SEQUENCE LISTING

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<120> Recombinant Laminin-521

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<160> 8

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<210> 1
<211> 3695
<212> PRT
<213> Homo sapiens

<400> 1

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

Arg Gly Pro Ala Pro Leu Leu Leu Val Gly Leu Ala Leu Leu Gly Ala
            20                  25                  30

Ala Arg Ala Arg Glu Glu Ala Gly Gly Gly Phe Ser Leu His Pro Pro
        35                  40                  45

Tyr Phe Asn Leu Ala Glu Gly Ala Arg Ile Ala Ala Ser Ala Thr Cys
    50                  55                  60

Gly Glu Glu Ala Pro Ala Arg Gly Ser Pro Arg Pro Thr Glu Asp Leu
65                  70                  75                  80

Tyr Cys Lys Leu Val Gly Gly Pro Val Ala Gly Gly Asp Pro Asn Gln
                85                  90                  95

Thr Ile Arg Gly Gln Tyr Cys Asp Ile Cys Thr Ala Ala Asn Ser Asn
            100                 105                 110

Lys Ala His Pro Ala Ser Asn Ala Ile Asp Gly Thr Glu Arg Trp Trp
        115                 120                 125

Gln Ser Pro Pro Leu Ser Arg Gly Leu Glu Tyr Asn Glu Val Asn Val
    130                 135                 140

Thr Leu Asp Leu Gly Gln Val Phe His Val Ala Tyr Val Leu Ile Lys
145                 150                 155                 160

Phe Ala Asn Ser Pro Arg Pro Asp Leu Trp Val Leu Glu Arg Ser Met
                165                 170                 175
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Asp Phe Gly Arg Thr Tyr Gln Pro Trp Gln Phe Phe Ala Ser Ser Lys
            180                 185                 190

Arg Asp Cys Leu Glu Arg Phe Gly Pro Gln Thr Leu Glu Arg Ile Thr
        195                 200                 205

Arg Asp Asp Ala Ala Ile Cys Thr Thr Glu Tyr Ser Arg Ile Val Pro
    210                 215                 220

Leu Glu Asn Gly Glu Ile Val Val Ser Leu Val Asn Gly Arg Pro Gly
225                 230                 235                 240

Ala Met Asn Phe Ser Tyr Ser Pro Leu Leu Arg Glu Phe Thr Lys Ala
                245                 250                 255

Thr Asn Val Arg Leu Arg Phe Leu Arg Thr Asn Thr Leu Leu Gly His
            260                 265                 270

Leu Met Gly Lys Ala Leu Arg Asp Pro Thr Val Thr Arg Arg Tyr Tyr
        275                 280                 285

Tyr Ser Ile Lys Asp Ile Ser Ile Gly Gly Arg Cys Val Cys His Gly
    290                 295                 300

His Ala Asp Ala Cys Asp Ala Lys Asp Pro Thr Asp Pro Phe Arg Leu
305                 310                 315                 320

Gln Cys Thr Cys Gln His Asn Thr Cys Gly Gly Thr Cys Asp Arg Cys
                325                 330                 335

Cys Pro Gly Phe Asn Gln Gln Pro Trp Lys Pro Ala Thr Ala Asn Ser
            340                 345                 350

Ala Asn Glu Cys Gln Ser Cys Asn Cys Tyr Gly His Ala Thr Asp Cys
        355                 360                 365

Tyr Tyr Asp Pro Glu Val Asp Arg Arg Arg Ala Ser Gln Ser Leu Asp
    370                 375                 380

Gly Thr Tyr Gln Gly Gly Gly Val Cys Ile Asp Cys Gln His His Thr
385                 390                 395                 400

Thr Gly Val Asn Cys Glu Arg Cys Leu Pro Gly Phe Tyr Arg Ser Pro
                405                 410                 415

Asn His Pro Leu Asp Ser Pro His Val Cys Arg Arg Cys Asn Cys Glu
            420                 425                 430
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Ser Asp Phe Thr Asp Gly Thr Cys Glu Asp Leu Thr Gly Arg Cys Tyr
        435                 440                 445

Cys Arg Pro Asn Phe Ser Gly Glu Arg Cys Asp Val Cys Ala Glu Gly
    450                 455                 460

Phe Thr Gly Phe Pro Ser Cys Tyr Pro Thr Pro Ser Ser Ser Asn Asp
465                 470                 475                 480

Thr Arg Glu Gln Val Leu Pro Ala Gly Gln Ile Val Asn Cys Asp Cys
                485                 490                 495

Ser Ala Ala Gly Thr Gln Gly Asn Ala Cys Arg Lys Asp Pro Arg Val
            500                 505                 510

Gly Arg Cys Leu Cys Lys Pro Asn Phe Gln Gly Thr His Cys Glu Leu
        515                 520                 525

Cys Ala Pro Gly Phe Tyr Gly Pro Gly Cys Gln Pro Cys Gln Cys Ser
    530                 535                 540

Ser Pro Gly Val Ala Asp Asp Arg Cys Asp Pro Asp Thr Gly Gln Cys
545                 550                 555                 560

Arg Cys Arg Val Gly Phe Glu Gly Ala Thr Cys Asp Arg Cys Ala Pro
                565                 570                 575

Gly Tyr Phe His Phe Pro Leu Cys Gln Leu Cys Gly Cys Ser Pro Ala
            580                 585                 590

Gly Thr Leu Pro Glu Gly Cys Asp Glu Ala Gly Arg Cys Leu Cys Gln
        595                 600                 605

Pro Glu Phe Ala Gly Pro His Cys Asp Arg Cys Arg Pro Gly Tyr His
    610                 615                 620

Gly Phe Pro Asn Cys Gln Ala Cys Thr Cys Asp Pro Arg Gly Ala Leu
625                 630                 635                 640

Asp Gln Leu Cys Gly Ala Gly Gly Leu Cys Arg Cys Arg Pro Gly Tyr
                645                 650                 655

Thr Gly Thr Ala Cys Gln Glu Cys Ser Pro Gly Phe His Gly Phe Pro
            660                 665                 670

