu Glu Ile  Asp Tyr Asp
    1040                1045                1050

Asp Thr  Ile Ser Val Glu Met  Lys Lys Glu Asp Phe  Asp Ile Tyr
    1055                1060                1065

Asp Glu  Asp Glu Asn Gln Ser  Pro Arg Ser Phe Gln  Lys Lys Thr
    1070                1075                1080

Arg His  Tyr Phe Ile Ala Ala  Val Glu Arg Leu Trp  Asp Tyr Gly
    1085                1090                1095

Met Ser  Ser Ser Pro His Val  Leu Arg Asn Arg Ala  Gln Ser Gly
    1100                1105                1110

Ser Val  Pro Gln Phe Lys Lys  Val Val Phe Gln Glu  Phe Thr Asp
    1115                1120                1125

Gly Ser  Phe Thr Gln Pro Leu  Tyr Arg Gly Glu Leu  Asn Glu His
    1130                1135                1140

Leu Gly  Leu Leu Gly Pro Tyr  Ile Arg Ala Glu Val  Glu Asp Asn
    1145                1150                1155

Ile Met  Val Thr Phe Arg Asn  Gln Ala Ser Arg Pro  Tyr Ser Phe
    1160                1165                1170
```

```
Tyr Ser  Ser Leu Ile Ser Tyr  Glu Glu Asp Gln Arg  Gln Gly Ala
    1175                 1180                 1185

Glu Pro  Arg Lys Asn Phe Val  Lys Pro Asn Glu Thr  Lys Thr Tyr
    1190                 1195                 1200

Phe Trp  Lys Val Gln His His  Met Ala Pro Thr Lys  Asp Glu Phe
    1205                 1210                 1215

Asp Cys  Lys Ala Trp Ala Tyr  Phe Ser Asp Val Asp  Leu Glu Lys
    1220                 1225                 1230

Asp Val  His Ser Gly Leu Ile  Gly Pro Leu Leu Val  Cys His Thr
    1235                 1240                 1245

Asn Thr  Leu Asn Pro Ala His  Gly Arg Gln Val Thr  Val Gln Glu
    1250                 1255                 1260

Phe Ala  Leu Phe Phe Thr Ile  Phe Asp Glu Thr Lys  Ser Trp Tyr
    1265                 1270                 1275

Phe Thr  Glu Asn Met Glu Arg  Asn Cys Arg Ala Pro  Cys Asn Ile
    1280                 1285                 1290

Gln Met  Glu Asp Pro Thr Phe  Lys Glu Asn Tyr Arg  Phe His Ala
    1295                 1300                 1305

Ile Asn  Gly Tyr Ile Met Asp  Thr Leu Pro Gly Leu  Val Met Ala
    1310                 1315                 1320

Gln Asp  Gln Arg Ile Arg Trp  Tyr Leu Leu Ser Met  Gly Ser Asn
    1325                 1330                 1335

Glu Asn  Ile His Ser Ile His  Phe Ser Gly His Val  Phe Thr Val
    1340                 1345                 1350

Arg Lys  Lys Glu Glu Tyr Lys  Met Ala Leu Tyr Asn  Leu Tyr Pro
    1355                 1360                 1365

Gly Val  Phe Glu Thr Val Glu  Met Leu Pro Ser Lys  Ala Gly Ile
    1370                 1375                 1380
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```
Trp Arg  Val Glu Cys Leu Ile  Gly Glu His Leu His  Ala Gly Met
    1385                1390                1395

Ser Thr  Leu Phe Leu Val Tyr  Ser Asn Lys Cys Gln  Thr Pro Leu
    1400                1405                1410

Gly Met  Ala Ser Gly His Ile  Arg Asp Phe Gln Ile  Thr Ala Ser
    1415                1420                1425

Gly Gln  Tyr Gly Gln Trp Ala  Pro Lys Leu Ala Arg  Leu His Tyr
    1430                1435                1440

Ser Gly  Ser Ile Asn Ala Trp  Ser Thr Lys Glu Pro  Phe Ser Trp
    1445                1450                1455

Ile Lys  Val Asp Leu Leu Ala  Pro Met Ile Ile His  Gly Ile Lys
    1460                1465                1470

Thr Gln  Gly Ala Arg Gln Lys  Phe Ser Ser Leu Tyr  Ile Ser Gln
    1475                1480                1485

Phe Ile  Ile Met Tyr Ser Leu  Asp Gly Lys Lys Trp  Gln Thr Tyr
    1490                1495                1500

Arg Gly  Asn Ser Thr Gly Thr  Leu Met Val Phe Phe  Gly Asn Val
    1505                1510                1515

Asp Ser  Ser Gly Ile Lys His  Asn Ile Phe Asn Pro  Pro Ile Ile
    1520                1525                1530

Ala Arg  Tyr Ile Arg Leu His  Pro Thr His Tyr Ser  Ile Arg Ser
    1535                1540                1545

Thr Leu  Arg Met Glu Leu Met  Gly Cys Asp Leu Asn  Ser Cys Ser
    1550                1555                1560

Met Pro  Leu Gly Met Glu Ser  Lys Ala Ile Ser Asp  Ala Gln Ile
    1565                1570                1575

Thr Ala  Ser Ser Tyr Phe Thr  Asn Met Phe Ala Thr  Trp Ser Pro
    1580                1585                1590
```

```
Ser Lys  Ala Arg Leu His Leu  Gln Gly Arg Ser Asn  Ala Trp Arg
    1595                 1600                 1605

Pro Gln  Val Asn Asn Pro Lys  Glu Trp Leu Gln Val  Asp Phe Gln
    1610                 1615                 1620

Lys Thr  Met Lys Val Thr Gly  Val Thr Thr Gln Gly  Val Lys Ser
    1625                 1630                 1635

Leu Leu  Thr Ser Met Tyr Val  Lys Glu Phe Leu Ile  Ser Ser Ser
    1640                 1645                 1650

Gln Asp  Gly His Gln Trp Thr  Leu Phe Phe Gln Asn  Gly Lys Val
    1655                 1660                 1665

Lys Val  Phe Gln Gly Asn Gln  Asp Ser Phe Thr Pro  Val Val Asn
    1670                 1675                 1680

Ser Leu  Asp Pro Pro Leu Leu  Thr Arg Tyr Leu Arg  Ile His Pro
    1685                 1690                 1695

Gln Ser  Trp Val His Gln Ile  Ala Leu Arg Met Glu  Val Leu Gly
    1700                 1705                 1710

Cys Glu  Ala Gln Asp Leu Tyr  Asp Lys Thr His Thr  Cys Pro Pro
    1715                 1720                 1725

Cys Pro  Ala Pro Glu Leu Leu  Gly Gly Pro Ser Val  Phe Leu Phe
    1730                 1735                 1740

Pro Pro  Lys Pro Lys Asp Thr  Leu Met Ile Ser Arg  Thr Pro Glu
    1745                 1750                 1755

Val Thr  Cys Val Val Val Asp  Val Ser His Glu Asp  Pro Glu Val
    1760                 1765                 1770

Lys Phe  Asn Trp Tyr Val Asp  Gly Val Glu Val His  Asn Ala Lys
    1775                 1780                 1785

Thr Lys  Pro Arg Glu Glu Gln  Tyr Asn Ser Thr Tyr  Arg Val Val
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```
    1790                1795                1800

Ser Val  Leu Thr Val Leu His  Gln Asp Trp Leu Asn  Gly Lys Glu
    1805                1810                1815

Tyr Lys  Cys Lys Val Ser Asn  Lys Ala Leu Pro Ala  Pro Ile Glu
    1820                1825                1830

Lys Thr  Ile Ser Lys Ala Lys  Gly Gln Pro Arg Glu  Pro Gln Val
    1835                1840                1845

Tyr Thr  Leu Pro Pro Ser Arg  Asp Glu Leu Thr Lys  Asn Gln Val
    1850                1855                1860

Ser Leu  Thr Cys Leu Val Lys  Gly Phe Tyr Pro Ser  Asp Ile Ala
    1865                1870                1875

Val Glu  Trp Glu Ser Asn Gly  Gln Pro Glu Asn Asn  Tyr Lys Thr
    1880                1885                1890

Thr Pro  Pro Val Leu Asp Ser  Asp Gly Ser Phe Phe  Leu Tyr Ser
    1895                1900                1905

Lys Leu  Thr Val Asp Lys Ser  Arg Trp Gln Gln Gly  Asn Val Phe
    1910                1915                1920

Ser Cys  Ser Val Met His Glu  Ala Leu His Asn His  Tyr Thr Gln
    1925                1930                1935

Lys Ser  Leu Ser Leu Ser Pro  Gly
    1940                1945


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

Asp Leu Glu Cys Met Ser Met Gly Cys Val Ser Gly Cys Leu Cys Pro
        35                  40                  45

Pro Gly Met Val Arg His Glu Asn Arg Cys Val Ala Leu Glu Arg Cys
    50                  55                  60

Pro Cys Phe His Gln Gly Lys Glu Tyr Ala Pro Gly Glu Thr Val Lys
65                  70                  75                  80

Ile Gly Cys Asn Thr Cys Val Cys Arg Asp Arg Lys Trp Asn Cys Thr
                85                  90                  95

Asp His Val Cys Asp Ala Thr Cys Ser Thr Ile Gly Met Ala His Tyr
            100                 105                 110

Leu Thr Phe Asp Gly Leu Lys Tyr Leu Phe Pro Gly Glu Cys Gln Tyr
        115                 120                 125

Val Leu Val Gln Asp Tyr Cys Gly Ser Asn Pro Gly Thr Phe Arg Ile
    130                 135                 140

Leu Val Gly Asn Lys Gly Cys Ser His Pro Ser Val Lys Cys Lys Lys
145                 150                 155                 160

Arg Val Thr Ile Leu Val Glu Gly Gly Glu Ile Glu Leu Phe Asp Gly
                165                 170                 175

Glu Val Asn Val Lys Arg Pro Met Lys Asp Glu Thr His Phe Glu Val
            180                 185                 190

Val Glu Ser Gly Arg Tyr Ile Ile Leu Leu Leu Gly Lys Ala Leu Ser
        195                 200                 205

Val Val Trp Asp Arg His Leu Ser Ile Ser Val Val Leu Lys Gln Thr
    210                 215                 220

Tyr Gln Glu Lys Val Cys Gly Leu Cys Gly Asn Phe Asp Gly Ile Gln
```

```
225                 230                 235                 240

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

Asp Phe Gly Asn Ser Trp Lys Val Ser Ser Gln Cys Ala Asp Thr Arg
            260                 265                 270

Lys Val Pro Leu Asp Ser Ser Pro Ala Thr Cys His Asn Asn Ile Met
        275                 280                 285

Lys Gln Thr Met Val Asp Ser Ser Cys Arg Ile Leu Thr Ser Asp Val
    290                 295                 300

Phe Gln Asp Cys Asn Lys Leu Val Asp Pro Glu Pro Tyr Leu Asp Val
305                 310                 315                 320

Cys Ile Tyr Asp Thr Cys Ser Cys Glu Ser Ile Gly Asp Cys Ala Ala
                325                 330                 335

Phe Cys Asp Thr Ile Ala Ala Tyr Ala His Val Cys Ala Gln His Gly
            340                 345                 350

Lys Val Val Thr Trp Arg Thr Ala Thr Leu Cys Pro Gln Ser Cys Glu
        355                 360                 365

Glu Arg Asn Leu Arg Glu Asn Gly Tyr Glu Ala Glu Trp Arg Tyr Asn
    370                 375                 380

Ser Cys Ala Pro Ala Cys Gln Val Thr Cys Gln His Pro Glu Pro Leu
385                 390                 395                 400

Ala Cys Pro Val Gln Cys Val Glu Gly Cys His Ala His Cys Pro Pro
                405                 410                 415

Gly Lys Ile Leu Asp Glu Leu Leu Gln Thr Cys Val Asp Pro Glu Asp
            420                 425                 430

Cys Pro Val Cys Glu Val Ala Gly Arg Arg Phe Ala Ser Gly Lys Lys
        435                 440                 445
```

```
Val Thr Leu Asn Pro Ser Asp Pro Glu His Cys Gln Ile Cys His Cys
    450                 455                 460

Asp Val Val Asn Leu Thr Cys Glu Ala Cys Gln Glu Pro Gly Thr Ser
465                 470                 475                 480

Glu Ser Ala Thr Pro Glu Ser Gly Pro Gly Ser Glu Pro Ala Thr Ser
                485                 490                 495

Gly Ser Glu Thr Pro Gly Thr Ser Glu Ser Ala Thr Pro Glu Ser Gly
            500                 505                 510

Pro Gly Ser Glu Pro Ala Thr Ser Gly Ser Glu Thr Pro Gly Thr Ser
        515                 520                 525

Glu Ser Ala Thr Pro Glu Ser Gly Pro Gly Thr Ser Thr Glu Pro Ser
    530                 535                 540

Glu Gly Ser Ala Pro Gly Ser Pro Ala Gly Ser Pro Thr Ser Thr Glu
545                 550                 555                 560

Glu Gly Thr Ser Glu Ser Ala Thr Pro Glu Ser Gly Pro Gly Ser Glu
                565                 570                 575

Pro Ala Thr Ser Gly Ser Glu Thr Pro Gly Thr Ser Glu Ser Ala Thr
            580                 585                 590

Pro Glu Ser Gly Pro Gly Ser Pro Ala Gly Ser Pro Thr Ser Thr Glu
        595                 600                 605

Glu Gly Ser Pro Ala Gly Ser Pro Thr Ser Thr Glu Glu Gly Ala Ser
    610                 615                 620

Ser Asp Lys Asn Thr Gly Asp Tyr Tyr Glu Asp Ser Tyr Glu Asp Ile
625                 630                 635                 640

Ser Ala Tyr Leu Leu Ser Lys Asn Asn Ala Ile Glu Pro Arg Ser Phe
                645                 650                 655

Ser Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu
            660                 665                 670
```

```
Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu
        675                 680                 685

Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser
    690                 695                 700

His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu
705                 710                 715                 720

Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr
                725                 730                 735

Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn
            740                 745                 750

Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro
        755                 760                 765

Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln
    770                 775                 780

Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val
785                 790                 795                 800

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

Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro
            820                 825                 830

Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr
        835                 840                 845

Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val
    850                 855                 860

Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu
865                 870                 875                 880

Ser Pro Gly
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Met Gln Ile Glu Leu Ser Thr Cys Phe Phe Leu Cys Leu Leu Arg Phe
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Cys Phe Ser Ala Thr Arg Arg Tyr Tyr Leu Gly Ala Val Glu Leu Ser
            20                  25                  30


Trp Asp Tyr Met Gln Ser Asp Leu Gly Glu Leu Pro Val Asp Ala Arg
        35                  40                  45


Phe Pro Pro Arg Val Pro Lys Ser Phe Pro Phe Asn Thr Ser Val Val
    50                  55                  60


Tyr Lys Lys Thr Leu Phe Val Glu Phe Thr Asp His Leu Phe Asn Ile
65                  70                  75                  80


Ala Lys Pro Arg Pro Pro Trp Met Gly Leu Leu Gly Pro Thr Ile Gln
                85                  90                  95


Ala Glu Val Tyr Asp Thr Val Val Ile Thr Leu Lys Asn Met Ala Ser
            100                 105                 110


His Pro Val Ser Leu His Ala Val Gly Val Ser Tyr Trp Lys Ala Ser
        115                 120                 125


Glu Gly Ala Glu Tyr Asp Asp Gln Thr Ser Gln Arg Glu Lys Glu Asp
    130                 135                 140


Asp Lys Val Phe Pro Gly Gly Ser His Thr Tyr Val Trp Gln Val Leu
145                 150                 155                 160


Lys Glu Asn Gly Pro Met Ala Ser Asp Pro Leu Cys Leu Thr Tyr Ser
                165                 170                 175
```

```
Tyr Leu Ser His Val Asp Leu Val Lys Asp Leu Asn Ser Gly Leu Ile
            180                 185                 190

Gly Ala Leu Leu Val Cys Arg Glu Gly Ser Leu Ala Lys Glu Lys Thr
        195                 200                 205

Gln Thr Leu His Lys Phe Ile Leu Leu Phe Ala Val Phe Asp Glu Gly
    210                 215                 220

Lys Ser Trp His Ser Glu Thr Lys Asn Ser Leu Met Gln Asp Arg Asp
225                 230                 235                 240

Ala Ala Ser Ala Arg Ala Trp Pro Lys Met His Thr Val Asn Gly Tyr
                245                 250                 255