Ser Cys Val Pro Cys His Cys Ser Ala Glu Gly Ser Leu His Ala Ala
```

675 680 685

Cys Asp Pro Arg Ser Gly Gln Cys Ser Cys Arg Pro Arg Val Thr Gly
690 695 700

Leu Arg Cys Asp Thr Cys Val Pro Gly Ala Tyr Asn Phe Pro Tyr Cys
705 710 715 720

Glu Ala Gly Ser Cys His Pro Ala Gly Leu Ala Pro Val Asp Pro Ala
725 730 735

Leu Pro Glu Ala Gln Val Pro Cys Met Cys Arg Ala His Val Glu Gly
740 745 750

Pro Ser Cys Asp Arg Cys Lys Pro Gly Phe Trp Gly Leu Ser Pro Ser
755 760 765

Asn Pro Glu Gly Cys Thr Arg Cys Ser Cys Asp Leu Arg Gly Thr Leu
770 775 780

Gly Gly Val Ala Glu Cys Gln Pro Gly Thr Gly Gln Cys Phe Cys Lys
785 790 795 800

Pro His Val Cys Gly Gln Ala Cys Ala Ser Cys Lys Asp Gly Phe Phe
805 810 815

Gly Leu Asp Gln Ala Asp Tyr Phe Gly Cys Arg Ser Cys Arg Cys Asp
820 825 830

Ile Gly Gly Ala Leu Gly Gln Ser Cys Glu Pro Arg Thr Gly Val Cys
835 840 845

Arg Cys Arg Pro Asn Thr Gln Gly Pro Thr Cys Ser Glu Pro Ala Arg
850 855 860

Asp His Tyr Leu Pro Asp Leu His His Leu Arg Leu Glu Leu Glu Glu
865 870 875 880

Ala Ala Thr Pro Glu Gly His Ala Val Arg Phe Gly Phe Asn Pro Leu
885 890 895

Glu Phe Glu Asn Phe Ser Trp Arg Gly Tyr Ala Gln Met Ala Pro Val
900 905 910

Gln Pro Arg Ile Val Ala Arg Leu Asn Leu Thr Ser Pro Asp Leu Phe
915 920 925

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Trp Leu Val Phe Arg Tyr Val Asn Arg Gly Ala Met Ser Val Ser Gly
    930                 935                 940

Arg Val Ser Val Arg Glu Glu Gly Arg Ser Ala Thr Cys Ala Asn Cys
945                 950                 955                 960

Thr Ala Gln Ser Gln Pro Val Ala Phe Pro Pro Ser Thr Glu Pro Ala
                965                 970                 975

Phe Ile Thr Val Pro Gln Arg Gly Phe Gly Glu Pro Phe Val Leu Asn
            980                 985                 990

Pro Gly Thr Trp Ala Leu Arg Val  Glu Ala Glu Gly Val  Leu Leu Asp
        995                 1000                1005

Tyr Val  Val Leu Leu Pro Ser  Ala Tyr Tyr Glu Ala  Ala Leu Leu
    1010                1015                1020

Gln Leu  Arg Val Thr Glu Ala  Cys Thr Tyr Arg Pro  Ser Ala Gln
    1025                1030                1035

Gln Ser  Gly Asp Asn Cys Leu  Leu Tyr Thr His Leu  Pro Leu Asp
    1040                1045                1050

Gly Phe  Pro Ser Ala Ala Gly  Leu Glu Ala Leu Cys  Arg Gln Asp
    1055                1060                1065

Asn Ser  Leu Pro Arg Pro Cys  Pro Thr Glu Gln Leu  Ser Pro Ser
    1070                1075                1080

His Pro  Pro Leu Ile Thr Cys  Thr Gly Ser Asp Val  Asp Val Gln
    1085                1090                1095

Leu Gln  Val Ala Val Pro Gln  Pro Gly Arg Tyr Ala  Leu Val Val
    1100                1105                1110

Glu Tyr  Ala Asn Glu Asp Ala  Arg Gln Glu Val Gly  Val Ala Val
    1115                1120                1125

His Thr  Pro Gln Arg Ala Pro  Gln Gln Gly Leu Leu  Ser Leu His
    1130                1135                1140

Pro Cys  Leu Tyr Ser Thr Leu  Cys Arg Gly Thr Ala  Arg Asp Thr
    1145                1150                1155

Gln Asp  His Leu Ala Val Phe  His Leu Asp Ser Glu  Ala Ser Val
    1160                1165                1170
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Arg Leu  Thr Ala Glu Gln Ala  Arg Phe Phe Leu His  Gly Val Thr
    1175                1180                1185

Leu Val  Pro Ile Glu Glu Phe  Ser Pro Glu Phe Val  Glu Pro Arg
    1190                1195                1200

Val Ser  Cys Ile Ser Ser His  Gly Ala Phe Gly Pro  Asn Ser Ala
    1205                1210                1215

Ala Cys  Leu Pro Ser Arg Phe  Pro Lys Pro Pro Gln  Pro Ile Ile
    1220                1225                1230

Leu Arg  Asp Cys Gln Val Ile  Pro Leu Pro Pro Gly  Leu Pro Leu
    1235                1240                1245

Thr His  Ala Gln Asp Leu Thr  Pro Ala Met Ser Pro  Ala Gly Pro
    1250                1255                1260

Arg Pro  Arg Pro Pro Thr Ala  Val Asp Pro Asp Ala  Glu Pro Thr
    1265                1270                1275

Leu Leu  Arg Glu Pro Gln Ala  Thr Val Val Phe Thr  Thr His Val
    1280                1285                1290

Pro Thr  Leu Gly Arg Tyr Ala  Phe Leu Leu His Gly  Tyr Gln Pro
    1295                1300                1305

Ala His  Pro Thr Phe Pro Val  Glu Val Leu Ile Asn  Ala Gly Arg
    1310                1315                1320

Val Trp  Gln Gly His Ala Asn  Ala Ser Phe Cys Pro  His Gly Tyr
    1325                1330                1335

Gly Cys  Arg Thr Leu Val Val  Cys Glu Gly Gln Ala  Leu Leu Asp
    1340                1345                1350

Val Thr  His Ser Glu Leu Thr  Val Thr Val Arg Val  Pro Lys Gly
    1355                1360                1365

Arg Trp  Leu Trp Leu Asp Tyr  Val Leu Val Val Pro  Glu Asn Val
    1370                1375                1380

Tyr Ser  Phe Gly Tyr Leu Arg  Glu Glu Pro Leu Asp  Lys Ser Tyr
    1385                1390                1395

Asp Phe  Ile Ser His Cys Ala  Ala Gln Gly Tyr His  Ile Ser Pro
    1400                1405                1410
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Ser Ser  Ser Ser Leu Phe Cys  Arg Asn Ala Ala Ala  Ser Leu Ser
    1415                 1420                 1425

Leu Phe  Tyr Asn Asn Gly Ala  Arg Pro Cys Gly Cys  His Glu Val
    1430                 1435                 1440

Gly Ala  Thr Gly Pro Thr Cys  Glu Pro Phe Gly Gly  Gln Cys Pro
    1445                 1450                 1455

Cys His  Ala His Val Ile Gly  Arg Asp Cys Ser Arg  Cys Ala Thr
    1460                 1465                 1470

Gly Tyr  Trp Gly Phe Pro Asn  Cys Arg Pro Cys Asp  Cys Gly Ala
    1475                 1480                 1485

Arg Leu  Cys Asp Glu Leu Thr  Gly Gln Cys Ile Cys  Pro Pro Arg
    1490                 1495                 1500

Thr Ile  Pro Pro Asp Cys Leu  Leu Cys Gln Pro Gln  Thr Phe Gly
    1505                 1510                 1515

Cys His  Pro Leu Val Gly Cys  Glu Glu Cys Asn Cys  Ser Gly Pro
    1520                 1525                 1530

Gly Ile  Gln Glu Leu Thr Asp  Pro Thr Cys Asp Thr  Asp Ser Gly
    1535                 1540                 1545

Gln Cys  Lys Cys Arg Pro Asn  Val Thr Gly Arg Arg  Cys Asp Thr
    1550                 1555                 1560

Cys Ser  Pro Gly Phe His Gly  Tyr Pro Arg Cys Arg  Pro Cys Asp
    1565                 1570                 1575

Cys His  Glu Ala Gly Thr Ala  Pro Gly Val Cys Asp  Pro Leu Thr
    1580                 1585                 1590

Gly Gln  Cys Tyr Cys Lys Glu  Asn Val Gln Gly Pro  Lys Cys Asp
    1595                 1600                 1605

Gln Cys  Ser Leu Gly Thr Phe  Ser Leu Asp Ala Ala  Asn Pro Lys
    1610                 1615                 1620

Gly Cys  Thr Arg Cys Phe Cys  Phe Gly Ala Thr Glu  Arg Cys Arg
    1625                 1630                 1635

Ser Ser  Ser Tyr Thr Arg Gln  Glu Phe Val Asp Met  Glu Gly Trp
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    1640                1645                1650

Val Leu  Leu Ser Thr Asp Arg  Gln Val Val Pro His  Glu Arg Gln
    1655                1660                1665

Pro Gly  Thr Glu Met Leu Arg  Ala Asp Leu Arg His  Val Pro Glu
    1670                1675                1680

Ala Val  Pro Glu Ala Phe Pro  Glu Leu Tyr Trp Gln  Ala Pro Pro
    1685                1690                1695

Ser Tyr  Leu Gly Asp Arg Val  Ser Ser Tyr Gly Gly  Thr Leu Arg
    1700                1705                1710

Tyr Glu  Leu His Ser Glu Thr  Gln Arg Gly Asp Val  Phe Val Pro
    1715                1720                1725

Met Glu  Ser Arg Pro Asp Val  Val Leu Gln Gly Asn  Gln Met Ser
    1730                1735                1740

Ile Thr  Phe Leu Glu Pro Ala  Tyr Pro Thr Pro Gly  His Val His
    1745                1750                1755

Arg Gly  Gln Leu Gln Leu Val  Glu Gly Asn Phe Arg  His Thr Glu
    1760                1765                1770

Thr Arg  Asn Thr Val Ser Arg  Glu Glu Leu Met Met  Val Leu Ala
    1775                1780                1785

Ser Leu  Glu Gln Leu Gln Ile  Arg Ala Leu Phe Ser  Gln Ile Ser
    1790                1795                1800

Ser Ala  Val Phe Leu Arg Arg  Val Ala Leu Glu Val  Ala Ser Pro
    1805                1810                1815

Ala Gly  Gln Gly Ala Leu Ala  Ser Asn Val Glu Leu  Cys Leu Cys
    1820                1825                1830

Pro Ala  Ser Tyr Arg Gly Asp  Ser Cys Gln Glu Cys  Ala Pro Gly
    1835                1840                1845

Phe Tyr  Arg Asp Val Lys Gly  Leu Phe Leu Gly Arg  Cys Val Pro
    1850                1855                1860

Cys Gln  Cys His Gly His Ser  Asp Arg Cys Leu Pro  Gly Ser Gly
    1865                1870                1875
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Val Cys  Val Asp Cys Gln His  Asn Thr Glu Gly Ala  His Cys Glu
    1880                 1885                 1890

Arg Cys  Gln Ala Gly Phe Val  Ser Ser Arg Asp Asp  Pro Ser Ala
    1895                 1900                 1905

Pro Cys  Val Ser Cys Pro Cys  Pro Leu Ser Val Pro  Ser Asn Asn
    1910                 1915                 1920

Phe Ala  Glu Gly Cys Val Leu  Arg Gly Gly Arg Thr  Gln Cys Leu
    1925                 1930                 1935

Cys Lys  Pro Gly Tyr Ala Gly  Ala Ser Cys Glu Arg  Cys Ala Pro
    1940                 1945                 1950

Gly Phe  Phe Gly Asn Pro Leu  Val Leu Gly Ser Ser  Cys Gln Pro
    1955                 1960                 1965

Cys Asp  Cys Ser Gly Asn Gly  Asp Pro Asn Leu Leu  Phe Ser Asp
    1970                 1975                 1980

Cys Asp  Pro Leu Thr Gly Ala  Cys Arg Gly Cys Leu  Arg His Thr
    1985                 1990                 1995

Thr Gly  Pro Arg Cys Glu Ile  Cys Ala Pro Gly Phe  Tyr Gly Asn
    2000                 2005                 2010

Ala Leu  Leu Pro Gly Asn Cys  Thr Arg Cys Asp Cys  Thr Pro Cys
    2015                 2020                 2025

Gly Thr  Glu Ala Cys Asp Pro  His Ser Gly His Cys  Leu Cys Lys
    2030                 2035                 2040

Ala Gly  Val Thr Gly Arg Arg  Cys Asp Arg Cys Gln  Glu Gly His
    2045                 2050                 2055

Phe Gly  Phe Asp Gly Cys Gly  Gly Cys Arg Pro Cys  Ala Cys Gly
    2060                 2065                 2070

Pro Ala  Ala Glu Gly Ser Glu  Cys His Pro Gln Ser  Gly Gln Cys
    2075                 2080                 2085

His Cys  Arg Pro Gly Thr Met  Gly Pro Gln Cys Arg  Glu Cys Ala
    2090                 2095                 2100

Pro Gly  Tyr Trp Gly Leu Pro  Glu Gln Gly Cys Arg  Arg Cys Gln
    2105                 2110                 2115
```

```
Cys Pro  Gly Gly Arg Cys Asp  Pro His Thr Gly Arg  Cys Asn Cys
    2120                 2125                 2130

Pro Pro  Gly Leu Ser Gly Glu  Arg Cys Asp Thr Cys  Ser Gln Gln
    2135                 2140                 2145

His Gln  Val Pro Val Pro Gly  Gly Pro Val Gly His  Ser Ile His
    2150                 2155                 2160

Cys Glu  Val Cys Asp His Cys  Val Val Leu Leu Leu  Asp Asp Leu
    2165                 2170                 2175

Glu Arg  Ala Gly Ala Leu Leu  Pro Ala Ile His Glu  Gln Leu Arg
    2180                 2185                 2190

Gly Ile  Asn Ala Ser Ser Met  Ala Trp Ala Arg Leu  His Arg Leu
    2195                 2200                 2205

Asn Ala  Ser Ile Ala Asp Leu  Gln Ser Gln Leu Arg  Ser Pro Leu
    2210                 2215                 2220

Gly Pro  Arg His Glu Thr Ala  Gln Gln Leu Glu Val  Leu Glu Gln
    2225                 2230                 2235

Gln Ser  Thr Ser Leu Gly Gln  Asp Ala Arg Arg Leu  Gly Gly Gln
    2240                 2245                 2250

Ala Val  Gly Thr Arg Asp Gln  Ala Ser Gln Leu Leu  Ala Gly Thr
    2255                 2260                 2265

Glu Ala  Thr Leu Gly His Ala  Lys Thr Leu Leu Ala  Ala Ile Arg
    2270                 2275                 2280

Ala Val  Asp Arg Thr Leu Ser  Glu Leu Met Ser Gln  Thr Gly His
    2285                 2290                 2295

Leu Gly  Leu Ala Asn Ala Ser  Ala Pro Ser Gly Glu  Gln Leu Leu
    2300                 2305                 2310

Arg Thr  Leu Ala Glu Val Glu  Arg Leu Leu Trp Glu  Met Arg Ala
    2315                 2320                 2325

Arg Asp  Leu Gly Ala Pro Gln  Ala Ala Ala Glu Ala  Glu Leu Ala
    2330                 2335                 2340

Ala Ala  Gln Arg Leu Leu Ala  Arg Val Gln Glu Gln  Leu Ser Ser
    2345                 2350                 2355
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Leu Trp  Glu Glu Asn Gln Ala  Leu Ala Thr Gln Thr  Arg Asp Arg
    2360                 2365                 2370

Leu Ala  Gln His Glu Ala Gly  Leu Met Asp Leu Arg  Glu Ala Leu
    2375                 2380                 2385

Asn Arg  Ala Val Asp Ala Thr  Arg Glu Ala Gln Glu  Leu Asn Ser
    2390                 2395                 2400

Arg Asn  Gln Glu Arg Leu Glu  Glu Ala Leu Gln Arg  Lys Gln Glu
    2405                 2410                 2415

Leu Ser  Arg Asp Asn Ala Thr  Leu Gln Ala Thr Leu  His Ala Ala
    2420                 2425                 2430

Arg Asp  Thr Leu Ala Ser Val  Phe Arg Leu Leu His  Ser Leu Asp
    2435                 2440                 2445

Gln Ala  Lys Glu Glu Leu Glu  Arg Leu Ala Ala Ser  Leu Asp Gly
    2450                 2455                 2460

Ala Arg  Thr Pro Leu Leu Gln  Arg Met Gln Thr Phe  Ser Pro Ala
    2465                 2470                 2475

Gly Ser  Lys Leu Arg Leu Val  Glu Ala Ala Glu Ala  His Ala Gln
    2480                 2485                 2490

Gln Leu  Gly Gln Leu Ala Leu  Asn Leu Ser Ser Ile  Ile Leu Asp
    2495                 2500                 2505

Val Asn  Gln Asp Arg Leu Thr  Gln Arg Ala Ile Glu  Ala Ser Asn
    2510                 2515                 2520

Ala Tyr  Ser Arg Ile Leu Gln  Ala Val Gln Ala Ala  Glu Asp Ala
    2525                 2530                 2535

Ala Gly  Gln Ala Leu Gln Gln  Ala Asp His Thr Trp  Ala Thr Val
    2540                 2545                 2550

Val Arg  Gln Gly Leu Val Asp  Arg Ala Gln Gln Leu  Leu Ala Asn
    2555                 2560                 2565

Ser Thr  Ala Leu Glu Glu Ala  Met Leu Gln Glu Gln  Gln Arg Leu
    2570                 2575                 2580

Gly Leu  Val Trp Ala Ala Leu  Gln Gly Ala Arg Thr  Gln Leu Arg
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2585 2590 2595

Asp Val Arg Ala Lys Lys Asp Gln Leu Glu Ala His Ile Gln Ala
2600 2605 2610

Ala Gln Ala Met Leu Ala Met Asp Thr Asp Glu Thr Ser Lys Lys
2615 2620 2625

Ile Ala His Ala Lys Ala Val Ala Ala Glu Ala Gln Asp Thr Ala
2630 2635 2640

Thr Arg Val Gln Ser Gln Leu Gln Ala Met Gln Glu Asn Val Glu
2645 2650 2655

Arg Trp Gln Gly Gln Tyr Glu Gly Leu Arg Gly Gln Asp Leu Gly
2660 2665 2670

Gln Ala Val Leu Asp Ala Gly His Ser Val Ser Thr Leu Glu Lys
2675 2680 2685

Thr Leu Pro Gln Leu Leu Ala Lys Leu Ser Ile Leu Glu Asn Arg
2690 2695 2700

Gly Val His Asn Ala Ser Leu Ala Leu Ser Ala Ser Ile Gly Arg
2705 2710 2715

Val Arg Glu Leu Ile Ala Gln Ala Arg Gly Ala Ala Ser Lys Val
2720 2725 2730

Lys Val Pro Met Lys Phe Asn Gly Arg Ser Gly Val Gln Leu Arg
2735 2740 2745

Thr Pro Arg Asp Leu Ala Asp Leu Ala Ala Tyr Thr Ala Leu Lys
2750 2755 2760

Phe Tyr Leu Gln Gly Pro Glu Pro Glu Pro Gly Gln Gly Thr Glu
2765 2770 2775

Asp Arg Phe Val Met Tyr Met Gly Ser Arg Gln Ala Thr Gly Asp
2780 2785 2790

Tyr Met Gly Val Ser Leu Arg Asp Lys Lys Val His Trp Val Tyr
2795 2800 2805

Gln Leu Gly Glu Ala Gly Pro Ala Val Leu Ser Ile Asp Glu Asp
2810 2815 2820