Val Asn Arg Ser Leu Pro Gly Leu Ile Gly Cys His Arg Lys Ser Val
            260                 265                 270

Tyr Trp His Val Ile Gly Met Gly Thr Thr Pro Glu Val His Ser Ile
        275                 280                 285

Phe Leu Glu Gly His Thr Phe Leu Val Arg Asn His Arg Gln Ala Ser
    290                 295                 300

Leu Glu Ile Ser Pro Ile Thr Phe Leu Thr Ala Gln Thr Leu Leu Met
305                 310                 315                 320

Asp Leu Gly Gln Phe Leu Leu Phe Cys His Ile Ser Ser His Gln His
                325                 330                 335

Asp Gly Met Glu Ala Tyr Val Lys Val Asp Ser Cys Pro Glu Glu Pro
            340                 345                 350

Gln Leu Arg Met Lys Asn Asn Glu Glu Ala Glu Asp Tyr Asp Asp Asp
        355                 360                 365

Leu Thr Asp Ser Glu Met Asp Val Val Arg Phe Asp Asp Asp Asn Ser
    370                 375                 380

Pro Ser Phe Ile Gln Ile Arg Ser Val Ala Lys Lys His Pro Lys Thr
385                 390                 395                 400
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```
Trp Val His Tyr Ile Ala Ala Glu Glu Glu Asp Trp Asp Tyr Ala Pro
                405                 410                 415

Leu Val Leu Ala Pro Asp Asp Arg Ser Tyr Lys Ser Gln Tyr Leu Asn
            420                 425                 430

Asn Gly Pro Gln Arg Ile Gly Arg Lys Tyr Lys Lys Val Arg Phe Met
        435                 440                 445

Ala Tyr Thr Asp Glu Thr Phe Lys Thr Arg Glu Ala Ile Gln His Glu
    450                 455                 460

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

Leu Ile Ile Phe Lys Asn Gln Ala Ser Arg Pro Tyr Asn Ile Tyr Pro
                485                 490                 495

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

Gly Val Lys His Leu Lys Asp Phe Pro Ile Leu Pro Gly Glu Ile Phe
        515                 520                 525

Lys Tyr Lys Trp Thr Val Thr Val Glu Asp Gly Pro Thr Lys Ser Asp
    530                 535                 540

Pro Arg Cys Leu Thr Arg Tyr Tyr Ser Ser Phe Val Asn Met Glu Arg
545                 550                 555                 560

Asp Leu Ala Ser Gly Leu Ile Gly Pro Leu Leu Ile Cys Tyr Lys Glu
                565                 570                 575

Ser Val Asp Gln Arg Gly Asn Gln Ile Met Ser Asp Lys Arg Asn Val
            580                 585                 590

Ile Leu Phe Ser Val Phe Asp Glu Asn Arg Ser Trp Tyr Leu Thr Glu
        595                 600                 605

Asn Ile Gln Arg Phe Leu Pro Asn Pro Ala Gly Val Gln Leu Glu Asp
```

```
    610                 615                 620

Pro Glu Phe Gln Ala Ser Asn Ile Met His Ser Ile Asn Gly Tyr Val
625                 630                 635                 640

Phe Asp Ser Leu Gln Leu Ser Val Cys Leu His Glu Val Ala Tyr Trp
                645                 650                 655

Tyr Ile Leu Ser Ile Gly Ala Gln Thr Asp Phe Leu Ser Val Phe Phe
            660                 665                 670

Ser Gly Tyr Thr Phe Lys His Lys Met Val Tyr Glu Asp Thr Leu Thr
        675                 680                 685

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

Gly Leu Trp Ile Leu Gly Cys His Asn Ser Asp Phe Arg Asn Arg Gly
705                 710                 715                 720

Met Thr Ala Leu Leu Lys Val Ser Ser Cys Asp Lys Asn Thr Gly Asp
                725                 730                 735

Tyr Tyr Glu Asp Ser Tyr Glu Asp Ile Ser Ala Tyr Leu Leu Ser Lys
            740                 745                 750

Asn Asn Ala Ile Glu Pro Arg Ser Phe Ser Gln Asn Gly Thr Ser Glu
        755                 760                 765

Ser Ala Thr Pro Glu Ser Gly Pro Gly Ser Glu Pro Ala Thr Ser Gly
    770                 775                 780

Ser Glu Thr Pro Gly Thr Ser Glu Ser Ala Thr Pro Glu Ser Gly Pro
785                 790                 795                 800

Gly Ser Glu Pro Ala Thr Ser Gly Ser Glu Thr Pro Gly Thr Ser Glu
                805                 810                 815

Ser Ala Thr Pro Glu Ser Gly Pro Gly Thr Ser Thr Glu Pro Ser Glu
            820                 825                 830
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Gly Ser Ala Pro Gly Ser Pro Ala Gly Ser Pro Thr Ser Thr Glu Glu
        835                 840                 845

Gly Thr Ser Glu Ser Ala Thr Pro Glu Ser Gly Pro Gly Ser Glu Pro
    850                 855                 860

Ala Thr Ser Gly Ser Glu Thr Pro Gly Thr Ser Glu Ser Ala Thr Pro
865                 870                 875                 880

Glu Ser Gly Pro Gly Ser Pro Ala Gly Ser Pro Thr Ser Thr Glu Glu
                885                 890                 895

Gly Ser Pro Ala Gly Ser Pro Thr Ser Thr Glu Glu Gly Thr Ser Thr
            900                 905                 910

Glu Pro Ser Glu Gly Ser Ala Pro Gly Thr Ser Glu Ser Ala Thr Pro
        915                 920                 925

Glu Ser Gly Pro Gly Thr Ser Glu Ser Ala Thr Pro Glu Ser Gly Pro
    930                 935                 940

Gly Thr Ser Glu Ser Ala Thr Pro Glu Ser Gly Pro Gly Ser Glu Pro
945                 950                 955                 960

Ala Thr Ser Gly Ser Glu Thr Pro Gly Ser Glu Pro Ala Thr Ser Gly
                965                 970                 975

Ser Glu Thr Pro Gly Ser Pro Ala Gly Ser Pro Thr Ser Thr Glu Glu
            980                 985                 990

Gly Thr Ser Thr Glu Pro Ser Glu  Gly Ser Ala Pro Gly  Thr Ser Thr
        995                 1000                1005

Glu Pro  Ser Glu Gly Ser Ala  Pro Gly Ser Glu Pro  Ala Thr Ser
    1010                1015                1020

Gly Ser  Glu Thr Pro Gly Thr  Ser Glu Ser Ala Thr  Pro Glu Ser
    1025                1030                1035

Gly Pro  Gly Thr Ser Thr Glu  Pro Ser Glu Gly Ser  Ala Pro Ala
    1040                1045                1050
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```
Ser Ser  Glu Ile Thr Arg Thr  Thr Leu Gln Ser Asp  Gln Glu Glu
    1055                1060                1065

Ile Asp  Tyr Asp Asp Thr Ile  Ser Val Glu Met Lys  Lys Glu Asp
    1070                1075                1080

Phe Asp  Ile Tyr Asp Glu Asp  Glu Asn Gln Ser Pro  Arg Ser Phe
    1085                1090                1095

Gln Lys  Lys Thr Arg His Tyr  Phe Ile Ala Ala Val  Glu Arg Leu
    1100                1105                1110

Trp Asp  Tyr Gly Met Ser Ser  Ser Pro His Val Leu  Arg Asn Arg
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Ala Gln  Ser Gly Ser Val Pro  Gln Phe Lys Lys Val  Val Phe Gln
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Glu Phe  Thr Asp Gly Ser Phe  Thr Gln Pro Leu Tyr  Arg Gly Glu
    1145                1150                1155

Leu Asn  Glu His Leu Gly Leu  Leu Gly Pro Tyr Ile  Arg Ala Glu
    1160                1165                1170

Val Glu  Asp Asn Ile Met Val  Thr Phe Arg Asn Gln  Ala Ser Arg
    1175                1180                1185

Pro Tyr  Ser Phe Tyr Ser Ser  Leu Ile Ser Tyr Glu  Glu Asp Gln
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Arg Gln  Gly Ala Glu Pro Arg  Lys Asn Phe Val Lys  Pro Asn Glu
    1205                1210                1215

Thr Lys  Thr Tyr Phe Trp Lys  Val Gln His His Met  Ala Pro Thr
    1220                1225                1230

Lys Asp  Glu Phe Asp Cys Lys  Ala Trp Ala Tyr Phe  Ser Asp Val
    1235                1240                1245

Asp Leu  Glu Lys Asp Val His  Ser Gly Leu Ile Gly  Pro Leu Leu
    1250                1255                1260
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Val Cys  His Thr Asn Thr Leu  Asn Pro Ala His Gly  Arg Gln Val
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Thr Val  Gln Glu Phe Ala Leu  Phe Phe Thr Ile Phe  Asp Glu Thr
    1280                1285                1290

Lys Ser  Trp Tyr Phe Thr Glu  Asn Met Glu Arg Asn  Cys Arg Ala
    1295                1300                1305

Pro Cys  Asn Ile Gln Met Glu  Asp Pro Thr Phe Lys  Glu Asn Tyr
    1310                1315                1320

Arg Phe  His Ala Ile Asn Gly  Tyr Ile Met Asp Thr  Leu Pro Gly
    1325                1330                1335

Leu Val  Met Ala Gln Asp Gln  Arg Ile Arg Trp Tyr  Leu Leu Ser
    1340                1345                1350

Met Gly  Ser Asn Glu Asn Ile  His Ser Ile His Phe  Ser Gly His
    1355                1360                1365

Val Phe  Thr Val Arg Lys Lys  Glu Glu Tyr Lys Met  Ala Leu Tyr
    1370                1375                1380

Asn Leu  Tyr Pro Gly Val Phe  Glu Thr Val Glu Met  Leu Pro Ser
    1385                1390                1395

Lys Ala  Gly Ile Trp Arg Val  Glu Cys Leu Ile Gly  Glu His Leu
    1400                1405                1410

His Ala  Gly Met Ser Thr Leu  Phe Leu Val Tyr Ser  Asn Lys Cys
    1415                1420                1425

Gln Thr  Pro Leu Gly Met Ala  Ser Gly His Ile Arg  Asp Phe Gln
    1430                1435                1440

Ile Thr  Ala Ser Gly Gln Tyr  Gly Gln Trp Ala Pro  Lys Leu Ala
    1445                1450                1455

Arg Leu  His Tyr Ser Gly Ser  Ile Asn Ala Trp Ser  Thr Lys Glu
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Pro Phe  Ser Trp Ile Lys Val  Asp Leu Leu Ala Pro  Met Ile Ile
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His Gly  Ile Lys Thr Gln Gly  Ala Arg Gln Lys Phe  Ser Ser Leu
    1490                1495                1500

Tyr Ile  Ser Gln Phe Ile Ile  Met Tyr Ser Leu Asp  Gly Lys Lys
    1505                1510                1515

Trp Gln  Thr Tyr Arg Gly Asn  Ser Thr Gly Thr Leu  Met Val Phe
    1520                1525                1530

Phe Gly  Asn Val Asp Ser Ser  Gly Ile Lys His Asn  Ile Phe Asn
    1535                1540                1545

Pro Pro  Ile Ile Ala Arg Tyr  Ile Arg Leu His Pro  Thr His Tyr
    1550                1555                1560

Ser Ile  Arg Ser Thr Leu Arg  Met Glu Leu Met Gly  Cys Asp Leu
    1565                1570                1575

Asn Ser  Cys Ser Met Pro Leu  Gly Met Glu Ser Lys  Ala Ile Ser
    1580                1585                1590

Asp Ala  Gln Ile Thr Ala Ser  Ser Tyr Phe Thr Asn  Met Phe Ala
    1595                1600                1605

Thr Trp  Ser Pro Ser Lys Ala  Arg Leu His Leu Gln  Gly Arg Ser
    1610                1615                1620

Asn Ala  Trp Arg Pro Gln Val  Asn Asn Pro Lys Glu  Trp Leu Gln
    1625                1630                1635

Val Asp  Phe Gln Lys Thr Met  Lys Val Thr Gly Val  Thr Thr Gln
    1640                1645                1650

Gly Val  Lys Ser Leu Leu Thr  Ser Met Tyr Val Lys  Glu Phe Leu
    1655                1660                1665
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Ile Ser  Ser Ser Gln Asp Gly  His Gln Trp Thr Leu  Phe Phe Gln
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Asn Gly  Lys Val Lys Val Phe  Gln Gly Asn Gln Asp  Ser Phe Thr
    1685                 1690                 1695

Pro Val  Val Asn Ser Leu Asp  Pro Pro Leu Leu Thr  Arg Tyr Leu
    1700                 1705                 1710

Arg Ile  His Pro Gln Ser Trp  Val His Gln Ile Ala  Leu Arg Met
    1715                 1720                 1725

Glu Val  Leu Gly Cys Glu Ala  Gln Asp Leu Tyr Asp  Lys Thr His
    1730                 1735                 1740

Thr Cys  Pro Pro Cys Pro Ala  Pro Glu Leu Leu Gly  Gly Pro Ser
    1745                 1750                 1755

Val Phe  Leu Phe Pro Pro Lys  Pro Lys Asp Thr Leu  Met Ile Ser
    1760                 1765                 1770

Arg Thr  Pro Glu Val Thr Cys  Val Val Val Asp Val  Ser His Glu
    1775                 1780                 1785

Asp Pro  Glu Val Lys Phe Asn  Trp Tyr Val Asp Gly  Val Glu Val
    1790                 1795                 1800

His Asn  Ala Lys Thr Lys Pro  Arg Glu Glu Gln Tyr  Asn Ser Thr
    1805                 1810                 1815

Tyr Arg  Val Val Ser Val Leu  Thr Val Leu His Gln  Asp Trp Leu
    1820                 1825                 1830

Asn Gly  Lys Glu Tyr Lys Cys  Lys Val Ser Asn Lys  Ala Leu Pro
    1835                 1840                 1845

Ala Pro  Ile Glu Lys Thr Ile  Ser Lys Ala Lys Gly  Gln Pro Arg
    1850                 1855                 1860

Glu Pro  Gln Val Tyr Thr Leu  Pro Pro Ser Arg Asp  Glu Leu Thr
    1865                 1870                 1875
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Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro
    1880   1885   1890

Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn
    1895   1900   1905

Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe
    1910   1915   1920

Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln
    1925   1930   1935

Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn
    1940   1945   1950

His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly
    1955   1960   1965

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Ala Arg Cys Ser Leu Phe Gly Ser Asp Phe Val Asn Thr Phe Asp Gly
35 40 45

Ser Met Tyr Ser Phe Ala Gly Tyr Cys Ser Tyr Leu Leu Ala Gly Gly
50 55 60

Cys Gln Lys Arg Ser Phe Ser Ile Ile Gly Asp Phe Gln Asn Gly Lys
65 70 75 80

Arg Val Ser Leu Ser Val Tyr Leu Gly Glu Phe Phe Asp Ile His Leu
85 90 95

Phe Val Asn Gly Thr Val Thr Gln Gly Asp Gln Arg Val Ser Met Pro
100 105 110

Tyr Ala Ser Lys Gly Leu Tyr Leu Glu Thr Glu Ala Gly Tyr Tyr Lys
115 120 125

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Leu Ser Gly Glu Ala Tyr Gly Phe Val Ala Arg Ile Asp Gly Ser Gly
    130                 135                 140

Asn Phe Gln Val Leu Leu Ser Asp Arg Tyr Phe Asn Lys Thr Cys Gly
145                 150                 155                 160

Leu Cys Gly Asn Phe Asn Ile Phe Ala Glu Asp Asp Phe Met Thr Gln
                165                 170                 175

Glu Gly Thr Leu Thr Ser Asp Pro Tyr Asp Phe Ala Asn Ser Trp Ala
            180                 185                 190

Leu Ser Ser Gly Glu Gln Trp Cys Glu Arg Ala Ser Pro Pro Ser Ser
        195                 200                 205

Ser Cys Asn Ile Ser Ser Gly Glu Met Gln Lys Gly Leu Trp Glu Gln
    210                 215                 220

Cys Gln Leu Leu Lys Ser Thr Ser Val Phe Ala Arg Cys His Pro Leu
225                 230                 235                 240

Val Asp Pro Glu Pro Phe Val Ala Leu Cys Glu Lys Thr Leu Cys Glu
                245                 250                 255

Cys Ala Gly Gly Leu Glu Cys Ala Cys Pro Ala Leu Leu Glu Tyr Ala
            260                 265                 270