```
Ile Gly  Glu Gln Phe Ala Ala  Val Ser Leu Asp Arg  Thr Leu Gln
    2825                 2830                 2835

Phe Gly  His Met Ser Val Thr  Val Glu Arg Gln Met  Ile Gln Glu
    2840                 2845                 2850

Thr Lys  Gly Asp Thr Val Ala  Pro Gly Ala Glu Gly  Leu Leu Asn
    2855                 2860                 2865

Leu Arg  Pro Asp Asp Phe Val  Phe Tyr Val Gly Gly  Tyr Pro Ser
    2870                 2875                 2880

Thr Phe  Thr Pro Pro Pro Leu  Leu Arg Phe Pro Gly  Tyr Arg Gly
    2885                 2890                 2895

Cys Ile  Glu Met Asp Thr Leu  Asn Glu Glu Val Val  Ser Leu Tyr
    2900                 2905                 2910

Asn Phe  Glu Arg Thr Phe Gln  Leu Asp Thr Ala Val  Asp Arg Pro
    2915                 2920                 2925

Cys Ala  Arg Ser Lys Ser Thr  Gly Asp Pro Trp Leu  Thr Asp Gly
    2930                 2935                 2940

Ser Tyr  Leu Asp Gly Thr Gly  Phe Ala Arg Ile Ser  Phe Asp Ser
    2945                 2950                 2955

Gln Ile  Ser Thr Thr Lys Arg  Phe Glu Gln Glu Leu  Arg Leu Val
    2960                 2965                 2970

Ser Tyr  Ser Gly Val Leu Phe  Phe Leu Lys Gln Gln  Ser Gln Phe
    2975                 2980                 2985

Leu Cys  Leu Ala Val Gln Glu  Gly Ser Leu Val Leu  Leu Tyr Asp
    2990                 2995                 3000

Phe Gly  Ala Gly Leu Lys Lys  Ala Val Pro Leu Gln  Pro Pro Pro
    3005                 3010                 3015

Pro Leu  Thr Ser Ala Ser Lys  Ala Ile Gln Val Phe  Leu Leu Gly
    3020                 3025                 3030

Gly Ser  Arg Lys Arg Val Leu  Val Arg Val Glu Arg  Ala Thr Val
    3035                 3040                 3045

Tyr Ser  Val Glu Gln Asp Asn  Asp Leu Glu Leu Ala  Asp Ala Tyr
    3050                 3055                 3060
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```
Tyr Leu  Gly Gly Val Pro Pro  Asp Gln Leu Pro Pro  Ser Leu Arg
    3065                 3070                 3075

Arg Leu  Phe Pro Thr Gly Gly  Ser Val Arg Gly Cys  Val Lys Gly
    3080                 3085                 3090

Ile Lys  Ala Leu Gly Lys Tyr  Val Asp Leu Lys Arg  Leu Asn Thr
    3095                 3100                 3105

Thr Gly  Val Ser Ala Gly Cys  Thr Ala Asp Leu Leu  Val Gly Arg
    3110                 3115                 3120

Ala Met  Thr Phe His Gly His  Gly Phe Leu Arg Leu  Ala Leu Ser
    3125                 3130                 3135

Asn Val  Ala Pro Leu Thr Gly  Asn Val Tyr Ser Gly  Phe Gly Phe
    3140                 3145                 3150

His Ser  Ala Gln Asp Ser Ala  Leu Leu Tyr Tyr Arg  Ala Ser Pro
    3155                 3160                 3165

Asp Gly  Leu Cys Gln Val Ser  Leu Gln Gln Gly Arg  Val Ser Leu
    3170                 3175                 3180

Gln Leu  Leu Arg Thr Glu Val  Lys Thr Gln Ala Gly  Phe Ala Asp
    3185                 3190                 3195

Gly Ala  Pro His Tyr Val Ala  Phe Tyr Ser Asn Ala  Thr Gly Val
    3200                 3205                 3210

Trp Leu  Tyr Val Asp Asp Gln  Leu Gln Gln Met Lys  Pro His Arg
    3215                 3220                 3225

Gly Pro  Pro Pro Glu Leu Gln  Pro Gln Pro Glu Gly  Pro Pro Arg
    3230                 3235                 3240

Leu Leu  Leu Gly Gly Leu Pro  Glu Ser Gly Thr Ile  Tyr Asn Phe
    3245                 3250                 3255

Ser Gly  Cys Ile Ser Asn Val  Phe Val Gln Arg Leu  Leu Gly Pro
    3260                 3265                 3270

Gln Arg  Val Phe Asp Leu Gln  Gln Asn Leu Gly Ser  Val Asn Val
    3275                 3280                 3285

Ser Thr  Gly Cys Ala Pro Ala  Leu Gln Ala Gln Thr  Pro Gly Leu
    3290                 3295                 3300
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```
Gly Pro  Arg Gly Leu Gln Ala  Thr Ala Arg Lys Ala  Ser Arg Arg
    3305                 3310                 3315

Ser Arg  Gln Pro Ala Arg His  Pro Ala Cys Met Leu  Pro Pro His
    3320                 3325                 3330

Leu Arg  Thr Thr Arg Asp Ser  Tyr Gln Phe Gly Gly  Ser Leu Ser
    3335                 3340                 3345

Ser His  Leu Glu Phe Val Gly  Ile Leu Ala Arg His  Arg Asn Trp
    3350                 3355                 3360

Pro Ser  Leu Ser Met His Val  Leu Pro Arg Ser Ser  Arg Gly Leu
    3365                 3370                 3375

Leu Leu  Phe Thr Ala Arg Leu  Arg Pro Gly Ser Pro  Ser Leu Ala
    3380                 3385                 3390

Leu Phe  Leu Ser Asn Gly His  Phe Val Ala Gln Met  Glu Gly Leu
    3395                 3400                 3405

Gly Thr  Arg Leu Arg Ala Gln  Ser Arg Gln Arg Ser  Arg Pro Gly
    3410                 3415                 3420

Arg Trp  His Lys Val Ser Val  Arg Trp Glu Lys Asn  Arg Ile Leu
    3425                 3430                 3435

Leu Val  Thr Asp Gly Ala Arg  Ala Trp Ser Gln Glu  Gly Pro His
    3440                 3445                 3450

Arg Gln  His Gln Gly Ala Glu  His Pro Gln Pro His  Thr Leu Phe
    3455                 3460                 3465

Val Gly  Gly Leu Pro Ala Ser  Ser His Ser Ser Lys  Leu Pro Val
    3470                 3475                 3480

Thr Val  Gly Phe Ser Gly Cys  Val Lys Arg Leu Arg  Leu His Gly
    3485                 3490                 3495

Arg Pro  Leu Gly Ala Pro Thr  Arg Met Ala Gly Val  Thr Pro Cys
    3500                 3505                 3510

Ile Leu  Gly Pro Leu Glu Ala  Gly Leu Phe Phe Pro  Gly Ser Gly
    3515                 3520                 3525

Gly Val  Ile Thr Leu Asp Leu  Pro Gly Ala Thr Leu  Pro Asp Val
```

3530 3535 3540

Gly Leu Glu Leu Glu Val Arg Pro Leu Ala Val Thr Gly Leu Ile
3545 3550 3555

Phe His Leu Gly Gln Ala Arg Thr Pro Pro Tyr Leu Gln Leu Gln
3560 3565 3570

Val Thr Glu Lys Gln Val Leu Leu Arg Ala Asp Asp Gly Ala Gly
3575 3580 3585

Glu Phe Ser Thr Ser Val Thr Arg Pro Ser Val Leu Cys Asp Gly
3590 3595 3600

Gln Trp His Arg Leu Ala Val Met Lys Ser Gly Asn Val Leu Arg
3605 3610 3615

Leu Glu Val Asp Ala Gln Ser Asn His Thr Val Gly Pro Leu Leu
3620 3625 3630

Ala Ala Ala Ala Gly Ala Pro Ala Pro Leu Tyr Leu Gly Gly Leu
3635 3640 3645

Pro Glu Pro Met Ala Val Gln Pro Trp Pro Pro Ala Tyr Cys Gly
3650 3655 3660

Cys Met Arg Arg Leu Ala Val Asn Arg Ser Pro Val Ala Met Thr
3665 3670 3675

Arg Ser Val Glu Val His Gly Ala Val Gly Ala Ser Gly Cys Pro
3680 3685 3690

Ala Ala
3695

<210> 2
<211> 1811
<212> PRT
<213> Homo sapiens

<400> 2

Met Glu Leu Thr Ser Arg Glu Arg Gly Arg Gly Gln Pro Leu Pro Trp
1 5 10 15

Glu Leu Arg Leu Gly Leu Leu Leu Ser Val Leu Ala Ala Thr Leu Ala
20 25 30

Gln Ala Pro Ala Pro Asp Val Pro Gly Cys Ser Arg Gly Ser Cys Tyr

```
        35                  40                  45

Pro Ala Thr Gly Asp Leu Leu Val Gly Arg Ala Asp Arg Leu Thr Ala
    50                  55                  60

Ser Ser Thr Cys Gly Leu Asn Gly Pro Gln Pro Tyr Cys Ile Val Ser
65                  70                  75                  80

His Leu Gln Asp Glu Lys Lys Cys Phe Leu Cys Asp Ser Arg Arg Pro
                85                  90                  95

Phe Ser Ala Arg Asp Asn Pro His Ser His Arg Ile Gln Asn Val Val
            100                 105                 110

Thr Ser Phe Ala Pro Gln Arg Arg Ala Ala Trp Trp Gln Ser Glu Asn
        115                 120                 125

Gly Ile Pro Ala Val Thr Ile Gln Leu Asp Leu Glu Ala Glu Phe His
    130                 135                 140

Phe Thr His Leu Ile Met Thr Phe Lys Thr Phe Arg Pro Ala Ala Met
145                 150                 155                 160

Leu Val Glu Arg Ser Ala Asp Phe Gly Arg Thr Trp His Val Tyr Arg
                165                 170                 175

Tyr Phe Ser Tyr Asp Cys Gly Ala Asp Phe Pro Gly Val Pro Leu Ala
            180                 185                 190

Pro Pro Arg His Trp Asp Asp Val Val Cys Glu Ser Arg Tyr Ser Glu
        195                 200                 205

Ile Glu Pro Ser Thr Glu Gly Glu Val Ile Tyr Arg Val Leu Asp Pro
    210                 215                 220

Ala Ile Pro Ile Pro Asp Pro Tyr Ser Ser Arg Ile Gln Asn Leu Leu
225                 230                 235                 240

Lys Ile Thr Asn Leu Arg Val Asn Leu Thr Arg Leu His Thr Leu Gly
                245                 250                 255

Asp Asn Leu Leu Asp Pro Arg Arg Glu Ile Arg Glu Lys Tyr Tyr Tyr
            260                 265                 270

Ala Leu Tyr Glu Leu Val Val Arg Gly Asn Cys Phe Cys Tyr Gly His
        275                 280                 285
```

```
Ala Ser Glu Cys Ala Pro Ala Pro Gly Ala Pro Ala His Ala Glu Gly
    290                 295                 300

Met Val His Gly Ala Cys Ile Cys Lys His Asn Thr Arg Gly Leu Asn
305                 310                 315                 320

Cys Glu Gln Cys Gln Asp Phe Tyr Arg Asp Leu Pro Trp Arg Pro Ala
                325                 330                 335

Glu Asp Gly His Ser His Ala Cys Arg Lys Cys Glu Cys His Gly His
            340                 345                 350

Thr His Ser Cys His Phe Asp Met Ala Val Tyr Leu Ala Ser Gly Asn
        355                 360                 365

Val Ser Gly Gly Val Cys Asp Gly Cys Gln His Asn Thr Ala Gly Arg
    370                 375                 380

His Cys Glu Leu Cys Arg Pro Phe Phe Tyr Arg Asp Pro Thr Lys Asp
385                 390                 395                 400

Leu Arg Asp Pro Ala Val Cys Arg Ser Cys Asp Cys Asp Pro Met Gly
                405                 410                 415

Ser Gln Asp Gly Gly Arg Cys Asp Ser His Asp Asp Pro Ala Leu Gly
            420                 425                 430

Leu Val Ser Gly Gln Cys Arg Cys Lys Glu His Val Val Gly Thr Arg
        435                 440                 445

Cys Gln Gln Cys Arg Asp Gly Phe Phe Gly Leu Ser Ile Ser Asp Arg
    450                 455                 460

Leu Gly Cys Arg Arg Cys Gln Cys Asn Ala Arg Gly Thr Val Pro Gly
465                 470                 475                 480

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

Val Thr Gly Arg Gly Cys Asp Arg Cys Leu Pro Gly His Trp Gly Leu
            500                 505                 510

Ser His Asp Leu Leu Gly Cys Arg Pro Cys Asp Cys Asp Val Gly Gly
        515                 520                 525

Ala Leu Asp Pro Gln Cys Asp Glu Gly Thr Gly Gln Cys His Cys Arg
    530                 535                 540
```

```
Gln His Met Val Gly Arg Arg Cys Glu Gln Val Gln Pro Gly Tyr Phe
545                 550                 555                 560

Arg Pro Phe Leu Asp His Leu Ile Trp Glu Ala Glu Asp Thr Arg Gly
                565                 570                 575

Gln Val Leu Asp Val Val Glu Arg Leu Val Thr Pro Gly Glu Thr Pro
            580                 585                 590

Ser Trp Thr Gly Ser Gly Phe Val Arg Leu Gln Glu Gly Gln Thr Leu
        595                 600                 605

Glu Phe Leu Val Ala Ser Val Pro Lys Ala Met Asp Tyr Asp Leu Leu
    610                 615                 620

Leu Arg Leu Glu Pro Gln Val Pro Glu Gln Trp Ala Glu Leu Glu Leu
625                 630                 635                 640

Ile Val Gln Arg Pro Gly Pro Val Pro Ala His Ser Leu Cys Gly His
                645                 650                 655

Leu Val Pro Lys Asp Asp Arg Ile Gln Gly Thr Leu Gln Pro His Ala
            660                 665                 670

Arg Tyr Leu Ile Phe Pro Asn Pro Val Cys Leu Glu Pro Gly Ile Ser
        675                 680                 685

Tyr Lys Leu His Leu Lys Leu Val Arg Thr Gly Gly Ser Ala Gln Pro
    690                 695                 700

Glu Thr Pro Tyr Ser Gly Pro Gly Leu Leu Ile Asp Ser Leu Val Leu
705                 710                 715                 720

Leu Pro Arg Val Leu Val Leu Glu Met Phe Ser Gly Gly Asp Ala Ala
                725                 730                 735

Ala Leu Glu Arg Gln Ala Thr Phe Glu Arg Tyr Gln Cys His Glu Glu
            740                 745                 750

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

Leu Ile Ser Leu Ser Thr Leu Ile Tyr Asn Gly Ala Leu Pro Cys Gln
    770                 775                 780

Cys Asn Pro Gln Gly Ser Leu Ser Ser Glu Cys Asn Pro His Gly Gly
785                 790                 795                 800
```

```
Gln Cys Leu Cys Lys Pro Gly Val Val Gly Arg Arg Cys Asp Leu Cys
                805                 810                 815

Ala Pro Gly Tyr Tyr Gly Phe Gly Pro Thr Gly Cys Gln Ala Cys Gln
            820                 825                 830

Cys Ser His Glu Gly Ala Leu Ser Ser Leu Cys Glu Lys Thr Ser Gly
        835                 840                 845