Arg Thr Cys Ala Gln Glu Gly Met Val Leu Tyr Gly Trp Thr Asp His
        275                 280                 285

Ser Ala Cys Ser Pro Val Cys Pro Ala Gly Met Glu Tyr Arg Gln Cys
    290                 295                 300

Val Ser Pro Cys Ala Arg Thr Cys Gln Ser Leu His Ile Asn Glu Met
305                 310                 315                 320

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

Leu Asp Glu Gly Leu Cys Val Glu Ser Thr Glu Cys Pro Cys Val His
            340                 345                 350
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Ser Gly Lys Arg Tyr Pro Pro Gly Thr Ser Leu Ser Arg Asp Cys Asn
        355                 360                 365

Thr Cys Ile Cys Arg Asn Ser Gln Trp Ile Cys Ser Asn Glu Glu Cys
    370                 375                 380

Pro Gly Glu Cys Leu Val Thr Gly Gln Ser His Phe Lys Ser Phe Asp
385                 390                 395                 400

Asn Arg Tyr Phe Thr Phe Ser Gly Ile Cys Gln Tyr Leu Leu Ala Arg
                405                 410                 415

Asp Cys Gln Asp His Ser Phe Ser Ile Val Ile Glu Thr Val Gln Cys
            420                 425                 430

Ala Asp Asp Arg Asp Ala Val Cys Thr Arg Ser Val Thr Val Arg Leu
        435                 440                 445

Pro Gly Leu His Asn Ser Leu Val Lys Leu Lys His Gly Ala Gly Val
    450                 455                 460

Ala Met Asp Gly Gln Asp Ile Gln Leu Pro Leu Leu Lys Gly Asp Leu
465                 470                 475                 480

Arg Ile Gln His Thr Val Thr Ala Ser Val Arg Leu Ser Tyr Gly Glu
                485                 490                 495

Asp Leu Gln Met Asp Trp Asp Gly Arg Gly Arg Leu Leu Val Lys Leu
            500                 505                 510

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

Gly Asn Gln Gly Asp Asp Phe Leu Thr Pro Ser Gly Leu Ala Glu Pro
    530                 535                 540

Arg Val Glu Asp Phe Gly Asn Ala Trp Lys Leu His Gly Asp Cys Gln
545                 550                 555                 560

Asp Leu Gln Lys Gln His Ser Asp Pro Cys Ala Leu Asn Pro Arg Met
                565                 570                 575
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Thr Arg Phe Ser Glu Glu Ala Cys Ala Val Leu Thr Ser Pro Thr Phe
            580                 585                 590

Glu Ala Cys His Arg Ala Val Ser Pro Leu Pro Tyr Leu Arg Asn Cys
        595                 600                 605

Arg Tyr Asp Val Cys Ser Cys Ser Asp Gly Arg Glu Cys Leu Cys Gly
    610                 615                 620

Ala Leu Ala Ser Tyr Ala Ala Ala Cys Ala Gly Arg Gly Val Arg Val
625                 630                 635                 640

Ala Trp Arg Glu Pro Gly Arg Cys Glu Leu Asn Cys Pro Lys Gly Gln
                645                 650                 655

Val Tyr Leu Gln Cys Gly Thr Pro Cys Asn Leu Thr Cys Arg Ser Leu
            660                 665                 670

Ser Tyr Pro Asp Glu Glu Cys Asn Glu Ala Cys Leu Glu Gly Cys Phe
        675                 680                 685

Cys Pro Pro Gly Leu Tyr Met Asp Glu Arg Gly Asp Cys Val Pro Lys
    690                 695                 700

Ala Gln Cys Pro Cys Tyr Tyr Asp Gly Glu Ile Phe Gln Pro Glu Asp
705                 710                 715                 720

Ile Phe Ser Asp His His Thr Met Cys Tyr Cys Glu Asp Gly Phe Met
                725                 730                 735

His Cys Thr Met Ser Gly Val Pro Gly Ser Leu Leu Pro Asp Ala Val
            740                 745                 750

Leu Ser Ser Pro Leu Ser His Arg Ser Lys Arg Ser Leu Ser Cys Arg
        755                 760                 765

Pro Pro Met Val Lys Leu Val Cys Pro Ala Asp Asn Leu Arg Ala Glu
    770                 775                 780

Gly Leu Glu Cys Thr Lys Thr Cys Gln Asn Tyr Asp Leu Glu Cys Met
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Ser Met Gly Cys Val Ser Gly Cys Leu Cys Pro Pro Gly Met Val Arg
805 810 815

His Glu Asn Arg Cys Val Ala Leu Glu Arg Cys Pro Cys Phe His Gln
820 825 830

Gly Lys Glu Tyr Ala Pro Gly Glu Thr Val Lys Ile Gly Cys Asn Thr
835 840 845

Cys Val Cys Arg Asp Arg Lys Trp Asn Cys Thr Asp His Val Cys Asp
850 855 860

Ala Thr Cys Ser Thr Ile Gly Met Ala His Tyr Leu Thr Phe Asp Gly
865 870 875 880

Leu Lys Tyr Leu Phe Pro Gly Glu Cys Gln Tyr Val Leu Val Gln Asp
885 890 895

Tyr Cys Gly Ser Asn Pro Gly Thr Phe Arg Ile Leu Val Gly Asn Lys
900 905 910

Gly Cys Ser His Pro Ser Val Lys Cys Lys Lys Arg Val Thr Ile Leu
915 920 925

Val Glu Gly Gly Glu Ile Glu Leu Phe Asp Gly Glu Val Asn Val Lys
930 935 940

Arg Pro Met Lys Asp Glu Thr His Phe Glu Val Val Glu Ser Gly Arg
945 950 955 960

Tyr Ile Ile Leu Leu Leu Gly Lys Ala Leu Ser Val Val Trp Asp Arg
965 970 975

His Leu Ser Ile Ser Val Val Leu Lys Gln Thr Tyr Gln Glu Lys Val
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Cys Gly Leu Cys Gly Asn Phe Asp Gly Ile Gln Asn Asn Asp Leu Thr
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Leu Asp  Ser Ser Pro Ala Thr  Cys His Asn Asn Ile  Met Lys Gln
    1040                1045                1050

Thr Met  Val Asp Ser Ser Cys  Arg Ile Leu Thr Ser  Asp Val Phe
    1055                1060                1065

Gln Asp  Cys Asn Lys Leu Val  Asp Pro Glu Pro Tyr  Leu Asp Val
    1070                1075                1080

Cys Ile  Tyr Asp Thr Cys Ser  Cys Glu Ser Ile Gly  Asp Cys Ala
    1085                1090                1095

Ala Phe  Cys Asp Thr Ile Ala  Ala Tyr Ala His Val  Cys Ala Gln
    1100                1105                1110

His Gly  Lys Val Val Thr Trp  Arg Thr Ala Thr Leu  Cys Pro Gln
    1115                1120                1125

Ser Cys  Glu Glu Arg Asn Leu  Arg Glu Asn Gly Tyr  Glu Ala Glu
    1130                1135                1140

Trp Arg  Tyr Asn Ser Cys Ala  Pro Ala Cys Gln Val  Thr Cys Gln
    1145                1150                1155

His Pro  Glu Pro Leu Ala Cys  Pro Val Gln Cys Val  Glu Gly Cys
    1160                1165                1170

His Ala  His Cys Pro Pro Gly  Lys Ile Leu Asp Glu  Leu Leu Gln
    1175                1180                1185

Thr Cys  Val Asp Pro Glu Asp  Cys Pro Val Cys Glu  Val Ala Gly
    1190                1195                1200

Arg Arg  Phe Ala Ser Gly Lys  Lys Val Thr Leu Asn  Pro Ser Asp
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Pro Glu  His Cys Gln Ile Cys  His Cys Asp Val Val  Asn Leu Thr
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Cys Glu  Ala Cys Gln Glu Pro  Gly Thr Ser Glu Ser  Ala Thr Pro
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Glu Ser  Gly Pro Gly Ser Glu  Pro Ala Thr Ser Gly  Ser Glu Thr
    1250                1255                1260

Pro Gly  Thr Ser Glu Ser Ala  Thr Pro Glu Ser Gly  Pro Gly Ser
    1265                1270                1275

Glu Pro  Ala Thr Ser Gly Ser  Glu Thr Pro Gly Thr  Ser Glu Ser
    1280                1285                1290

Ala Thr  Pro Glu Ser Gly Pro  Gly Thr Ser Thr Glu  Pro Ser Glu
    1295                1300                1305

Gly Ser  Ala Pro Gly Ser Pro  Ala Gly Ser Pro Thr  Ser Thr Glu
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Glu Gly  Thr Ser Glu Ser Ala  Thr Pro Glu Ser Gly  Pro Gly Ser
    1325                1330                1335

Glu Pro  Ala Thr Ser Gly Ser  Glu Thr Pro Gly Thr  Ser Glu Ser
    1340                1345                1350

Ala Thr  Pro Glu Ser Gly Pro  Gly Ser Pro Ala Gly  Ser Pro Thr
    1355                1360                1365

Ser Thr  Glu Glu Gly Ser Pro  Ala Gly Ser Pro Thr  Ser Thr Glu
    1370                1375                1380

Glu Gly  Ala Ser Ser Asp Lys  Asn Thr Gly Asp Tyr  Tyr Glu Asp
    1385                1390                1395

Ser Tyr  Glu Asp Ile Ser Ala  Tyr Leu Leu Ser Lys  Asn Asn Ala
    1400                1405                1410

Ile Glu  Pro Arg Ser Phe Ser  Asp Lys Thr His Thr  Cys Pro Pro
    1415                1420                1425
```

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Cys Pro  Ala Pro Glu Leu Leu  Gly Gly Pro Ser Val  Phe Leu Phe
    1430                1435                1440

Pro Pro  Lys Pro Lys Asp Thr  Leu Met Ile Ser Arg  Thr Pro Glu
    1445                1450                1455

Val Thr  Cys Val Val Val Asp  Val Ser His Glu Asp  Pro Glu Val
    1460                1465                1470

Lys Phe  Asn Trp Tyr Val Asp  Gly Val Glu Val His  Asn Ala Lys
    1475                1480                1485

Thr Lys  Pro Arg Glu Glu Gln  Tyr Asn Ser Thr Tyr  Arg Val Val
    1490                1495                1500

Ser Val  Leu Thr Val Leu His  Gln Asp Trp Leu Asn  Gly Lys Glu
    1505                1510                1515

Tyr Lys  Cys Lys Val Ser Asn  Lys Ala Leu Pro Ala  Pro Ile Glu
    1520                1525                1530

Lys Thr  Ile Ser Lys Ala Lys  Gly Gln Pro Arg Glu  Pro Gln Val
    1535                1540                1545

Tyr Thr  Leu Pro Pro Ser Arg  Asp Glu Leu Thr Lys  Asn Gln Val
    1550                1555                1560

Ser Leu  Thr Cys Leu Val Lys  Gly Phe Tyr Pro Ser  Asp Ile Ala
    1565                1570                1575

Val Glu  Trp Glu Ser Asn Gly  Gln Pro Glu Asn Asn  Tyr Lys Thr
    1580                1585                1590

Thr Pro  Pro Val Leu Asp Ser  Asp Gly Ser Phe Phe  Leu Tyr Ser
    1595                1600                1605

Lys Leu  Thr Val Asp Lys Ser  Arg Trp Gln Gln Gly  Asn Val Phe
    1610                1615                1620

Ser Cys  Ser Val Met His Glu  Ala Leu His Asn His  Tyr Thr Gln
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1625 1630 1635

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gacttcgtca acacctttga tgggagcatg tacagctttg cgggatactg cagttacctc 180

ctggcagggg gctgccagaa acgctccttc tcgattattg gggacttcca gaatggcaag 240

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Gln Ser Asp Leu Gly Glu Leu Pro Val Asp Ala Arg Phe Pro Pro Arg
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Val Pro Lys Ser Phe Pro Phe Asn Thr Ser Val Val Tyr Lys Lys Thr
35 40 45

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

Pro Pro Trp Met Gly Leu Leu Gly Pro Thr Ile Gln Ala Glu Val Tyr
65 70 75 80

Asp Thr Val Val Ile Thr Leu Lys Asn Met Ala Ser His Pro Val Ser
85 90 95

Leu His Ala Val Gly Val Ser Tyr Trp Lys Ala Ser Glu Gly Ala Glu
100 105 110

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Tyr Asp Asp Gln Thr Ser Gln Arg Glu Lys Glu Asp Asp Lys Val Phe
        115                 120                 125

Pro Gly Gly Ser His Thr Tyr Val Trp Gln Val Leu Lys Glu Asn Gly
    130                 135                 140

Pro Met Ala Ser Asp Pro Leu Cys Leu Thr Tyr Ser Tyr Leu Ser His
145                 150                 155                 160

Val Asp Leu Val Lys Asp Leu Asn Ser Gly Leu Ile Gly Ala Leu Leu
                165                 170                 175

Val Cys Arg Glu Gly Ser Leu Ala Lys Glu Lys Thr Gln Thr Leu His
            180                 185                 190

Lys Phe Ile Leu Leu Phe Ala Val Phe Asp Glu Gly Lys Ser Trp His
        195                 200                 205

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

Arg Ala Trp Pro Lys Met His Thr Val Asn Gly Tyr Val Asn Arg Ser
225                 230                 235                 240

Leu Pro Gly Leu Ile Gly Cys His Arg Lys Ser Val Tyr Trp His Val
                245                 250                 255

Ile Gly Met Gly Thr Thr Pro Glu Val His Ser Ile Phe Leu Glu Gly
            260                 265                 270

His Thr Phe Leu Val Arg Asn His Arg Gln Ala Ser Leu Glu Ile Ser
        275                 280                 285

Pro Ile Thr Phe Leu Thr Ala Gln Thr Leu Leu Met Asp Leu Gly Gln
    290                 295                 300

Phe Leu Leu Phe Cys His Ile Ser Ser His Gln His Asp Gly Met Glu
305                 310                 315                 320

Ala Tyr Val Lys Val Asp Ser Cys Pro Glu Glu Pro Gln Leu Arg Met
                325                 330                 335
```

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Lys Asn Asn Glu Glu Ala Glu Asp Tyr Asp Asp Asp Leu Thr Asp Ser
            340                 345                 350

Glu Met Asp Val Val Arg Phe Asp Asp Asp Asn Ser Pro Ser Phe Ile
        355                 360                 365

Gln Ile Arg Ser Val Ala Lys Lys His Pro Lys Thr Trp Val His Tyr
    370                 375                 380

Ile Ala Ala Glu Glu Glu Asp Trp Asp Tyr Ala Pro Leu Val Leu Ala
385                 390                 395                 400

Pro Asp Asp Arg Ser Tyr Lys Ser Gln Tyr Leu Asn Asn Gly Pro Gln
                405                 410                 415

Arg Ile Gly Arg Lys Tyr Lys Lys Val Arg Phe Met Ala Tyr Thr Asp
            420                 425                 430

Glu Thr Phe Lys Thr Arg Glu Ala Ile Gln His Glu Ser Gly Ile Leu
        435                 440                 445

Gly Pro Leu Leu Tyr Gly Glu Val Gly Asp Thr Leu Leu Ile Ile Phe
    450                 455                 460

Lys Asn Gln Ala Ser Arg Pro Tyr Asn Ile Tyr Pro His Gly Ile Thr
465                 470                 475                 480

Asp Val Arg Pro Leu Tyr Ser Arg Arg Leu Pro Lys Gly Val Lys His
                485                 490                 495

Leu Lys Asp Phe Pro Ile Leu Pro Gly Glu Ile Phe Lys Tyr Lys Trp
            500                 505                 510

Thr Val Thr Val Glu Asp Gly Pro Thr Lys Ser Asp Pro Arg Cys Leu
        515                 520                 525

Thr Arg Tyr Tyr Ser Ser Phe Val Asn Met Glu Arg Asp Leu Ala Ser
    530                 535                 540

Gly Leu Ile Gly Pro Leu Leu Ile Cys Tyr Lys Glu Ser Val Asp Gln
```

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545                 550                 555                 560

Arg Gly Asn Gln Ile Met Ser Asp Lys Arg Asn Val Ile Leu Phe Ser
                565                 570                 575

Val Phe Asp Glu Asn Arg Ser Trp Tyr Leu Thr Glu Asn Ile Gln Arg
            580                 585                 590

Phe Leu Pro Asn Pro Ala Gly Val Gln Leu Glu Asp Pro Glu Phe Gln
        595                 600                 605

Ala Ser Asn Ile Met His Ser Ile Asn Gly Tyr Val Phe Asp Ser Leu
    610                 615                 620

Gln Leu Ser Val Cys Leu His Glu Val Ala Tyr Trp Tyr Ile Leu Ser
625                 630                 635                 640

Ile Gly Ala Gln Thr Asp Phe Leu Ser Val Phe Phe Ser Gly Tyr Thr
                645                 650                 655

Phe Lys His Lys Met Val Tyr Glu Asp Thr Leu Thr Leu Phe Pro Phe
            660                 665                 670

Ser Gly Glu Thr Val Phe Met Ser Met Glu Asn Pro Gly Leu Trp Ile
        675                 680                 685

Leu Gly Cys His Asn Ser Asp Phe Arg Asn Arg Gly Met Thr Ala Leu
    690                 695                 700

Leu Lys Val Ser Ser Cys Asp Lys Asn Thr Gly Asp Tyr Tyr Glu Asp
705                 710                 715                 720

Ser Tyr Glu Asp Ile Ser Ala Tyr Leu Leu Ser Lys Asn Asn Ala Ile
                725                 730                 735

Glu Pro Arg Ser Phe Ser Gln Asn Gly Thr Ser Glu Ser Ala Thr Pro
            740                 745                 750

Glu Ser Gly Pro Gly Ser Glu Pro Ala Thr Ser Gly Ser Glu Thr Pro
        755                 760                 765
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Gly Thr Ser Glu Ser Ala Thr Pro Glu Ser Gly Pro Gly Ser Glu Pro
    770                 775                 780

Ala Thr Ser Gly Ser Glu Thr Pro Gly Thr Ser Glu Ser Ala Thr Pro
785                 790                 795                 800

Glu Ser Gly Pro Gly Thr Ser Thr Glu Pro Ser Glu Gly Ser Ala Pro
                805                 810                 815

Gly Ser Pro Ala Gly Ser Pro Thr Ser Thr Glu Glu Gly Thr Ser Glu
            820                 825                 830

Ser Ala Thr Pro Glu Ser Gly Pro Gly Ser Glu Pro Ala Thr Ser Gly
        835                 840                 845

Ser Glu Thr Pro Gly Thr Ser Glu Ser Ala Thr Pro Glu Ser Gly Pro
    850                 855                 860

Gly Ser Pro Ala Gly Ser Pro Thr Ser Thr Glu Glu Gly Ser Pro Ala
865                 870                 875                 880

Gly Ser Pro Thr Ser Thr Glu Glu Gly Thr Ser Thr Glu Pro Ser Glu
                885                 890                 895

Gly Ser Ala Pro Gly Thr Ser Glu Ser Ala Thr Pro Glu Ser Gly Pro
            900                 905                 910

Gly Thr Ser Glu Ser Ala Thr Pro Glu Ser Gly Pro Gly Thr Ser Glu
        915                 920                 925

Ser Ala Thr Pro Glu Ser Gly Pro Gly Ser Glu Pro Ala Thr Ser Gly
    930                 935                 940

Ser Glu Thr Pro Gly Ser Glu Pro Ala Thr Ser Gly Ser Glu Thr Pro
945                 950                 955                 960

Gly Ser Pro Ala Gly Ser Pro Thr Ser Thr Glu Glu Gly Thr Ser Thr
                965                 970                 975

Glu Pro Ser Glu Gly Ser Ala Pro Gly Thr Ser Thr Glu Pro Ser Glu
            980                 985                 990
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Gly Ser Ala Pro Gly Ser Glu Pro  Ala Thr Ser Gly Ser  Glu Thr Pro
        995                 1000                1005


Gly Thr  Ser Glu Ser Ala Thr  Pro Glu Ser Gly Pro  Gly Thr Ser
    1010                1015                1020


Thr Glu  Pro Ser Glu Gly Ser  Ala Pro Ala Ser Ser  Glu Ile Thr
    1025                1030                1035


Arg Thr  Thr Leu Gln Ser Asp  Gln Glu Glu Ile Asp  Tyr Asp Asp
    1040                1045                1050


Thr Ile  Ser Val Glu Met Lys  Lys Glu Asp Phe Asp  Ile Tyr Asp
    1055                1060                1065


Glu Asp  Glu Asn Gln Ser Pro  Arg Ser Phe Gln Lys  Lys Thr Arg
    1070                1075                1080


His Tyr  Phe Ile Ala Ala Val  Glu Arg Leu Trp Asp  Tyr Gly Met
    1085                1090                1095


Ser Ser  Ser Pro His Val Leu  Arg Asn Arg Ala Gln  Ser Gly Ser
    1100                1105                1110


Val Pro  Gln Phe Lys Lys Val  Val Phe Gln Glu Phe  Thr Asp Gly
    1115                1120                1125


Ser Phe  Thr Gln Pro Leu Tyr  Arg Gly Glu Leu Asn  Glu His Leu
    1130                1135                1140


Gly Leu  Leu Gly Pro Tyr Ile  Arg Ala Glu Val Glu  Asp Asn Ile
    1145                1150                1155


Met Val  Thr Phe Arg Asn Gln  Ala Ser Arg Pro Tyr  Ser Phe Tyr
    1160                1165                1170


Ser Ser  Leu Ile Ser Tyr Glu  Glu Asp Gln Arg Gln  Gly Ala Glu
    1175                1180                1185


Pro Arg  Lys Asn Phe Val Lys  Pro Asn Glu Thr Lys  Thr Tyr Phe
    1190                1195                1200
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Trp Lys  Val Gln His His Met  Ala Pro Thr Lys Asp  Glu Phe Asp
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Cys Lys  Ala Trp Ala Tyr Phe  Ser Asp Val Asp Leu  Glu Lys Asp
    1220                 1225                 1230

Val His  Ser Gly Leu Ile Gly  Pro Leu Leu Val Cys  His Thr Asn
    1235                 1240                 1245

Thr Leu  Asn Pro Ala His Gly  Arg Gln Val Thr Val  Gln Glu Phe
    1250                 1255                 1260

Ala Leu  Phe Phe Thr Ile Phe  Asp Glu Thr Lys Ser  Trp Tyr Phe
    1265                 1270                 1275

Thr Glu  Asn Met Glu Arg Asn  Cys Arg Ala Pro Cys  Asn Ile Gln
    1280                 1285                 1290

Met Glu  Asp Pro Thr Phe Lys  Glu Asn Tyr Arg Phe  His Ala Ile
    1295                 1300                 1305

Asn Gly  Tyr Ile Met Asp Thr  Leu Pro Gly Leu Val  Met Ala Gln
    1310                 1315                 1320

Asp Gln  Arg Ile Arg Trp Tyr  Leu Leu Ser Met Gly  Ser Asn Glu
    1325                 1330                 1335

Asn Ile  His Ser Ile His Phe  Ser Gly His Val Phe  Thr Val Arg
    1340                 1345                 1350

Lys Lys  Glu Glu Tyr Lys Met  Ala Leu Tyr Asn Leu  Tyr Pro Gly
    1355                 1360                 1365

Val Phe  Glu Thr Val Glu Met  Leu Pro Ser Lys Ala  Gly Ile Trp
    1370                 1375                 1380

Arg Val  Glu Cys Leu Ile Gly  Glu His Leu His Ala  Gly Met Ser
    1385                 1390                 1395

Thr Leu  Phe Leu Val Tyr Ser  Asn Lys Cys Gln Thr  Pro Leu Gly
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Met Ala  Ser Gly His Ile Arg  Asp Phe Gln Ile Thr  Ala Ser Gly
    1415                1420                1425

Gln Tyr  Gly Gln Trp Ala Pro  Lys Leu Ala Arg Leu  His Tyr Ser
    1430                1435                1440

Gly Ser  Ile Asn Ala Trp Ser  Thr Lys Glu Pro Phe  Ser Trp Ile
    1445                1450                1455

Lys Val  Asp Leu Leu Ala Pro  Met Ile Ile His Gly  Ile Lys Thr
    1460                1465                1470

Gln Gly  Ala Arg Gln Lys Phe  Ser Ser Leu Tyr Ile  Ser Gln Phe
    1475                1480                1485

Ile Ile  Met Tyr Ser Leu Asp  Gly Lys Lys Trp Gln  Thr Tyr Arg
    1490                1495                1500

Gly Asn  Ser Thr Gly Thr Leu  Met Val Phe Phe Gly  Asn Val Asp
    1505                1510                1515

Ser Ser  Gly Ile Lys His Asn  Ile Phe Asn Pro Pro  Ile Ile Ala
    1520                1525                1530

Arg Tyr  Ile Arg Leu His Pro  Thr His Tyr Ser Ile  Arg Ser Thr
    1535                1540                1545

Leu Arg  Met Glu Leu Met Gly  Cys Asp Leu Asn Ser  Cys Ser Met
    1550                1555                1560

Pro Leu  Gly Met Glu Ser Lys  Ala Ile Ser Asp Ala  Gln Ile Thr
    1565                1570                1575

Ala Ser  Ser Tyr Phe Thr Asn  Met Phe Ala Thr Trp  Ser Pro Ser
    1580                1585                1590

Lys Ala  Arg Leu His Leu Gln  Gly Arg Ser Asn Ala  Trp Arg Pro
    1595                1600                1605
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Gln Val  Asn Asn Pro Lys Glu  Trp Leu Gln Val Asp  Phe Gln Lys
    1610                1615                1620

Thr Met  Lys Val Thr Gly Val  Thr Thr Gln Gly Val  Lys Ser Leu
    1625                1630                1635

Leu Thr  Ser Met Tyr Val Lys  Glu Phe Leu Ile Ser  Ser Ser Gln
    1640                1645                1650

Asp Gly  His Gln Trp Thr Leu  Phe Phe Gln Asn Gly  Lys Val Lys
    1655                1660                1665

Val Phe  Gln Gly Asn Gln Asp  Ser Phe Thr Pro Val  Val Asn Ser
    1670                1675                1680

Leu Asp  Pro Pro Leu Leu Thr  Arg Tyr Leu Arg Ile  His Pro Gln
    1685                1690                1695

Ser Trp  Val His Gln Ile Ala  Leu Arg Met Glu Val  Leu Gly Cys
    1700                1705                1710

Glu Ala  Gln Asp Leu Tyr Asp  Lys Thr His Thr Cys  Pro Pro Cys
    1715                1720                1725

Pro Ala  Pro Glu Leu Leu Gly  Gly Pro Ser Val Phe  Leu Phe Pro
    1730                1735                1740

Pro Lys  Pro Lys Asp Thr Leu  Met Ile Ser Arg Thr  Pro Glu Val
    1745                1750                1755

Thr Cys  Val Val Val Asp Val  Ser His Glu Asp Pro  Glu Val Lys
    1760                1765                1770

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

Lys Pro  Arg Glu Glu Gln Tyr  Asn Ser Thr Tyr Arg  Val Val Ser
    1790                1795                1800

Val Leu  Thr Val Leu His Gln  Asp Trp Leu Asn Gly  Lys Glu Tyr
    1805                1810                1815
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Lys Cys  Lys Val Ser Asn Lys  Ala Leu Pro Ala Pro  Ile Glu Lys
    1820                1825                1830


Thr Ile  Ser Lys Ala Lys Gly  Gln Pro Arg Glu Pro  Gln Val Tyr
    1835                1840                1845


Thr Leu  Pro Pro Ser Arg Asp  Glu Leu Thr Lys Asn  Gln Val Ser
    1850                1855                1860


Leu Thr  Cys Leu Val Lys Gly  Phe Tyr Pro Ser Asp  Ile Ala Val
    1865                1870                1875


Glu Trp  Glu Ser Asn Gly Gln  Pro Glu Asn Asn Tyr  Lys Thr Thr
    1880                1885                1890


Pro Pro  Val Leu Asp Ser Asp  Gly Ser Phe Phe Leu  Tyr Ser Lys
    1895                1900                1905


Leu Thr  Val Asp Lys Ser Arg  Trp Gln Gln Gly Asn  Val Phe Ser
    1910                1915                1920


Cys Ser  Val Met His Glu Ala  Leu His Asn His Tyr  Thr Gln Lys
    1925                1930                1935


Ser Leu  Ser Leu Ser Pro Gly
    1940                1945


<210>  8
<211>  2332
<212>  PRT
<213>  Homo sapiens

<400>  8

Ala Thr Arg Arg Tyr Tyr Leu Gly Ala Val Glu Leu Ser Trp Asp Tyr
1               5                  10                  15


Met Gln Ser Asp Leu Gly Glu Leu Pro Val Asp Ala Arg Phe Pro Pro
            20                  25                  30


Arg Val Pro Lys Ser Phe Pro Phe Asn Thr Ser Val Val Tyr Lys Lys
        35                  40                  45
```

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

Arg Pro Pro Trp Met Gly Leu Leu Gly Pro Thr Ile Gln Ala Glu Val
65                  70                  75                  80

Tyr Asp Thr Val Val Ile Thr Leu Lys Asn Met Ala Ser His Pro Val
                85                  90                  95

Ser Leu His Ala Val Gly Val Ser Tyr Trp Lys Ala Ser Glu Gly Ala
            100                 105                 110

Glu Tyr Asp Asp Gln Thr Ser Gln Arg Glu Lys Glu Asp Asp Lys Val
        115                 120                 125

Phe Pro Gly Gly Ser His Thr Tyr Val Trp Gln Val Leu Lys Glu Asn
    130                 135                 140

Gly Pro Met Ala Ser Asp Pro Leu Cys Leu Thr Tyr Ser Tyr Leu Ser
145                 150                 155                 160

His Val Asp Leu Val Lys Asp Leu Asn Ser Gly Leu Ile Gly Ala Leu
                165                 170                 175

Leu Val Cys Arg Glu Gly Ser Leu Ala Lys Glu Lys Thr Gln Thr Leu
            180                 185                 190

His Lys Phe Ile Leu Leu Phe Ala Val Phe Asp Glu Gly Lys Ser Trp
        195                 200                 205

His Ser Glu Thr Lys Asn Ser Leu Met Gln Asp Arg Asp Ala Ala Ser
    210                 215                 220

Ala Arg Ala Trp Pro Lys Met His Thr Val Asn Gly Tyr Val Asn Arg
225                 230                 235                 240

Ser Leu Pro Gly Leu Ile Gly Cys His Arg Lys Ser Val Tyr Trp His
                245                 250                 255

Val Ile Gly Met Gly Thr Thr Pro Glu Val His Ser Ile Phe Leu Glu
            260                 265                 270
```

```
Gly His Thr Phe Leu Val Arg Asn His Arg Gln Ala Ser Leu Glu Ile
        275                 280                 285

Ser Pro Ile Thr Phe Leu Thr Ala Gln Thr Leu Leu Met Asp Leu Gly
    290                 295                 300

Gln Phe Leu Leu Phe Cys His Ile Ser Ser His Gln His Asp Gly Met
305                 310                 315                 320

Glu Ala Tyr Val Lys Val Asp Ser Cys Pro Glu Glu Pro Gln Leu Arg
                325                 330                 335

Met Lys Asn Asn Glu Glu Ala Glu Asp Tyr Asp Asp Asp Leu Thr Asp
            340                 345                 350

Ser Glu Met Asp Val Val Arg Phe Asp Asp Asp Asn Ser Pro Ser Phe
        355                 360                 365

Ile Gln Ile Arg Ser Val Ala Lys Lys His Pro Lys Thr Trp Val His
    370                 375                 380

Tyr Ile Ala Ala Glu Glu Glu Asp Trp Asp Tyr Ala Pro Leu Val Leu
385                 390                 395                 400

Ala Pro Asp Asp Arg Ser Tyr Lys Ser Gln Tyr Leu Asn Asn Gly Pro
                405                 410                 415

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

Asp Glu Thr Phe Lys Thr Arg Glu Ala Ile Gln His Glu Ser Gly Ile
        435                 440                 445

Leu Gly Pro Leu Leu Tyr Gly Glu Val Gly Asp Thr Leu Leu Ile Ile
    450                 455                 460

Phe Lys Asn Gln Ala Ser Arg Pro Tyr Asn Ile Tyr Pro His Gly Ile
465                 470                 475                 480

Thr Asp Val Arg Pro Leu Tyr Ser Arg Arg Leu Pro Lys Gly Val Lys
```

```
                485                 490                 495

His Leu Lys Asp Phe Pro Ile Leu Pro Gly Glu Ile Phe Lys Tyr Lys
            500                 505                 510