Gln Cys Leu Cys Arg Thr Gly Ala Phe Gly Leu Arg Cys Asp Arg Cys
    850                 855                 860

Gln Arg Gly Gln Trp Gly Phe Pro Ser Cys Arg Pro Cys Val Cys Asn
865                 870                 875                 880

Gly His Ala Asp Glu Cys Asn Thr His Thr Gly Ala Cys Leu Gly Cys
                885                 890                 895

Arg Asp His Thr Gly Gly Glu His Cys Glu Arg Cys Ile Ala Gly Phe
            900                 905                 910

His Gly Asp Pro Arg Leu Pro Tyr Gly Gly Gln Cys Arg Pro Cys Pro
        915                 920                 925

Cys Pro Glu Gly Pro Gly Ser Gln Arg His Phe Ala Thr Ser Cys His
    930                 935                 940

Gln Asp Glu Tyr Ser Gln Gln Ile Val Cys His Cys Arg Ala Gly Tyr
945                 950                 955                 960

Thr Gly Leu Arg Cys Glu Ala Cys Ala Pro Gly His Phe Gly Asp Pro
                965                 970                 975

Ser Arg Pro Gly Gly Arg Cys Gln Leu Cys Glu Cys Ser Gly Asn Ile
            980                 985                 990

Asp Pro Met Asp Pro Asp Ala Cys  Asp Pro His Thr Gly  Gln Cys Leu
        995                 1000                1005

Arg Cys  Leu His His Thr Glu  Gly Pro His Cys Ala  His Cys Lys
    1010                1015                1020

Pro Gly  Phe His Gly Gln Ala  Ala Arg Gln Ser Cys  His Arg Cys
    1025                1030                1035

Thr Cys  Asn Leu Leu Gly Thr  Asn Pro Gln Gln Cys  Pro Ser Pro
```

```
    1040                1045                1050

Asp Gln  Cys His Cys Asp Pro  Ser Ser Gly Gln Cys  Pro Cys Leu
    1055                1060                1065

Pro Asn  Val Gln Gly Pro Ser  Cys Asp Arg Cys Ala  Pro Asn Phe
    1070                1075                1080

Trp Asn  Leu Thr Ser Gly His  Gly Cys Gln Pro Cys  Ala Cys His
    1085                1090                1095

Pro Ser  Arg Ala Arg Gly Pro  Thr Cys Asn Glu Phe  Thr Gly Gln
    1100                1105                1110

Cys His  Cys Arg Ala Gly Phe  Gly Gly Arg Thr Cys  Ser Glu Cys
    1115                1120                1125

Gln Glu  Leu His Trp Gly Asp  Pro Gly Leu Gln Cys  His Ala Cys
    1130                1135                1140

Asp Cys  Asp Ser Arg Gly Ile  Asp Thr Pro Gln Cys  His Arg Phe
    1145                1150                1155

Thr Gly  His Cys Ser Cys Arg  Pro Gly Val Ser Gly  Val Arg Cys
    1160                1165                1170

Asp Gln  Cys Ala Arg Gly Phe  Ser Gly Ile Phe Pro  Ala Cys His
    1175                1180                1185

Pro Cys  His Ala Cys Phe Gly  Asp Trp Asp Arg Val  Val Gln Asp
    1190                1195                1200

Leu Ala  Ala Arg Thr Gln Arg  Leu Glu Gln Arg Ala  Gln Glu Leu
    1205                1210                1215

Gln Gln  Thr Gly Val Leu Gly  Ala Phe Glu Ser Ser  Phe Trp His
    1220                1225                1230

Met Gln  Glu Lys Leu Gly Ile  Val Gln Gly Ile Val  Gly Ala Arg
    1235                1240                1245

Asn Thr  Ser Ala Ala Ser Thr  Ala Gln Leu Val Glu  Ala Thr Glu
    1250                1255                1260

Glu Leu  Arg Arg Glu Ile Gly  Glu Ala Thr Glu His  Leu Thr Gln
    1265                1270                1275
```

```
Leu Glu  Ala Asp Leu Thr Asp  Val Gln Asp Glu Asn  Phe Asn Ala
    1280                 1285                 1290

Asn His  Ala Leu Ser Gly Leu  Glu Arg Asp Arg Leu  Ala Leu Asn
    1295                 1300                 1305

Leu Thr  Leu Arg Gln Leu Asp  Gln His Leu Asp Leu  Leu Lys His
    1310                 1315                 1320

Ser Asn  Phe Leu Gly Ala Tyr  Asp Ser Ile Arg His  Ala His Ser
    1325                 1330                 1335

Gln Ser  Ala Glu Ala Glu Arg  Arg Ala Asn Thr Ser  Ala Leu Ala
    1340                 1345                 1350

Val Pro  Ser Pro Val Ser Asn  Ser Ala Ser Ala Arg  His Arg Thr
    1355                 1360                 1365

Glu Ala  Leu Met Asp Ala Gln  Lys Glu Asp Phe Asn  Ser Lys His
    1370                 1375                 1380

Met Ala  Asn Gln Arg Ala Leu  Gly Lys Leu Ser Ala  His Thr His
    1385                 1390                 1395

Thr Leu  Ser Leu Thr Asp Ile  Asn Glu Leu Val Cys  Gly Ala Pro
    1400                 1405                 1410

Gly Asp  Ala Pro Cys Ala Thr  Ser Pro Cys Gly Gly  Ala Gly Cys
    1415                 1420                 1425

Arg Asp  Glu Asp Gly Gln Pro  Arg Cys Gly Gly Leu  Ser Cys Asn
    1430                 1435                 1440

Gly Ala  Ala Ala Thr Ala Asp  Leu Ala Leu Gly Arg  Ala Arg His
    1445                 1450                 1455

Thr Gln  Ala Glu Leu Gln Arg  Ala Leu Ala Glu Gly  Gly Ser Ile
    1460                 1465                 1470

Leu Ser  Arg Val Ala Glu Thr  Arg Arg Gln Ala Ser  Glu Ala Gln
    1475                 1480                 1485

Gln Arg  Ala Gln Ala Ala Leu  Asp Lys Ala Asn Ala  Ser Arg Gly
    1490                 1495                 1500

Gln Val  Glu Gln Ala Asn Gln  Glu Leu Gln Glu Leu  Ile Gln Ser
    1505                 1510                 1515
```

```
Val Lys  Asp Phe Leu Asn Gln  Glu Gly Ala Asp Pro  Asp Ser Ile
    1520                1525                1530

Glu Met  Val Ala Thr Arg Val  Leu Glu Leu Ser Ile  Pro Ala Ser
    1535                1540                1545

Ala Glu  Gln Ile Gln His Leu  Ala Gly Ala Ile Ala  Glu Arg Val
    1550                1555                1560

Arg Ser  Leu Ala Asp Val Asp  Ala Ile Leu Ala Arg  Thr Val Gly
    1565                1570                1575

Asp Val  Arg Arg Ala Glu Gln  Leu Leu Gln Asp Ala  Arg Arg Ala
    1580                1585                1590

Arg Ser  Trp Ala Glu Asp Glu  Lys Gln Lys Ala Glu  Thr Val Gln
    1595                1600                1605

Ala Ala  Leu Glu Glu Ala Gln  Arg Ala Gln Gly Ile  Ala Gln Gly
    1610                1615                1620

Ala Ile  Arg Gly Ala Val Ala  Asp Thr Arg Asp Thr  Glu Gln Thr
    1625                1630                1635

Leu Tyr  Gln Val Gln Glu Arg  Met Ala Gly Ala Glu  Arg Ala Leu
    1640                1645                1650

Ser Ser  Ala Gly Glu Arg Ala  Arg Gln Leu Asp Ala  Leu Leu Glu
    1655                1660                1665

Ala Leu  Lys Leu Lys Arg Ala  Gly Asn Ser Leu Ala  Ala Ser Thr
    1670                1675                1680

Ala Glu  Glu Thr Ala Gly Ser  Ala Gln Gly Arg Ala  Gln Glu Ala
    1685                1690                1695

Glu Gln  Leu Leu Arg Gly Pro  Leu Gly Asp Gln Tyr  Gln Thr Val
    1700                1705                1710

Lys Ala  Leu Ala Glu Arg Lys  Ala Gln Gly Val Leu  Ala Ala Gln
    1715                1720                1725

Ala Arg  Ala Glu Gln Leu Arg  Asp Glu Ala Arg Asp  Leu Leu Gln
    1730                1735                1740