Trp Thr Val Thr Val Glu Asp Gly Pro Thr Lys Ser Asp Pro Arg Cys
        515                 520                 525

Leu Thr Arg Tyr Tyr Ser Ser Phe Val Asn Met Glu Arg Asp Leu Ala
    530                 535                 540

Ser Gly Leu Ile Gly Pro Leu Leu Ile Cys Tyr Lys Glu Ser Val Asp
545                 550                 555                 560

Gln Arg Gly Asn Gln Ile Met Ser Asp Lys Arg Asn Val Ile Leu Phe
                565                 570                 575

Ser Val Phe Asp Glu Asn Arg Ser Trp Tyr Leu Thr Glu Asn Ile Gln
            580                 585                 590

Arg Phe Leu Pro Asn Pro Ala Gly Val Gln Leu Glu Asp Pro Glu Phe
        595                 600                 605

Gln Ala Ser Asn Ile Met His Ser Ile Asn Gly Tyr Val Phe Asp Ser
    610                 615                 620

Leu Gln Leu Ser Val Cys Leu His Glu Val Ala Tyr Trp Tyr Ile Leu
625                 630                 635                 640

Ser Ile Gly Ala Gln Thr Asp Phe Leu Ser Val Phe Phe Ser Gly Tyr
                645                 650                 655

Thr Phe Lys His Lys Met Val Tyr Glu Asp Thr Leu Thr Leu Phe Pro
            660                 665                 670

Phe Ser Gly Glu Thr Val Phe Met Ser Met Glu Asn Pro Gly Leu Trp
        675                 680                 685

Ile Leu Gly Cys His Asn Ser Asp Phe Arg Asn Arg Gly Met Thr Ala
    690                 695                 700
```

```
Leu Leu Lys Val Ser Ser Cys Asp Lys Asn Thr Gly Asp Tyr Tyr Glu
705                 710                 715                 720


Asp Ser Tyr Glu Asp Ile Ser Ala Tyr Leu Leu Ser Lys Asn Asn Ala
                725                 730                 735


Ile Glu Pro Arg Ser Phe Ser Gln Asn Ser Arg His Pro Ser Thr Arg
            740                 745                 750


Gln Lys Gln Phe Asn Ala Thr Thr Ile Pro Glu Asn Asp Ile Glu Lys
        755                 760                 765


Thr Asp Pro Trp Phe Ala His Arg Thr Pro Met Pro Lys Ile Gln Asn
    770                 775                 780


Val Ser Ser Ser Asp Leu Leu Met Leu Leu Arg Gln Ser Pro Thr Pro
785                 790                 795                 800


His Gly Leu Ser Leu Ser Asp Leu Gln Glu Ala Lys Tyr Glu Thr Phe
                805                 810                 815


Ser Asp Asp Pro Ser Pro Gly Ala Ile Asp Ser Asn Asn Ser Leu Ser
            820                 825                 830


Glu Met Thr His Phe Arg Pro Gln Leu His His Ser Gly Asp Met Val
        835                 840                 845


Phe Thr Pro Glu Ser Gly Leu Gln Leu Arg Leu Asn Glu Lys Leu Gly
    850                 855                 860


Thr Thr Ala Ala Thr Glu Leu Lys Lys Leu Asp Phe Lys Val Ser Ser
865                 870                 875                 880


Thr Ser Asn Asn Leu Ile Ser Thr Ile Pro Ser Asp Asn Leu Ala Ala
                885                 890                 895


Gly Thr Asp Asn Thr Ser Ser Leu Gly Pro Pro Ser Met Pro Val His
            900                 905                 910


Tyr Asp Ser Gln Leu Asp Thr Thr Leu Phe Gly Lys Lys Ser Ser Pro
        915                 920                 925
```

```
Leu Thr Glu Ser Gly Gly Pro Leu Ser Leu Ser Glu Glu Asn Asn Asp
    930                 935                 940

Ser Lys Leu Leu Glu Ser Gly Leu Met Asn Ser Gln Glu Ser Ser Trp
945                 950                 955                 960

Gly Lys Asn Val Ser Ser Thr Glu Ser Gly Arg Leu Phe Lys Gly Lys
                965                 970                 975

Arg Ala His Gly Pro Ala Leu Leu Thr Lys Asp Asn Ala Leu Phe Lys
            980                 985                 990

Val Ser Ile Ser Leu Leu Lys Thr  Asn Lys Thr Ser Asn  Asn Ser Ala
        995                 1000                1005

Thr Asn  Arg Lys Thr His Ile  Asp Gly Pro Ser Leu  Leu Ile Glu
    1010                1015                1020

Asn Ser  Pro Ser Val Trp Gln  Asn Ile Leu Glu Ser  Asp Thr Glu
    1025                1030                1035

Phe Lys  Lys Val Thr Pro Leu  Ile His Asp Arg Met  Leu Met Asp
    1040                1045                1050

Lys Asn  Ala Thr Ala Leu Arg  Leu Asn His Met Ser  Asn Lys Thr
    1055                1060                1065

Thr Ser  Ser Lys Asn Met Glu  Met Val Gln Gln Lys  Lys Glu Gly
    1070                1075                1080

Pro Ile  Pro Pro Asp Ala Gln  Asn Pro Asp Met Ser  Phe Phe Lys
    1085                1090                1095

Met Leu  Phe Leu Pro Glu Ser  Ala Arg Trp Ile Gln  Arg Thr His
    1100                1105                1110

Gly Lys  Asn Ser Leu Asn Ser  Gly Gln Gly Pro Ser  Pro Lys Gln
    1115                1120                1125

Leu Val  Ser Leu Gly Pro Glu  Lys Ser Val Glu Gly  Gln Asn Phe
    1130                1135                1140
```

```
Leu Ser  Glu Lys Asn Lys Val  Val Val Gly Lys Gly  Glu Phe Thr
    1145                1150                1155

Lys Asp  Val Gly Leu Lys Glu  Met Val Phe Pro Ser  Ser Arg Asn
    1160                1165                1170

Leu Phe  Leu Thr Asn Leu Asp  Asn Leu His Glu Asn  Asn Thr His
    1175                1180                1185

Asn Gln  Glu Lys Lys Ile Gln  Glu Glu Ile Glu Lys  Lys Glu Thr
    1190                1195                1200

Leu Ile  Gln Glu Asn Val Val  Leu Pro Gln Ile His  Thr Val Thr
    1205                1210                1215

Gly Thr  Lys Asn Phe Met Lys  Asn Leu Phe Leu Leu  Ser Thr Arg
    1220                1225                1230

Gln Asn  Val Glu Gly Ser Tyr  Asp Gly Ala Tyr Ala  Pro Val Leu
    1235                1240                1245

Gln Asp  Phe Arg Ser Leu Asn  Asp Ser Thr Asn Arg  Thr Lys Lys
    1250                1255                1260

His Thr  Ala His Phe Ser Lys  Lys Gly Glu Glu Glu  Asn Leu Glu
    1265                1270                1275

Gly Leu  Gly Asn Gln Thr Lys  Gln Ile Val Glu Lys  Tyr Ala Cys
    1280                1285                1290

Thr Thr  Arg Ile Ser Pro Asn  Thr Ser Gln Gln Asn  Phe Val Thr
    1295                1300                1305

Gln Arg  Ser Lys Arg Ala Leu  Lys Gln Phe Arg Leu  Pro Leu Glu
    1310                1315                1320

Glu Thr  Glu Leu Glu Lys Arg  Ile Ile Val Asp Asp  Thr Ser Thr
    1325                1330                1335

Gln Trp  Ser Lys Asn Met Lys  His Leu Thr Pro Ser  Thr Leu Thr
```

```
    1340                1345                1350

Gln Ile  Asp Tyr Asn Glu Lys  Glu Lys Gly Ala Ile  Thr Gln Ser
    1355                1360                1365

Pro Leu  Ser Asp Cys Leu Thr  Arg Ser His Ser Ile  Pro Gln Ala
    1370                1375                1380

Asn Arg  Ser Pro Leu Pro Ile  Ala Lys Val Ser Ser  Phe Pro Ser
    1385                1390                1395

Ile Arg  Pro Ile Tyr Leu Thr  Arg Val Leu Phe Gln  Asp Asn Ser
    1400                1405                1410

Ser His  Leu Pro Ala Ala Ser  Tyr Arg Lys Lys Asp  Ser Gly Val
    1415                1420                1425

Gln Glu  Ser Ser His Phe Leu  Gln Gly Ala Lys Lys  Asn Asn Leu
    1430                1435                1440

Ser Leu  Ala Ile Leu Thr Leu  Glu Met Thr Gly Asp  Gln Arg Glu
    1445                1450                1455

Val Gly  Ser Leu Gly Thr Ser  Ala Thr Asn Ser Val  Thr Tyr Lys
    1460                1465                1470

Lys Val  Glu Asn Thr Val Leu  Pro Lys Pro Asp Leu  Pro Lys Thr
    1475                1480                1485

Ser Gly  Lys Val Glu Leu Leu  Pro Lys Val His Ile  Tyr Gln Lys
    1490                1495                1500

Asp Leu  Phe Pro Thr Glu Thr  Ser Asn Gly Ser Pro  Gly His Leu
    1505                1510                1515

Asp Leu  Val Glu Gly Ser Leu  Leu Gln Gly Thr Glu  Gly Ala Ile
    1520                1525                1530

Lys Trp  Asn Glu Ala Asn Arg  Pro Gly Lys Val Pro  Phe Leu Arg
    1535                1540                1545
```

```
Val Ala  Thr Glu Ser Ser Ala  Lys Thr Pro Ser Lys  Leu Leu Asp
    1550                 1555                 1560

Pro Leu  Ala Trp Asp Asn His  Tyr Gly Thr Gln Ile  Pro Lys Glu
    1565                 1570                 1575

Glu Trp  Lys Ser Gln Glu Lys  Ser Pro Glu Lys Thr  Ala Phe Lys
    1580                 1585                 1590

Lys Lys  Asp Thr Ile Leu Ser  Leu Asn Ala Cys Glu  Ser Asn His
    1595                 1600                 1605

Ala Ile  Ala Ala Ile Asn Glu  Gly Gln Asn Lys Pro  Glu Ile Glu
    1610                 1615                 1620

Val Thr  Trp Ala Lys Gln Gly  Arg Thr Glu Arg Leu  Cys Ser Gln
    1625                 1630                 1635

Asn Pro  Pro Val Leu Lys Arg  His Gln Arg Glu Ile  Thr Arg Thr
    1640                 1645                 1650

Thr Leu  Gln Ser Asp Gln Glu  Glu Ile Asp Tyr Asp  Asp Thr Ile
    1655                 1660                 1665

Ser Val  Glu Met Lys Lys Glu  Asp Phe Asp Ile Tyr  Asp Glu Asp
    1670                 1675                 1680

Glu Asn  Gln Ser Pro Arg Ser  Phe Gln Lys Lys Thr  Arg His Tyr
    1685                 1690                 1695

Phe Ile  Ala Ala Val Glu Arg  Leu Trp Asp Tyr Gly  Met Ser Ser
    1700                 1705                 1710

Ser Pro  His Val Leu Arg Asn  Arg Ala Gln Ser Gly  Ser Val Pro
    1715                 1720                 1725

Gln Phe  Lys Lys Val Val Phe  Gln Glu Phe Thr Asp  Gly Ser Phe
    1730                 1735                 1740

Thr Gln  Pro Leu Tyr Arg Gly  Glu Leu Asn Glu His  Leu Gly Leu
    1745                 1750                 1755
```

```
Leu Gly  Pro Tyr Ile Arg Ala  Glu Val Glu Asp Asn  Ile Met Val
    1760                1765                1770

Thr Phe  Arg Asn Gln Ala Ser  Arg Pro Tyr Ser Phe  Tyr Ser Ser
    1775                1780                1785

Leu Ile  Ser Tyr Glu Glu Asp  Gln Arg Gln Gly Ala  Glu Pro Arg
    1790                1795                1800

Lys Asn  Phe Val Lys Pro Asn  Glu Thr Lys Thr Tyr  Phe Trp Lys
    1805                1810                1815

Val Gln  His His Met Ala Pro  Thr Lys Asp Glu Phe  Asp Cys Lys
    1820                1825                1830

Ala Trp  Ala Tyr Phe Ser Asp  Val Asp Leu Glu Lys  Asp Val His
    1835                1840                1845

Ser Gly  Leu Ile Gly Pro Leu  Leu Val Cys His Thr  Asn Thr Leu
    1850                1855                1860

Asn Pro  Ala His Gly Arg Gln  Val Thr Val Gln Glu  Phe Ala Leu
    1865                1870                1875

Phe Phe  Thr Ile Phe Asp Glu  Thr Lys Ser Trp Tyr  Phe Thr Glu
    1880                1885                1890

Asn Met  Glu Arg Asn Cys Arg  Ala Pro Cys Asn Ile  Gln Met Glu
    1895                1900                1905

Asp Pro  Thr Phe Lys Glu Asn  Tyr Arg Phe His Ala  Ile Asn Gly
    1910                1915                1920

Tyr Ile  Met Asp Thr Leu Pro  Gly Leu Val Met Ala  Gln Asp Gln
    1925                1930                1935

Arg Ile  Arg Trp Tyr Leu Leu  Ser Met Gly Ser Asn  Glu Asn Ile
    1940                1945                1950

His Ser  Ile His Phe Ser Gly  His Val Phe Thr Val  Arg Lys Lys
    1955                1960                1965
```

```
Glu Glu  Tyr Lys Met Ala Leu  Tyr Asn Leu Tyr Pro  Gly Val Phe
    1970                1975                1980

Glu Thr  Val Glu Met Leu Pro  Ser Lys Ala Gly Ile  Trp Arg Val
    1985                1990                1995

Glu Cys  Leu Ile Gly Glu His  Leu His Ala Gly Met  Ser Thr Leu
    2000                2005                2010

Phe Leu  Val Tyr Ser Asn Lys  Cys Gln Thr Pro Leu  Gly Met Ala
    2015                2020                2025

Ser Gly  His Ile Arg Asp Phe  Gln Ile Thr Ala Ser  Gly Gln Tyr
    2030                2035                2040

Gly Gln  Trp Ala Pro Lys Leu  Ala Arg Leu His Tyr  Ser Gly Ser
    2045                2050                2055

Ile Asn  Ala Trp Ser Thr Lys  Glu Pro Phe Ser Trp  Ile Lys Val
    2060                2065                2070

Asp Leu  Leu Ala Pro Met Ile  Ile His Gly Ile Lys  Thr Gln Gly
    2075                2080                2085

Ala Arg  Gln Lys Phe Ser Ser  Leu Tyr Ile Ser Gln  Phe Ile Ile
    2090                2095                2100

Met Tyr  Ser Leu Asp Gly Lys  Lys Trp Gln Thr Tyr  Arg Gly Asn
    2105                2110                2115

Ser Thr  Gly Thr Leu Met Val  Phe Phe Gly Asn Val  Asp Ser Ser
    2120                2125                2130

Gly Ile  Lys His Asn Ile Phe  Asn Pro Pro Ile Ile  Ala Arg Tyr
    2135                2140                2145

Ile Arg  Leu His Pro Thr His  Tyr Ser Ile Arg Ser  Thr Leu Arg
    2150                2155                2160

Met Glu  Leu Met Gly Cys Asp  Leu Asn Ser Cys Ser  Met Pro Leu
```

2165 2170 2175

Gly Met Glu Ser Lys Ala Ile Ser Asp Ala Gln Ile Thr Ala Ser
2180 2185 2190

Ser Tyr Phe Thr Asn Met Phe Ala Thr Trp Ser Pro Ser Lys Ala
2195 2200 2205

Arg Leu His Leu Gln Gly Arg Ser Asn Ala Trp Arg Pro Gln Val
2210 2215 2220

Asn Asn Pro Lys Glu Trp Leu Gln Val Asp Phe Gln Lys Thr Met
2225 2230 2235

Lys Val Thr Gly Val Thr Thr Gln Gly Val Lys Ser Leu Leu Thr
2240 2245 2250

Ser Met Tyr Val Lys Glu Phe Leu Ile Ser Ser Ser Gln Asp Gly
2255 2260 2265

His Gln Trp Thr Leu Phe Phe Gln Asn Gly Lys Val Lys Val Phe
2270 2275 2280

Gln Gly Asn Gln Asp Ser Phe Thr Pro Val Val Asn Ser Leu Asp
2285 2290 2295

Pro Pro Leu Leu Thr Arg Tyr Leu Arg Ile His Pro Gln Ser Trp
2300 2305 2310

Val His Gln Ile Ala Leu Arg Met Glu Val Leu Gly Cys Glu Ala
2315 2320 2325

Gln Asp Leu Tyr
2330

<210> 9
<211> 288
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 9