Ala Ala  Gln Asp Lys Leu Gln  Arg Leu Gln Glu Leu  Glu Gly Thr
    1745                1750                1755
```

```
Tyr Glu  Glu Asn Glu Arg Ala  Leu Glu Ser Lys Ala  Ala Gln Leu
    1760                 1765                 1770


Asp Gly  Leu Glu Ala Arg Met  Arg Ser Val Leu Gln  Ala Ile Asn
    1775                 1780                 1785


Leu Gln  Val Gln Ile Tyr Asn  Thr Cys Gln Lys Ser  Ser Trp Pro
    1790                 1795                 1800


Gly Arg  Ala Pro Asn Lys Pro  Val
    1805                 1810
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<210> 3
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<212> PRT
<213> Homo sapiens

<400> 3

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Met Arg Gly Ser His Arg Ala Ala Pro Ala Leu Arg Pro Arg Gly Arg
1               5                   10                  15


Leu Trp Pro Val Leu Ala Val Leu Ala Ala Ala Ala Ala Ala Gly Cys
            20                  25                  30


Ala Gln Ala Ala Met Asp Glu Cys Thr Asp Glu Gly Gly Arg Pro Gln
        35                  40                  45


Arg Cys Met Pro Glu Phe Val Asn Ala Ala Phe Asn Val Thr Val Val
    50                  55                  60


Ala Thr Asn Thr Cys Gly Thr Pro Pro Glu Glu Tyr Cys Val Gln Thr
65                  70                  75                  80


Gly Val Thr Gly Val Thr Lys Ser Cys His Leu Cys Asp Ala Gly Gln
                85                  90                  95


Pro His Leu Gln His Gly Ala Ala Phe Leu Thr Asp Tyr Asn Asn Gln
            100                 105                 110


Ala Asp Thr Thr Trp Trp Gln Ser Gln Thr Met Leu Ala Gly Val Gln
        115                 120                 125


Tyr Pro Ser Ser Ile Asn Leu Thr Leu His Leu Gly Lys Ala Phe Asp
    130                 135                 140


Ile Thr Tyr Val Arg Leu Lys Phe His Thr Ser Arg Pro Glu Ser Phe
145                 150                 155                 160
```

```
Ala Ile Tyr Lys Arg Thr Arg Glu Asp Gly Pro Trp Ile Pro Tyr Gln
                165                 170                 175

Tyr Tyr Ser Gly Ser Cys Glu Asn Thr Tyr Ser Lys Ala Asn Arg Gly
            180                 185                 190

Phe Ile Arg Thr Gly Gly Asp Glu Gln Gln Ala Leu Cys Thr Asp Glu
        195                 200                 205

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

Leu Glu Gly Arg Pro Ser Ala Tyr Asn Phe Asp Asn Ser Pro Val Leu
225                 230                 235                 240

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

Asn Thr Phe Gly Asp Glu Val Phe Asn Asp Pro Lys Val Leu Lys Ser
            260                 265                 270

Tyr Tyr Tyr Ala Ile Ser Asp Phe Ala Val Gly Gly Arg Cys Lys Cys
        275                 280                 285

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

Cys Asn Cys Lys His Asn Thr Tyr Gly Val Asp Cys Glu Lys Cys Leu
305                 310                 315                 320

Pro Phe Phe Asn Asp Arg Pro Trp Arg Arg Ala Thr Ala Glu Ser Ala
                325                 330                 335

Ser Glu Cys Leu Pro Cys Asp Cys Asn Gly Arg Ser Gln Glu Cys Tyr
            340                 345                 350

Phe Asp Pro Glu Leu Tyr Arg Ser Thr Gly His Gly Gly His Cys Thr
        355                 360                 365

Asn Cys Gln Asp Asn Thr Asp Gly Ala His Cys Glu Arg Cys Arg Glu
    370                 375                 380

Asn Phe Phe Arg Leu Gly Asn Asn Glu Ala Cys Ser Ser Cys His Cys
385                 390                 395                 400

Ser Pro Val Gly Ser Leu Ser Thr Gln Cys Asp Ser Tyr Gly Arg Cys
```

405 410 415

Ser Cys Lys Pro Gly Val Met Gly Asp Lys Cys Asp Arg Cys Gln Pro
420 425 430

Gly Phe His Ser Leu Thr Glu Ala Gly Cys Arg Pro Cys Ser Cys Asp
435 440 445

Pro Ser Gly Ser Ile Asp Glu Cys Asn Ile Glu Thr Gly Arg Cys Val
450 455 460

Cys Lys Asp Asn Val Glu Gly Phe Asn Cys Glu Arg Cys Lys Pro Gly
465 470 475 480

Phe Phe Asn Leu Glu Ser Ser Asn Pro Arg Gly Cys Thr Pro Cys Phe
485 490 495

Cys Phe Gly His Ser Ser Val Cys Thr Asn Ala Val Gly Tyr Ser Val
500 505 510

Tyr Ser Ile Ser Ser Thr Phe Gln Ile Asp Glu Asp Gly Trp Arg Ala
515 520 525

Glu Gln Arg Asp Gly Ser Glu Ala Ser Leu Glu Trp Ser Ser Glu Arg
530 535 540

Gln Asp Ile Ala Val Ile Ser Asp Ser Tyr Phe Pro Arg Tyr Phe Ile
545 550 555 560

Ala Pro Ala Lys Phe Leu Gly Lys Gln Val Leu Ser Tyr Gly Gln Asn
565 570 575

Leu Ser Phe Ser Phe Arg Val Asp Arg Arg Asp Thr Arg Leu Ser Ala
580 585 590

Glu Asp Leu Val Leu Glu Gly Ala Gly Leu Arg Val Ser Val Pro Leu
595 600 605

Ile Ala Gln Gly Asn Ser Tyr Pro Ser Glu Thr Thr Val Lys Tyr Val
610 615 620

Phe Arg Leu His Glu Ala Thr Asp Tyr Pro Trp Arg Pro Ala Leu Thr
625 630 635 640

Pro Phe Glu Phe Gln Lys Leu Leu Asn Asn Leu Thr Ser Ile Lys Ile
645 650 655

```
Arg Gly Thr Tyr Ser Glu Arg Ser Ala Gly Tyr Leu Asp Asp Val Thr
            660                 665                 670

Leu Ala Ser Ala Arg Pro Gly Pro Gly Val Pro Ala Thr Trp Val Glu
        675                 680                 685

Ser Cys Thr Cys Pro Val Gly Tyr Gly Gly Gln Phe Cys Glu Met Cys
    690                 695                 700

Leu Ser Gly Tyr Arg Arg Glu Thr Pro Asn Leu Gly Pro Tyr Ser Pro
705                 710                 715                 720

Cys Val Leu Cys Ala Cys Asn Gly His Ser Glu Thr Cys Asp Pro Glu
                725                 730                 735

Thr Gly Val Cys Asn Cys Arg Asp Asn Thr Ala Gly Pro His Cys Glu
            740                 745                 750

Lys Cys Ser Asp Gly Tyr Tyr Gly Asp Ser Thr Ala Gly Thr Ser Ser
        755                 760                 765

Asp Cys Gln Pro Cys Pro Cys Pro Gly Gly Ser Ser Cys Ala Val Val
    770                 775                 780

Pro Lys Thr Lys Glu Val Val Cys Thr Asn Cys Pro Thr Gly Thr Thr
785                 790                 795                 800

Gly Lys Arg Cys Glu Leu Cys Asp Asp Gly Tyr Phe Gly Asp Pro Leu
                805                 810                 815

Gly Arg Asn Gly Pro Val Arg Leu Cys Arg Leu Cys Gln Cys Ser Asp
            820                 825                 830

Asn Ile Asp Pro Asn Ala Val Gly Asn Cys Asn Arg Leu Thr Gly Glu
        835                 840                 845

Cys Leu Lys Cys Ile Tyr Asn Thr Ala Gly Phe Tyr Cys Asp Arg Cys
    850                 855                 860

Lys Asp Gly Phe Phe Gly Asn Pro Leu Ala Pro Asn Pro Ala Asp Lys
865                 870                 875                 880

Cys Lys Ala Cys Asn Cys Asn Leu Tyr Gly Thr Met Lys Gln Gln Ser
                885                 890                 895

Ser Cys Asn Pro Val Thr Gly Gln Cys Glu Cys Leu Pro His Val Thr
            900                 905                 910
```