```
Gly Thr Ser Glu Ser Ala Thr Pro Glu Ser Gly Pro Gly Ser Glu Pro
1               5                   10                  15


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


Glu Ser Gly Pro Gly Ser Glu Pro Ala Thr Ser Gly Ser Glu Thr Pro
        35                  40                  45


Gly Thr Ser Glu Ser Ala Thr Pro Glu Ser Gly Pro Gly Thr Ser Thr
    50                  55                  60


Glu Pro Ser Glu Gly Ser Ala Pro Gly Ser Pro Ala Gly Ser Pro Thr
65                  70                  75                  80


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


Gly Ser Glu Pro Ala Thr Ser Gly Ser Glu Thr Pro Gly Thr Ser Glu
            100                 105                 110


Ser Ala Thr Pro Glu Ser Gly Pro Gly Ser Pro Ala Gly Ser Pro Thr
        115                 120                 125


Ser Thr Glu Glu Gly Ser Pro Ala Gly Ser Pro Thr Ser Thr Glu Glu
    130                 135                 140


Gly Thr Ser Thr Glu Pro Ser Glu Gly Ser Ala Pro Gly Thr Ser Glu
145                 150                 155                 160


Ser Ala Thr Pro Glu Ser Gly Pro Gly Thr Ser Glu Ser Ala Thr Pro
                165                 170                 175


Glu Ser Gly Pro Gly Thr Ser Glu Ser Ala Thr Pro Glu Ser Gly Pro
            180                 185                 190


Gly Ser Glu Pro Ala Thr Ser Gly Ser Glu Thr Pro Gly Ser Glu Pro
        195                 200                 205


Ala Thr Ser Gly Ser Glu Thr Pro Gly Ser Pro Ala Gly Ser Pro Thr
```

```
    210                 215                 220

Ser Thr Glu Glu Gly Thr Ser Thr Glu Pro Ser Glu Gly Ser Ala Pro
225                 230                 235                 240

Gly Thr Ser Thr Glu Pro Ser Glu Gly Ser Ala Pro Gly Ser Glu Pro
                245                 250                 255

Ala Thr Ser Gly Ser Glu Thr Pro Gly Thr Ser Glu Ser Ala Thr Pro
            260                 265                 270

Glu Ser Gly Pro Gly Thr Ser Thr Glu Pro Ser Glu Gly Ser Ala Pro
        275                 280                 285
```

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

<220>
<223> Synthesized

<400> 10

```
Thr Ser Thr Glu Glu Gly Ala Ser Ile Ser Asp Lys Asn Thr Gly Asp
1               5                   10                  15

Tyr Tyr Glu Asp Ser Tyr Glu Asp Ile Ser Ala Tyr Leu Leu Ser Lys
            20                  25                  30

Asn Asn Ala Ile Glu Pro Arg Ser Phe Ser Asp Lys Thr His
        35                  40                  45
```

<210> 11
<211> 45
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 11

```
Thr Ser Thr Glu Glu Gly Ala Ser Ser Asp Lys Asn Thr Gly Asp Tyr
1               5                   10                  15
```

Tyr Glu Asp Ser Tyr Glu Asp Ile Ser Ala Tyr Leu Leu Ser Lys Asn
            20   25   30

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

<210> 12
<211> 1947
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 12

Ala Thr Arg Arg Tyr Tyr Leu Gly Ala Val Glu Leu Ser Trp Asp Tyr
1   5   10   15

Met Gln Ser Asp Leu Gly Glu Leu Pro Val Asp Ala Arg Phe Pro Pro
            20   25   30

Arg Val Pro Lys Ser Phe Pro Phe Asn Thr Ser Val Val Tyr Lys Lys
        35   40   45

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

Arg Pro Pro Trp Met Gly Leu Leu Gly Pro Thr Ile Gln Ala Glu Val
65   70   75   80

Tyr Asp Thr Val Val Ile Thr Leu Lys Asn Met Ala Ser His Pro Val
                85   90   95

Ser Leu His Ala Val Gly Val Ser Tyr Trp Lys Ala Ser Glu Gly Ala
            100   105   110

Glu Tyr Asp Asp Gln Thr Ser Gln Arg Glu Lys Glu Asp Asp Lys Val
        115   120   125

Phe Pro Gly Gly Ser His Thr Tyr Val Trp Gln Val Leu Lys Glu Asn
    130   135   140

Gly Pro Met Ala Ser Asp Pro Leu Cys Leu Thr Tyr Ser Tyr Leu Ser

```
145                 150                 155                 160

His Val Asp Leu Val Lys Asp Leu Asn Ser Gly Leu Ile Gly Ala Leu
                165                 170                 175

Leu Val Cys Arg Glu Gly Ser Leu Ala Lys Glu Lys Thr Gln Thr Leu
            180                 185                 190

His Lys Phe Ile Leu Leu Phe Ala Val Phe Asp Glu Gly Lys Ser Trp
        195                 200                 205

His Ser Glu Thr Lys Asn Ser Leu Met Gln Asp Arg Asp Ala Ala Ser
    210                 215                 220

Ala Arg Ala Trp Pro Lys Met His Thr Val Asn Gly Tyr Val Asn Arg
225                 230                 235                 240

Ser Leu Pro Gly Leu Ile Gly Cys His Arg Lys Ser Val Tyr Trp His
                245                 250                 255

Val Ile Gly Met Gly Thr Thr Pro Glu Val His Ser Ile Phe Leu Glu
            260                 265                 270

Gly His Thr Phe Leu Val Arg Asn His Arg Gln Ala Ser Leu Glu Ile
        275                 280                 285

Ser Pro Ile Thr Phe Leu Thr Ala Gln Thr Leu Leu Met Asp Leu Gly
    290                 295                 300

Gln Phe Leu Leu Phe Cys His Ile Ser Ser His Gln His Asp Gly Met
305                 310                 315                 320

Glu Ala Tyr Val Lys Val Asp Ser Cys Pro Glu Glu Pro Gln Leu Arg
                325                 330                 335

Met Lys Asn Asn Glu Glu Ala Glu Asp Tyr Asp Asp Asp Leu Thr Asp
            340                 345                 350

Ser Glu Met Asp Val Val Arg Phe Asp Asp Asp Asn Ser Pro Ser Phe
        355                 360                 365
```

```
Ile Gln Ile Arg Ser Val Ala Lys Lys His Pro Lys Thr Trp Val His
    370                 375                 380

Tyr Ile Ala Ala Glu Glu Glu Asp Trp Asp Tyr Ala Pro Leu Val Leu
385                 390                 395                 400

Ala Pro Asp Asp Arg Ser Tyr Lys Ser Gln Tyr Leu Asn Asn Gly Pro
                405                 410                 415

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

Asp Glu Thr Phe Lys Thr Arg Glu Ala Ile Gln His Glu Ser Gly Ile
        435                 440                 445

Leu Gly Pro Leu Leu Tyr Gly Glu Val Gly Asp Thr Leu Leu Ile Ile
    450                 455                 460

Phe Lys Asn Gln Ala Ser Arg Pro Tyr Asn Ile Tyr Pro His Gly Ile
465                 470                 475                 480

Thr Asp Val Arg Pro Leu Tyr Ser Arg Arg Leu Pro Lys Gly Val Lys
                485                 490                 495

His Leu Lys Asp Phe Pro Ile Leu Pro Gly Glu Ile Phe Lys Tyr Lys
            500                 505                 510

Trp Thr Val Thr Val Glu Asp Gly Pro Thr Lys Ser Asp Pro Arg Cys
        515                 520                 525

Leu Thr Arg Tyr Tyr Ser Ser Phe Val Asn Met Glu Arg Asp Leu Ala
    530                 535                 540

Ser Gly Leu Ile Gly Pro Leu Leu Ile Cys Tyr Lys Glu Ser Val Asp
545                 550                 555                 560

Gln Arg Gly Asn Gln Ile Met Ser Asp Lys Arg Asn Val Ile Leu Phe
                565                 570                 575

Ser Val Phe Asp Glu Asn Arg Ser Trp Tyr Leu Thr Glu Asn Ile Gln
            580                 585                 590
```

```
Arg Phe Leu Pro Asn Pro Ala Gly Val Gln Leu Glu Asp Pro Glu Phe
        595                 600                 605

Gln Ala Ser Asn Ile Met His Ser Ile Asn Gly Tyr Val Phe Asp Ser
    610                 615                 620

Leu Gln Leu Ser Val Cys Leu His Glu Val Ala Tyr Trp Tyr Ile Leu
625                 630                 635                 640

Ser Ile Gly Ala Gln Thr Asp Phe Leu Ser Val Phe Phe Ser Gly Tyr
                645                 650                 655

Thr Phe Lys His Lys Met Val Tyr Glu Asp Thr Leu Thr Leu Phe Pro
            660                 665                 670

Phe Ser Gly Glu Thr Val Phe Met Ser Met Glu Asn Pro Gly Leu Trp
        675                 680                 685

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

Leu Leu Lys Val Ser Ser Cys Asp Lys Asn Thr Gly Asp Tyr Tyr Glu
705                 710                 715                 720

Asp Ser Tyr Glu Asp Ile Ser Ala Tyr Leu Leu Ser Lys Asn Asn Ala
                725                 730                 735

Ile Glu Pro Arg Ser Phe Ser Gln Asn Gly Thr Ser Glu Ser Ala Thr
            740                 745                 750

Pro Glu Ser Gly Pro Gly Ser Glu Pro Ala Thr Ser Gly Ser Glu Thr
        755                 760                 765

Pro Gly Thr Ser Glu Ser Ala Thr Pro Glu Ser Gly Pro Gly Ser Glu
    770                 775                 780

Pro Ala Thr Ser Gly Ser Glu Thr Pro Gly Thr Ser Glu Ser Ala Thr
785                 790                 795                 800

Pro Glu Ser Gly Pro Gly Thr Ser Thr Glu Pro Ser Glu Gly Ser Ala
                805                 810                 815
```

```
Pro Gly Ser Pro Ala Gly Ser Pro Thr Ser Thr Glu Glu Gly Thr Ser
            820                 825                 830

Glu Ser Ala Thr Pro Glu Ser Gly Pro Gly Ser Glu Pro Ala Thr Ser
        835                 840                 845

Gly Ser Glu Thr Pro Gly Thr Ser Glu Ser Ala Thr Pro Glu Ser Gly
    850                 855                 860

Pro Gly Ser Pro Ala Gly Ser Pro Thr Ser Thr Glu Glu Gly Ser Pro
865                 870                 875                 880

Ala Gly Ser Pro Thr Ser Thr Glu Glu Gly Thr Ser Thr Glu Pro Ser
                885                 890                 895

Glu Gly Ser Ala Pro Gly Thr Ser Glu Ser Ala Thr Pro Glu Ser Gly
            900                 905                 910

Pro Gly Thr Ser Glu Ser Ala Thr Pro Glu Ser Gly Pro Gly Thr Ser
        915                 920                 925

Glu Ser Ala Thr Pro Glu Ser Gly Pro Gly Ser Glu Pro Ala Thr Ser
    930                 935                 940

Gly Ser Glu Thr Pro Gly Ser Glu Pro Ala Thr Ser Gly Ser Glu Thr
945                 950                 955                 960

Pro Gly Ser Pro Ala Gly Ser Pro Thr Ser Thr Glu Glu Gly Thr Ser
                965                 970                 975

Thr Glu Pro Ser Glu Gly Ser Ala Pro Gly Thr Ser Thr Glu Pro Ser
            980                 985                 990

Glu Gly Ser Ala Pro Gly Ser Glu  Pro Ala Thr Ser Gly  Ser Glu Thr
        995                 1000                1005

Pro Gly  Thr Ser Glu Ser Ala  Thr Pro Glu Ser Gly  Pro Gly Thr
    1010                1015                1020

Ser Thr  Glu Pro Ser Glu Gly  Ser Ala Pro Ala Ser  Ser Glu Ile
```

```
    1025                1030                1035

Thr Arg  Thr Thr Leu Gln Ser  Asp Gln Glu Glu Ile  Asp Tyr Asp
    1040                1045                1050

Asp Thr  Ile Ser Val Glu Met  Lys Lys Glu Asp Phe  Asp Ile Tyr
    1055                1060                1065

Asp Glu  Asp Glu Asn Gln Ser  Pro Arg Ser Phe Gln  Lys Lys Thr
    1070                1075                1080

Arg His  Tyr Phe Ile Ala Ala  Val Glu Arg Leu Trp  Asp Tyr Gly
    1085                1090                1095

Met Ser  Ser Ser Pro His Val  Leu Arg Asn Arg Ala  Gln Ser Gly
    1100                1105                1110

Ser Val  Pro Gln Phe Lys Lys  Val Val Phe Gln Glu  Phe Thr Asp
    1115                1120                1125

Gly Ser  Phe Thr Gln Pro Leu  Tyr Arg Gly Glu Leu  Asn Glu His
    1130                1135                1140

Leu Gly  Leu Leu Gly Pro Tyr  Ile Arg Ala Glu Val  Glu Asp Asn
    1145                1150                1155

Ile Met  Val Thr Phe Arg Asn  Gln Ala Ser Arg Pro  Tyr Ser Phe
    1160                1165                1170

Tyr Ser  Ser Leu Ile Ser Tyr  Glu Glu Asp Gln Arg  Gln Gly Ala
    1175                1180                1185

Glu Pro  Arg Lys Asn Phe Val  Lys Pro Asn Glu Thr  Lys Thr Tyr
    1190                1195                1200

Phe Trp  Lys Val Gln His His  Met Ala Pro Thr Lys  Asp Glu Phe
    1205                1210                1215

Asp Cys  Lys Ala Trp Ala Tyr  Phe Ser Asp Val Asp  Leu Glu Lys
    1220                1225                1230
```

```
Asp Val  His Ser Gly Leu Ile  Gly Pro Leu Leu Val  Cys His Thr
    1235                1240                1245

Asn Thr  Leu Asn Pro Ala His  Gly Arg Gln Val Thr  Val Gln Glu
    1250                1255                1260

Phe Ala  Leu Phe Phe Thr Ile  Phe Asp Glu Thr Lys  Ser Trp Tyr
    1265                1270                1275

Phe Thr  Glu Asn Met Glu Arg  Asn Cys Arg Ala Pro  Cys Asn Ile
    1280                1285                1290

Gln Met  Glu Asp Pro Thr Phe  Lys Glu Asn Tyr Arg  Phe His Ala
    1295                1300                1305

Ile Asn  Gly Tyr Ile Met Asp  Thr Leu Pro Gly Leu  Val Met Ala
    1310                1315                1320

Gln Asp  Gln Arg Ile Arg Trp  Tyr Leu Leu Ser Met  Gly Ser Asn
    1325                1330                1335

Glu Asn  Ile His Ser Ile His  Phe Ser Gly His Val  Phe Thr Val
    1340                1345                1350

Arg Lys  Lys Glu Glu Tyr Lys  Met Ala Leu Tyr Asn  Leu Tyr Pro
    1355                1360                1365

Gly Val  Phe Glu Thr Val Glu  Met Leu Pro Ser Lys  Ala Gly Ile
    1370                1375                1380

Trp Arg  Val Glu Cys Leu Ile  Gly Glu His Leu His  Ala Gly Met
    1385                1390                1395

Ser Thr  Leu Phe Leu Val Tyr  Ser Asn Lys Cys Gln  Thr Pro Leu
    1400                1405                1410

Gly Met  Ala Ser Gly His Ile  Arg Asp Phe Gln Ile  Thr Ala Ser
    1415                1420                1425

Gly Gln  Tyr Gly Gln Trp Ala  Pro Lys Leu Ala Arg  Leu His Tyr
    1430                1435                1440
```

```
Ser Gly  Ser Ile Asn Ala Trp  Ser Thr Lys Glu Pro  Phe Ser Trp
    1445                1450                1455

Ile Lys  Val Asp Leu Leu Ala  Pro Met Ile Ile His  Gly Ile Lys
    1460                1465                1470

Thr Gln  Gly Ala Arg Gln Lys  Phe Ser Ser Leu Tyr  Ile Ser Gln
    1475                1480                1485

Phe Ile  Ile Met Tyr Ser Leu  Asp Gly Lys Lys Trp  Gln Thr Tyr
    1490                1495                1500