```
Gly Gln Asp Cys Gly Ala Cys Asp Pro Gly Phe Tyr Asn Leu Gln Ser
        915                 920                 925

Gly Gln Gly Cys Glu Arg Cys Asp Cys His Ala Leu Gly Ser Thr Asn
    930                 935                 940

Gly Gln Cys Asp Ile Arg Thr Gly Gln Cys Glu Cys Gln Pro Gly Ile
945                 950                 955                 960

Thr Gly Gln His Cys Glu Arg Cys Glu Val Asn His Phe Gly Phe Gly
                965                 970                 975

Pro Glu Gly Cys Lys Pro Cys Asp Cys His Pro Glu Gly Ser Leu Ser
            980                 985                 990

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

Gly Asn  Arg Cys Asp Gln Cys  Glu Glu Asn Tyr Phe  Tyr Asn Arg
    1010                1015                1020

Ser Trp  Pro Gly Cys Gln Glu  Cys Pro Ala Cys Tyr  Arg Leu Val
    1025                1030                1035

Lys Asp  Lys Val Ala Asp His  Arg Val Lys Leu Gln  Glu Leu Glu
    1040                1045                1050

Ser Leu  Ile Ala Asn Leu Gly  Thr Gly Asp Glu Met  Val Thr Asp
    1055                1060                1065

Gln Ala  Phe Glu Asp Arg Leu  Lys Glu Ala Glu Arg  Glu Val Met
    1070                1075                1080

Asp Leu  Leu Arg Glu Ala Gln  Asp Val Lys Asp Val  Asp Gln Asn
    1085                1090                1095

Leu Met  Asp Arg Leu Gln Arg  Val Asn Asn Thr Leu  Ser Ser Gln
    1100                1105                1110

Ile Ser  Arg Leu Gln Asn Ile  Arg Asn Thr Ile Glu  Glu Thr Gly
    1115                1120                1125

Asn Leu  Ala Glu Gln Ala Arg  Ala His Val Glu Asn  Thr Glu Arg
    1130                1135                1140

Leu Ile  Glu Ile Ala Ser Arg  Glu Leu Glu Lys Ala  Lys Val Ala
    1145                1150                1155
```

```
Ala Ala  Asn Val Ser Val Thr  Gln Pro Glu Ser Thr  Gly Asp Pro
    1160                 1165                 1170

Asn Asn  Met Thr Leu Leu Ala  Glu Glu Ala Arg Lys  Leu Ala Glu
    1175                 1180                 1185

Arg His  Lys Gln Glu Ala Asp  Asp Ile Val Arg Val  Ala Lys Thr
    1190                 1195                 1200

Ala Asn  Asp Thr Ser Thr Glu  Ala Tyr Asn Leu Leu  Leu Arg Thr
    1205                 1210                 1215

Leu Ala  Gly Glu Asn Gln Thr  Ala Phe Glu Ile Glu  Glu Leu Asn
    1220                 1225                 1230

Arg Lys  Tyr Glu Gln Ala Lys  Asn Ile Ser Gln Asp  Leu Glu Lys
    1235                 1240                 1245

Gln Ala  Ala Arg Val His Glu  Glu Ala Lys Arg Ala  Gly Asp Lys
    1250                 1255                 1260

Ala Val  Glu Ile Tyr Ala Ser  Val Ala Gln Leu Ser  Pro Leu Asp
    1265                 1270                 1275

Ser Glu  Thr Leu Glu Asn Glu  Ala Asn Asn Ile Lys  Met Glu Ala
    1280                 1285                 1290

Glu Asn  Leu Glu Gln Leu Ile  Asp Gln Lys Leu Lys  Asp Tyr Glu
    1295                 1300                 1305

Asp Leu  Arg Glu Asp Met Arg  Gly Lys Glu Leu Glu  Val Lys Asn
    1310                 1315                 1320

Leu Leu  Glu Lys Gly Lys Thr  Glu Gln Gln Thr Ala  Asp Gln Leu
    1325                 1330                 1335

Leu Ala  Arg Ala Asp Ala Ala  Lys Ala Leu Ala Glu  Glu Ala Ala
    1340                 1345                 1350

Lys Lys  Gly Arg Asp Thr Leu  Gln Glu Ala Asn Asp  Ile Leu Asn
    1355                 1360                 1365

Asn Leu  Lys Asp Phe Asp Arg  Arg Val Asn Asp Asn  Lys Thr Ala
    1370                 1375                 1380

Ala Glu  Glu Ala Leu Arg Lys  Ile Pro Ala Ile Asn  Gln Thr Ile
```

```
    1385                1390                1395

Thr Glu  Ala Asn Glu Lys Thr  Arg Glu Ala Gln Gln  Ala Leu Gly
    1400                1405                1410

Ser Ala  Ala Ala Asp Ala Thr  Glu Ala Lys Asn Lys  Ala His Glu
    1415                1420                1425

Ala Glu  Arg Ile Ala Ser Ala  Val Gln Lys Asn Ala  Thr Ser Thr
    1430                1435                1440

Lys Ala  Glu Ala Glu Arg Thr  Phe Ala Glu Val Thr  Asp Leu Asp
    1445                1450                1455

Asn Glu  Val Asn Asn Met Leu  Lys Gln Leu Gln Glu  Ala Glu Lys
    1460                1465                1470

Glu Leu  Lys Arg Lys Gln Asp  Asp Ala Asp Gln Asp  Met Met Met
    1475                1480                1485

Ala Gly  Met Ala Ser Gln Ala  Ala Gln Glu Ala Glu  Ile Asn Ala
    1490                1495                1500

Arg Lys  Ala Lys Asn Ser Val  Thr Ser Leu Leu Ser  Ile Ile Asn
    1505                1510                1515

Asp Leu  Leu Glu Gln Leu Gly  Gln Leu Asp Thr Val  Asp Leu Asn
    1520                1525                1530

Lys Leu  Asn Glu Ile Glu Gly  Thr Leu Asn Lys Ala  Lys Asp Glu
    1535                1540                1545

Met Lys  Val Ser Asp Leu Asp  Arg Lys Val Ser Asp  Leu Glu Asn
    1550                1555                1560

Glu Ala  Lys Lys Gln Glu Ala  Ala Ile Met Asp Tyr  Asn Arg Asp
    1565                1570                1575

Ile Glu  Glu Ile Met Lys Asp  Ile Arg Asn Leu Glu  Asp Ile Arg
    1580                1585                1590

Lys Thr  Leu Pro Ser Gly Cys  Phe Asn Thr Pro Ser  Ile Glu Lys
    1595                1600                1605

Pro
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<213> Homo sapiens

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ggctgttcca ggggaagctg ctaccccgcc acgggcgacc tgctggtggg ccgagctgac 180

agactgactg cctcatccac ttgtggcctg aatggccccc agccctactg catcgtcagt 240

cacctgcagg acgaaaagaa gtgcttcctt tgtgactccc ggcgcccctt ctctgctaga 300

gacaacccac acagccatcg catccagaat gtagtcacca gctttgcacc acagcggcgg 360

gcagcctggt ggcagtcaga gaatggtatc cctgcggtca ccatccagct ggacctggag 420

gctgagtttc atttcacaca cctcattatg accttcaaga catttcgccc tgctgccatg 480

ctggtggaac gctcagcaga ctttggccgc acctggcatg tgtaccgata tttctcctat 540

gactgtgggg ctgacttccc aggagtccca ctagcacccc cacggcactg ggatgatgta 600

gtctgtgagt cccgctactc agagattgag ccatccactg aaggcgaggt catctatcgt 660

gtgctggacc ctgccatccc tatcccagac ccctacagct cacggattca gaacctgttg 720

aagatcacca acctacgggt gaacctgact cgtctacaca cgttgggaga caacctactc 780

gacccacgga gggagatccg agagaagtac tactatgccc tctatgagct ggttgtacgt 840

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catgctgagg gcatggtgca cggagcttgc atctgcaaac acaacacacg tggcctcaac 960

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gccgtatacc tggcatctgg caatgtgagt ggaggtgtgt gtgatggatg tcagcataac 1140

acagctgggc gccactgtga gctctgtcgg cccttcttct accgtgaccc aaccaaggac 1200

ctgcgggatc cggctgtgtg ccgctcctgt gattgtgacc ccatgggttc tcaagacggt 1260

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