Arg Gly  Asn Ser Thr Gly Thr  Leu Met Val Phe Phe  Gly Asn Val
    1505                1510                1515

Asp Ser  Ser Gly Ile Lys His  Asn Ile Phe Asn Pro  Pro Ile Ile
    1520                1525                1530

Ala Arg  Tyr Ile Arg Leu His  Pro Thr His Tyr Ser  Ile Arg Ser
    1535                1540                1545

Thr Leu  Arg Met Glu Leu Met  Gly Cys Asp Leu Asn  Ser Cys Ser
    1550                1555                1560

Met Pro  Leu Gly Met Glu Ser  Lys Ala Ile Ser Asp  Ala Gln Ile
    1565                1570                1575

Thr Ala  Ser Ser Tyr Phe Thr  Asn Met Phe Ala Thr  Trp Ser Pro
    1580                1585                1590

Ser Lys  Ala Arg Leu His Leu  Gln Gly Arg Ser Asn  Ala Trp Arg
    1595                1600                1605

Pro Gln  Val Asn Asn Pro Lys  Glu Trp Leu Gln Val  Asp Phe Gln
    1610                1615                1620

Lys Thr  Met Lys Val Thr Gly  Val Thr Thr Gln Gly  Val Lys Ser
    1625                1630                1635

Leu Leu  Thr Ser Met Tyr Val  Lys Glu Phe Leu Ile  Ser Ser Ser
    1640                1645                1650
```

```
Gln Asp  Gly His Gln Trp Thr  Leu Phe Phe Gln Asn  Gly Lys Val
    1655                 1660                 1665

Lys Val  Phe Gln Gly Asn Gln  Asp Ser Phe Thr Pro  Val Val Asn
    1670                 1675                 1680

Ser Leu  Asp Pro Pro Leu Leu  Thr Arg Tyr Leu Arg  Ile His Pro
    1685                 1690                 1695

Gln Ser  Trp Val His Gln Ile  Ala Leu Arg Met Glu  Val Leu Gly
    1700                 1705                 1710

Cys Glu  Ala Gln Asp Leu Tyr  Asp Lys Thr His Thr  Cys Pro Pro
    1715                 1720                 1725

Cys Pro  Ala Pro Glu Leu Leu  Gly Gly Pro Ser Val  Phe Leu Phe
    1730                 1735                 1740

Pro Pro  Lys Pro Lys Asp Thr  Leu Met Ile Ser Arg  Thr Pro Glu
    1745                 1750                 1755

Val Thr  Cys Val Val Val Asp  Val Ser His Glu Asp  Pro Glu Val
    1760                 1765                 1770

Lys Phe  Asn Trp Tyr Val Asp  Gly Val Glu Val His  Asn Ala Lys
    1775                 1780                 1785

Thr Lys  Pro Arg Glu Glu Gln  Tyr Asn Ser Thr Tyr  Arg Val Val
    1790                 1795                 1800

Ser Val  Leu Thr Val Leu His  Gln Asp Trp Leu Asn  Gly Lys Glu
    1805                 1810                 1815

Tyr Lys  Cys Lys Val Ser Asn  Lys Ala Leu Pro Ala  Pro Ile Glu
    1820                 1825                 1830

Lys Thr  Ile Ser Lys Ala Lys  Gly Gln Pro Arg Glu  Pro Gln Val
    1835                 1840                 1845

Tyr Thr  Leu Pro Pro Ser Arg  Asp Glu Leu Thr Lys  Asn Gln Val
```

```
    1850                1855                1860

Ser Leu  Thr Cys Leu Val Lys  Gly Phe Tyr Pro Ser  Asp Ile Ala
    1865                1870                1875

Val Glu  Trp Glu Ser Asn Gly  Gln Pro Glu Asn Asn  Tyr Lys Thr
    1880                1885                1890

Thr Pro  Pro Val Leu Asp Ser  Asp Gly Ser Phe Phe  Leu Tyr Ser
    1895                1900                1905

Lys Leu  Thr Val Asp Lys Ser  Arg Trp Gln Gln Gly  Asn Val Phe
    1910                1915                1920

Ser Cys  Ser Val Met His Glu  Ala Leu His Asn His  Tyr Thr Gln
    1925                1930                1935

Lys Ser  Leu Ser Leu Ser Pro  Gly Lys
    1940                1945
```

<210> 13
<211> 288
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 13

```
Gly Ser Pro Ala Gly Ser Pro Thr Ser Thr Glu Glu Gly Thr Ser Glu
1               5                   10                  15

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

Ser Glu Thr Pro Gly Thr Ser Glu Ser Ala Thr Pro Glu Ser Gly Pro
        35                  40                  45

Gly Thr Ser Thr Glu Pro Ser Glu Gly Ser Ala Pro Gly Thr Ser Thr
    50                  55                  60

Glu Pro Ser Glu Gly Ser Ala Pro Gly Thr Ser Thr Glu Pro Ser Glu
65                  70                  75                  80
```

```
Gly Ser Ala Pro Gly Thr Ser Thr Glu Pro Ser Glu Gly Ser Ala Pro
                85                  90                  95

Gly Thr Ser Thr Glu Pro Ser Glu Gly Ser Ala Pro Gly Thr Ser Thr
            100                 105                 110

Glu Pro Ser Glu Gly Ser Ala Pro Gly Ser Pro Ala Gly Ser Pro Thr
        115                 120                 125

Ser Thr Glu Glu Gly Thr Ser Thr Glu Pro Ser Glu Gly Ser Ala Pro
    130                 135                 140

Gly Thr Ser Glu Ser Ala Thr Pro Glu Ser Gly Pro Gly Ser Glu Pro
145                 150                 155                 160

Ala Thr Ser Gly Ser Glu Thr Pro Gly Thr Ser Glu Ser Ala Thr Pro
                165                 170                 175

Glu Ser Gly Pro Gly Ser Glu Pro Ala Thr Ser Gly Ser Glu Thr Pro
            180                 185                 190

Gly Thr Ser Glu Ser Ala Thr Pro Glu Ser Gly Pro Gly Thr Ser Thr
        195                 200                 205

Glu Pro Ser Glu Gly Ser Ala Pro Gly Thr Ser Glu Ser Ala Thr Pro
    210                 215                 220

Glu Ser Gly Pro Gly Ser Pro Ala Gly Ser Pro Thr Ser Thr Glu Glu
225                 230                 235                 240

Gly Ser Pro Ala Gly Ser Pro Thr Ser Thr Glu Glu Gly Ser Pro Ala
                245                 250                 255

Gly Ser Pro Thr Ser Thr Glu Glu Gly Thr Ser Glu Ser Ala Thr Pro
            260                 265                 270

Glu Ser Gly Pro Gly Thr Ser Thr Glu Pro Ser Glu Gly Ser Ala Pro
        275                 280                 285
```

<210> 14

<211> 144
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 14

Thr Ser Glu Ser Ala Thr Pro Glu Ser Gly Pro Gly Ser Glu Pro Ala
1 5 10 15

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

Ser Gly Pro Gly Ser Glu Pro Ala Thr Ser Gly Ser Glu Thr Pro Gly
35 40 45

Thr Ser Glu Ser Ala Thr Pro Glu Ser Gly Pro Gly Thr Ser Thr Glu
50 55 60

Pro Ser Glu Gly Ser Ala Pro Gly Ser Pro Ala Gly Ser Pro Thr Ser
65 70 75 80

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

Ser Glu Pro Ala Thr Ser Gly Ser Glu Thr Pro Gly Thr Ser Glu Ser
100 105 110

Ala Thr Pro Glu Ser Gly Pro Gly Ser Pro Ala Gly Ser Pro Thr Ser
115 120 125

Thr Glu Glu Gly Ser Pro Ala Gly Ser Pro Thr Ser Thr Glu Glu Gly
130 135 140

<210> 15
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 15

```
Asp Lys Asn Thr Gly Asp Tyr Tyr Glu Asp Ser Tyr Glu Asp Ile Ser
1               5                   10                  15


Ala Tyr Leu Leu Ser Lys Asn Asn Ala Ile Glu Pro Arg Ser Phe Ser
            20                  25                  30


<210>  16
<211>  19
<212>  PRT
<213>  Homo sapiens

<400>  16

Met Gln Ile Glu Leu Ser Thr Cys Phe Phe Leu Cys Leu Leu Arg Phe
1               5                   10                  15


Cys Phe Ser



<210>  17
<211>  745
<212>  PRT
<213>  Homo sapiens

<400>  17

Ala Thr Arg Arg Tyr Tyr Leu Gly Ala Val Glu Leu Ser Trp Asp Tyr
1               5                   10                  15


Met Gln Ser Asp Leu Gly Glu Leu Pro Val Asp Ala Arg Phe Pro Pro
            20                  25                  30


Arg Val Pro Lys Ser Phe Pro Phe Asn Thr Ser Val Val Tyr Lys Lys
        35                  40                  45


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


Arg Pro Pro Trp Met Gly Leu Leu Gly Pro Thr Ile Gln Ala Glu Val
65                  70                  75                  80


Tyr Asp Thr Val Val Ile Thr Leu Lys Asn Met Ala Ser His Pro Val
                85                  90                  95


Ser Leu His Ala Val Gly Val Ser Tyr Trp Lys Ala Ser Glu Gly Ala
```

```
            100                 105                 110

Glu Tyr Asp Asp Gln Thr Ser Gln Arg Glu Lys Glu Asp Asp Lys Val
        115                 120                 125

Phe Pro Gly Gly Ser His Thr Tyr Val Trp Gln Val Leu Lys Glu Asn
    130                 135                 140

Gly Pro Met Ala Ser Asp Pro Leu Cys Leu Thr Tyr Ser Tyr Leu Ser
145                 150                 155                 160

His Val Asp Leu Val Lys Asp Leu Asn Ser Gly Leu Ile Gly Ala Leu
                165                 170                 175

Leu Val Cys Arg Glu Gly Ser Leu Ala Lys Glu Lys Thr Gln Thr Leu
            180                 185                 190

His Lys Phe Ile Leu Leu Phe Ala Val Phe Asp Glu Gly Lys Ser Trp
        195                 200                 205

His Ser Glu Thr Lys Asn Ser Leu Met Gln Asp Arg Asp Ala Ala Ser
    210                 215                 220

Ala Arg Ala Trp Pro Lys Met His Thr Val Asn Gly Tyr Val Asn Arg
225                 230                 235                 240

Ser Leu Pro Gly Leu Ile Gly Cys His Arg Lys Ser Val Tyr Trp His
                245                 250                 255

Val Ile Gly Met Gly Thr Thr Pro Glu Val His Ser Ile Phe Leu Glu
            260                 265                 270

Gly His Thr Phe Leu Val Arg Asn His Arg Gln Ala Ser Leu Glu Ile
        275                 280                 285

Ser Pro Ile Thr Phe Leu Thr Ala Gln Thr Leu Leu Met Asp Leu Gly
    290                 295                 300

Gln Phe Leu Leu Phe Cys His Ile Ser Ser His Gln His Asp Gly Met
305                 310                 315                 320
```

```
Glu Ala Tyr Val Lys Val Asp Ser Cys Pro Glu Glu Pro Gln Leu Arg
                325                 330                 335

Met Lys Asn Asn Glu Glu Ala Glu Asp Tyr Asp Asp Asp Leu Thr Asp
            340                 345                 350

Ser Glu Met Asp Val Val Arg Phe Asp Asp Asp Asn Ser Pro Ser Phe
        355                 360                 365

Ile Gln Ile Arg Ser Val Ala Lys Lys His Pro Lys Thr Trp Val His
    370                 375                 380

Tyr Ile Ala Ala Glu Glu Glu Asp Trp Asp Tyr Ala Pro Leu Val Leu
385                 390                 395                 400

Ala Pro Asp Asp Arg Ser Tyr Lys Ser Gln Tyr Leu Asn Asn Gly Pro
                405                 410                 415

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

Asp Glu Thr Phe Lys Thr Arg Glu Ala Ile Gln His Glu Ser Gly Ile
        435                 440                 445

Leu Gly Pro Leu Leu Tyr Gly Glu Val Gly Asp Thr Leu Leu Ile Ile
    450                 455                 460

Phe Lys Asn Gln Ala Ser Arg Pro Tyr Asn Ile Tyr Pro His Gly Ile
465                 470                 475                 480

Thr Asp Val Arg Pro Leu Tyr Ser Arg Arg Leu Pro Lys Gly Val Lys
                485                 490                 495

His Leu Lys Asp Phe Pro Ile Leu Pro Gly Glu Ile Phe Lys Tyr Lys
            500                 505                 510

Trp Thr Val Thr Val Glu Asp Gly Pro Thr Lys Ser Asp Pro Arg Cys
        515                 520                 525

Leu Thr Arg Tyr Tyr Ser Ser Phe Val Asn Met Glu Arg Asp Leu Ala
    530                 535                 540
```

```
Ser Gly Leu Ile Gly Pro Leu Leu Ile Cys Tyr Lys Glu Ser Val Asp
545                 550                 555                 560


Gln Arg Gly Asn Gln Ile Met Ser Asp Lys Arg Asn Val Ile Leu Phe
                565                 570                 575


Ser Val Phe Asp Glu Asn Arg Ser Trp Tyr Leu Thr Glu Asn Ile Gln
            580                 585                 590


Arg Phe Leu Pro Asn Pro Ala Gly Val Gln Leu Glu Asp Pro Glu Phe
        595                 600                 605


Gln Ala Ser Asn Ile Met His Ser Ile Asn Gly Tyr Val Phe Asp Ser
    610                 615                 620


Leu Gln Leu Ser Val Cys Leu His Glu Val Ala Tyr Trp Tyr Ile Leu
625                 630                 635                 640


Ser Ile Gly Ala Gln Thr Asp Phe Leu Ser Val Phe Phe Ser Gly Tyr
                645                 650                 655


Thr Phe Lys His Lys Met Val Tyr Glu Asp Thr Leu Thr Leu Phe Pro
            660                 665                 670


Phe Ser Gly Glu Thr Val Phe Met Ser Met Glu Asn Pro Gly Leu Trp
        675                 680                 685


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


Leu Leu Lys Val Ser Ser Cys Asp Lys Asn Thr Gly Asp Tyr Tyr Glu
705                 710                 715                 720


Asp Ser Tyr Glu Asp Ile Ser Ala Tyr Leu Leu Ser Lys Asn Asn Ala
                725                 730                 735


Ile Glu Pro Arg Ser Phe Ser Gln Asn
            740                 745


<210>  18
<211>  684
```

<212> PRT
<213> Homo sapiens

<400> 18

Glu Ile Thr Arg Thr Thr Leu Gln Ser Asp Gln Glu Glu Ile Asp Tyr
1 5 10 15

Asp Asp Thr Ile Ser Val Glu Met Lys Lys Glu Asp Phe Asp Ile Tyr
20 25 30

Asp Glu Asp Glu Asn Gln Ser Pro Arg Ser Phe Gln Lys Lys Thr Arg
35 40 45

His Tyr Phe Ile Ala Ala Val Glu Arg Leu Trp Asp Tyr Gly Met Ser
50 55 60

Ser Ser Pro His Val Leu Arg Asn Arg Ala Gln Ser Gly Ser Val Pro
65 70 75 80

Gln Phe Lys Lys Val Val Phe Gln Glu Phe Thr Asp Gly Ser Phe Thr
85 90 95

Gln Pro Leu Tyr Arg Gly Glu Leu Asn Glu His Leu Gly Leu Leu Gly
100 105 110

Pro Tyr Ile Arg Ala Glu Val Glu Asp Asn Ile Met Val Thr Phe Arg
115 120 125

Asn Gln Ala Ser Arg Pro Tyr Ser Phe Tyr Ser Ser Leu Ile Ser Tyr
130 135 140

Glu Glu Asp Gln Arg Gln Gly Ala Glu Pro Arg Lys Asn Phe Val Lys
145 150 155 160

Pro Asn Glu Thr Lys Thr Tyr Phe Trp Lys Val Gln His His Met Ala
165 170 175

Pro Thr Lys Asp Glu Phe Asp Cys Lys Ala Trp Ala Tyr Phe Ser Asp
180 185 190

Val Asp Leu Glu Lys Asp Val His Ser Gly Leu Ile Gly Pro Leu Leu
195 200 205

```
Val Cys His Thr Asn Thr Leu Asn Pro Ala His Gly Arg Gln Val Thr
    210                 215                 220

Val Gln Glu Phe Ala Leu Phe Phe Thr Ile Phe Asp Glu Thr Lys Ser
225                 230                 235                 240

Trp Tyr Phe Thr Glu Asn Met Glu Arg Asn Cys Arg Ala Pro Cys Asn
                245                 250                 255

Ile Gln Met Glu Asp Pro Thr Phe Lys Glu Asn Tyr Arg Phe His Ala
            260                 265                 270

Ile Asn Gly Tyr Ile Met Asp Thr Leu Pro Gly Leu Val Met Ala Gln
        275                 280                 285

Asp Gln Arg Ile Arg Trp Tyr Leu Leu Ser Met Gly Ser Asn Glu Asn
    290                 295                 300

Ile His Ser Ile His Phe Ser Gly His Val Phe Thr Val Arg Lys Lys
305                 310                 315                 320

Glu Glu Tyr Lys Met Ala Leu Tyr Asn Leu Tyr Pro Gly Val Phe Glu
                325                 330                 335

Thr Val Glu Met Leu Pro Ser Lys Ala Gly Ile Trp Arg Val Glu Cys
            340                 345                 350

Leu Ile Gly Glu His Leu His Ala Gly Met Ser Thr Leu Phe Leu Val
        355                 360                 365

Tyr Ser Asn Lys Cys Gln Thr Pro Leu Gly Met Ala Ser Gly His Ile
    370                 375                 380

Arg Asp Phe Gln Ile Thr Ala Ser Gly Gln Tyr Gly Gln Trp Ala Pro
385                 390                 395                 400

Lys Leu Ala Arg Leu His Tyr Ser Gly Ser Ile Asn Ala Trp Ser Thr
                405                 410                 415

Lys Glu Pro Phe Ser Trp Ile Lys Val Asp Leu Leu Ala Pro Met Ile
```

```
            420                 425                 430

Ile His Gly Ile Lys Thr Gln Gly Ala Arg Gln Lys Phe Ser Ser Leu
        435                 440                 445

Tyr Ile Ser Gln Phe Ile Ile Met Tyr Ser Leu Asp Gly Lys Lys Trp
    450                 455                 460

Gln Thr Tyr Arg Gly Asn Ser Thr Gly Thr Leu Met Val Phe Phe Gly
465                 470                 475                 480

Asn Val Asp Ser Ser Gly Ile Lys His Asn Ile Phe Asn Pro Pro Ile
                485                 490                 495

Ile Ala Arg Tyr Ile Arg Leu His Pro Thr His Tyr Ser Ile Arg Ser
            500                 505                 510

Thr Leu Arg Met Glu Leu Met Gly Cys Asp Leu Asn Ser Cys Ser Met
        515                 520                 525

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

Ser Ser Tyr Phe Thr Asn Met Phe Ala Thr Trp Ser Pro Ser Lys Ala
545                 550                 555                 560

Arg Leu His Leu Gln Gly Arg Ser Asn Ala Trp Arg Pro Gln Val Asn
                565                 570                 575

Asn Pro Lys Glu Trp Leu Gln Val Asp Phe Gln Lys Thr Met Lys Val
            580                 585                 590

Thr Gly Val Thr Thr Gln Gly Val Lys Ser Leu Leu Thr Ser Met Tyr
        595                 600                 605

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

Leu Phe Phe Gln Asn Gly Lys Val Lys Val Phe Gln Gly Asn Gln Asp
625                 630                 635                 640
```

Ser Phe Thr Pro Val Val Asn Ser Leu Asp Pro Pro Leu Leu Thr Arg
645 650 655

Tyr Leu Arg Ile His Pro Gln Ser Trp Val His Gln Ile Ala Leu Arg
660 665 670

Met Glu Val Leu Gly Cys Glu Ala Gln Asp Leu Tyr
675 680

<210> 19
<211> 22
<212> PRT
<213> Homo sapiens

<400> 19

Met Ile Pro Ala Arg Phe Ala Gly Val Leu Leu Ala Leu Ala Leu Ile
1 5 10 15

Leu Pro Gly Thr Leu Cys
20

<210> 20
<211> 741
<212> PRT
<213> Homo sapiens

<400> 20

Ala Glu Gly Thr Arg Gly Arg Ser Ser Thr Ala Arg Cys Ser Leu Phe
1 5 10 15

Gly Ser Asp Phe Val Asn Thr Phe Asp Gly Ser Met Tyr Ser Phe Ala
20 25 30

Gly Tyr Cys Ser Tyr Leu Leu Ala Gly Gly Cys Gln Lys Arg Ser Phe
35 40 45

Ser Ile Ile Gly Asp Phe Gln Asn Gly Lys Arg Val Ser Leu Ser Val
50 55 60

Tyr Leu Gly Glu Phe Phe Asp Ile His Leu Phe Val Asn Gly Thr Val
65 70 75 80

Thr Gln Gly Asp Gln Arg Val Ser Met Pro Tyr Ala Ser Lys Gly Leu

```
                85                  90                  95

Tyr Leu Glu Thr Glu Ala Gly Tyr Tyr Lys Leu Ser Gly Glu Ala Tyr
            100                 105                 110

Gly Phe Val Ala Arg Ile Asp Gly Ser Gly Asn Phe Gln Val Leu Leu
        115                 120                 125

Ser Asp Arg Tyr Phe Asn Lys Thr Cys Gly Leu Cys Gly Asn Phe Asn
    130                 135                 140

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

Asp Pro Tyr Asp Phe Ala Asn Ser Trp Ala Leu Ser Ser Gly Glu Gln
                165                 170                 175

Trp Cys Glu Arg Ala Ser Pro Pro Ser Ser Ser Cys Asn Ile Ser Ser
            180                 185                 190

Gly Glu Met Gln Lys Gly Leu Trp Glu Gln Cys Gln Leu Leu Lys Ser
        195                 200                 205

Thr Ser Val Phe Ala Arg Cys His Pro Leu Val Asp Pro Glu Pro Phe
    210                 215                 220

Val Ala Leu Cys Glu Lys Thr Leu Cys Glu Cys Ala Gly Gly Leu Glu
225                 230                 235                 240

Cys Ala Cys Pro Ala Leu Leu Glu Tyr Ala Arg Thr Cys Ala Gln Glu
                245                 250                 255

Gly Met Val Leu Tyr Gly Trp Thr Asp His Ser Ala Cys Ser Pro Val
            260                 265                 270

Cys Pro Ala Gly Met Glu Tyr Arg Gln Cys Val Ser Pro Cys Ala Arg
        275                 280                 285

Thr Cys Gln Ser Leu His Ile Asn Glu Met Cys Gln Glu Arg Cys Val
    290                 295                 300
```

```
Asp Gly Cys Ser Cys Pro Glu Gly Gln Leu Leu Asp Glu Gly Leu Cys
305                 310                 315                 320

Val Glu Ser Thr Glu Cys Pro Cys Val His Ser Gly Lys Arg Tyr Pro
                325                 330                 335

Pro Gly Thr Ser Leu Ser Arg Asp Cys Asn Thr Cys Ile Cys Arg Asn
            340                 345                 350

Ser Gln Trp Ile Cys Ser Asn Glu Glu Cys Pro Gly Glu Cys Leu Val
        355                 360                 365

Thr Gly Gln Ser His Phe Lys Ser Phe Asp Asn Arg Tyr Phe Thr Phe
    370                 375                 380

Ser Gly Ile Cys Gln Tyr Leu Leu Ala Arg Asp Cys Gln Asp His Ser
385                 390                 395                 400

Phe Ser Ile Val Ile Glu Thr Val Gln Cys Ala Asp Asp Arg Asp Ala
                405                 410                 415

Val Cys Thr Arg Ser Val Thr Val Arg Leu Pro Gly Leu His Asn Ser
            420                 425                 430

Leu Val Lys Leu Lys His Gly Ala Gly Val Ala Met Asp Gly Gln Asp
        435                 440                 445

Ile Gln Leu Pro Leu Leu Lys Gly Asp Leu Arg Ile Gln His Thr Val
    450                 455                 460

Thr Ala Ser Val Arg Leu Ser Tyr Gly Glu Asp Leu Gln Met Asp Trp
465                 470                 475                 480

Asp Gly Arg Gly Arg Leu Leu Val Lys Leu Ser Pro Val Tyr Ala Gly
                485                 490                 495

Lys Thr Cys Gly Leu Cys Gly Asn Tyr Asn Gly Asn Gln Gly Asp Asp
            500                 505                 510

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

```
Asn Ala Trp Lys Leu His Gly Asp Cys Gln Asp Leu Gln Lys Gln His
    530                 535                 540

Ser Asp Pro Cys Ala Leu Asn Pro Arg Met Thr Arg Phe Ser Glu Glu
545                 550                 555                 560

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

Val Ser Pro Leu Pro Tyr Leu Arg Asn Cys Arg Tyr Asp Val Cys Ser
            580                 585                 590

Cys Ser Asp Gly Arg Glu Cys Leu Cys Gly Ala Leu Ala Ser Tyr Ala
        595                 600                 605

Ala Ala Cys Ala Gly Arg Gly Val Arg Val Ala Trp Arg Glu Pro Gly
    610                 615                 620

Arg Cys Glu Leu Asn Cys Pro Lys Gly Gln Val Tyr Leu Gln Cys Gly
625                 630                 635                 640

Thr Pro Cys Asn Leu Thr Cys Arg Ser Leu Ser Tyr Pro Asp Glu Glu
                645                 650                 655

Cys Asn Glu Ala Cys Leu Glu Gly Cys Phe Cys Pro Pro Gly Leu Tyr
            660                 665                 670

Met Asp Glu Arg Gly Asp Cys Val Pro Lys Ala Gln Cys Pro Cys Tyr
        675                 680                 685

Tyr Asp Gly Glu Ile Phe Gln Pro Glu Asp Ile Phe Ser Asp His His
    690                 695                 700

Thr Met Cys Tyr Cys Glu Asp Gly Phe Met His Cys Thr Met Ser Gly
705                 710                 715                 720

Val Pro Gly Ser Leu Leu Pro Asp Ala Val Leu Ser Ser Pro Leu Ser
                725                 730                 735

His Arg Ser Lys Arg
            740
```

<210> 21
<211> 103
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 21

Ser Leu Ser Cys Arg Pro Pro Met Val Lys Leu Val Cys Pro Ala Asp
1 5 10 15

Asn Leu Arg Ala Glu Gly Leu Glu Cys Thr Lys Thr Cys Gln Asn Tyr
20 25 30

Asp Leu Glu Cys Met Ser Met Gly Cys Val Ser Gly Cys Leu Cys Pro
35 40 45

Pro Gly Met Val Arg His Glu Asn Arg Cys Val Ala Leu Glu Arg Cys
50 55 60

Pro Cys Phe His Gln Gly Lys Glu Tyr Ala Pro Gly Glu Thr Val Lys
65 70 75 80

Ile Gly Cys Asn Thr Cys Val Cys Arg Asp Arg Lys Trp Asn Cys Thr
85 90 95

Asp His Val Cys Asp Ala Thr
100

<210> 22
<211> 374
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 22

Cys Ser Thr Ile Gly Met Ala His Tyr Leu Thr Phe Asp Gly Leu Lys
1 5 10 15

Tyr Leu Phe Pro Gly Glu Cys Gln Tyr Val Leu Val Gln Asp Tyr Cys

```
            20                  25                  30

Gly Ser Asn Pro Gly Thr Phe Arg Ile Leu Val Gly Asn Lys Gly Cys
        35                  40                  45

Ser His Pro Ser Val Lys Cys Lys Lys Arg Val Thr Ile Leu Val Glu
    50                  55                  60

Gly Gly Glu Ile Glu Leu Phe Asp Gly Glu Val Asn Val Lys Arg Pro
65                  70                  75                  80

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

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

Ser Ile Ser Val Val Leu Lys Gln Thr Tyr Gln Glu Lys Val Cys Gly
        115                 120                 125

Leu Cys Gly Asn Phe Asp Gly Ile Gln Asn Asn Asp Leu Thr Ser Ser
    130                 135                 140

Asn Leu Gln Val Glu Glu Asp Pro Val Asp Phe Gly Asn Ser Trp Lys
145                 150                 155                 160

Val Ser Ser Gln Cys Ala Asp Thr Arg Lys Val Pro Leu Asp Ser Ser
                165                 170                 175

Pro Ala Thr Cys His Asn Asn Ile Met Lys Gln Thr Met Val Asp Ser
            180                 185                 190

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

Val Asp Pro Glu Pro Tyr Leu Asp Val Cys Ile Tyr Asp Thr Cys Ser
    210                 215                 220

Cys Glu Ser Ile Gly Asp Cys Ala Ala Phe Cys Asp Thr Ile Ala Ala
225                 230                 235                 240
```

```
Tyr Ala His Val Cys Ala Gln His Gly Lys Val Val Thr Trp Arg Thr
                245                 250                 255


Ala Thr Leu Cys Pro Gln Ser Cys Glu Glu Arg Asn Leu Arg Glu Asn
            260                 265                 270


Gly Tyr Glu Ala Glu Trp Arg Tyr Asn Ser Cys Ala Pro Ala Cys Gln
        275                 280                 285


Val Thr Cys Gln His Pro Glu Pro Leu Ala Cys Pro Val Gln Cys Val
    290                 295                 300


Glu Gly Cys His Ala His Cys Pro Pro Gly Lys Ile Leu Asp Glu Leu
305                 310                 315                 320


Leu Gln Thr Cys Val Asp Pro Glu Asp Cys Pro Val Cys Glu Val Ala
                325                 330                 335


Gly Arg Arg Phe Ala Ser Gly Lys Lys Val Thr Leu Asn Pro Ser Asp
            340                 345                 350


Pro Glu His Cys Gln Ile Cys His Cys Asp Val Val Asn Leu Thr Cys
        355                 360                 365


Glu Ala Cys Gln Glu Pro
    370


<210>  23
<211>  226
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthesized

<400>  23

Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly
1               5                   10                  15


Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met
            20                  25                  30


Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His
```

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        35                  40                  45

Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val
    50                  55                  60

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

Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly
                85                  90                  95

Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile
            100                 105                 110

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

Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser
    130                 135                 140

Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu
145                 150                 155                 160

Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro
                165                 170                 175

Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val
            180                 185                 190

Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met
        195                 200                 205

His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser
    210                 215                 220

Pro Gly
225
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<210> 24
<211> 291
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 24

Gly Thr Ser Glu Ser Ala Thr Pro Glu Ser Gly Pro Gly Ser Glu Pro
1   5   10   15

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

Glu Ser Gly Pro Gly Ser Glu Pro Ala Thr Ser Gly Ser Glu Thr Pro
        35   40   45

Gly Thr Ser Glu Ser Ala Thr Pro Glu Ser Gly Pro Gly Thr Ser Thr
    50   55   60

Glu Pro Ser Glu Gly Ser Ala Pro Gly Ser Pro Ala Gly Ser Pro Thr
65   70   75   80

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

Gly Ser Glu Pro Ala Thr Ser Gly Ser Glu Thr Pro Gly Thr Ser Glu
            100   105   110

Ser Ala Thr Pro Glu Ser Gly Pro Gly Ser Pro Ala Gly Ser Pro Thr
        115   120   125

Ser Thr Glu Glu Gly Ser Pro Ala Gly Ser Pro Thr Ser Thr Glu Glu
    130   135   140

Gly Thr Ser Thr Glu Pro Ser Glu Gly Ser Ala Pro Gly Thr Ser Glu
145   150   155   160

Ser Ala Thr Pro Glu Ser Gly Pro Gly Thr Ser Glu Ser Ala Thr Pro
                165   170   175

Glu Ser Gly Pro Gly Thr Ser Glu Ser Ala Thr Pro Glu Ser Gly Pro
            180   185   190

Gly Ser Glu Pro Ala Thr Ser Gly Ser Glu Thr Pro Gly Ser Glu Pro

```
        195                 200                 205

Ala Thr Ser Gly Ser Glu Thr Pro Gly Ser Pro Ala Gly Ser Pro Thr
    210                 215                 220

Ser Thr Glu Glu Gly Thr Ser Thr Glu Pro Ser Glu Gly Ser Ala Pro
225                 230                 235                 240

Gly Thr Ser Thr Glu Pro Ser Glu Gly Ser Ala Pro Gly Ser Glu Pro
                245                 250                 255

Ala Thr Ser Gly Ser Glu Thr Pro Gly Thr Ser Glu Ser Ala Thr Pro
            260                 265                 270

Glu Ser Gly Pro Gly Thr Ser Thr Glu Pro Ser Glu Gly Ser Ala Pro
        275                 280                 285

Ala Ser Ser
    290
```