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<151> 2007-12-31

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    1295                 1300                 1305

Gly Leu  Lys Asp Arg Lys Arg  Pro Ser Glu Leu Arg  Arg Ile Ala
    1310                 1315                 1320

Ser Gln  Val Lys Tyr Ala Gly  Ser Gln Val Ala Ser  Thr Ser Glu
    1325                 1330                 1335

Val Leu  Lys Tyr Thr Leu Phe  Gln Ile Phe Ser Lys  Ile Asp Arg
    1340                 1345                 1350

Pro Glu  Ala Ser Arg Ile Thr  Leu Leu Leu Met Ala  Ser Gln Glu
    1355                 1360                 1365

Pro Gln  Arg Met Ser Arg Asn  Phe Val Arg Tyr Val  Gln Gly Leu
    1370                 1375                 1380

Lys Lys  Lys Lys Val Ile Val  Ile Pro Val Gly Ile  Gly Pro His
    1385                 1390                 1395

Ala Asn  Leu Lys Gln Ile Arg  Leu Ile Glu Lys Gln  Ala Pro Glu
    1400                 1405                 1410

Asn Lys  Ala Phe Val Leu Ser  Ser Val Asp Glu Leu  Glu Gln Gln
    1415                 1420                 1425
```

```
Arg Asp Glu Ile Val Ser Tyr Leu Cys Asp Leu Ala Pro Glu Ala
    1430                1435                1440

Pro Pro Pro Thr Leu Pro Pro Asp Met Ala Gln Val Thr Val Gly
    1445                1450                1455

Pro Gly Leu Leu Gly Val Ser Thr Leu Gly Pro Lys Arg Asn Ser
    1460                1465                1470

Met Val Leu Asp Val Ala Phe Val Leu Glu Gly Ser Asp Lys Ile
    1475                1480                1485

Gly Glu Ala Asp Phe Asn Arg Ser Lys Glu Phe Met Glu Glu Val
    1490                1495                1500

Ile Gln Arg Met Asp Val Gly Gln Asp Ser Ile His Val Thr Val
    1505                1510                1515

Leu Gln Tyr Ser Tyr Met Val Thr Val Glu Tyr Pro Phe Ser Glu
    1520                1525                1530

Ala Gln Ser Lys Gly Asp Ile Leu Gln Arg Val Arg Glu Ile Arg
    1535                1540                1545

Tyr Gln Gly Gly Asn Arg Thr Asn Thr Gly Leu Ala Leu Arg Tyr
    1550                1555                1560

Leu Ser Asp His Ser Phe Leu Val Ser Gln Gly Asp Arg Glu Gln
    1565                1570                1575

Ala Pro Asn Leu Val Tyr Met Val Thr Gly Asn Pro Ala Ser Asp
    1580                1585                1590

Glu Ile Lys Arg Leu Pro Gly Asp Ile Gln Val Val Pro Ile Gly
    1595                1600                1605

Val Gly Pro Asn Ala Asn Val Gln Glu Leu Glu Arg Ile Gly Trp
    1610                1615                1620

Pro Asn Ala Pro Ile Leu Ile Gln Asp Phe Glu Thr Leu Pro Arg
    1625                1630                1635

Glu Ala Pro Asp Leu Val Leu Gln Arg Cys Cys Ser Gly Glu Gly
    1640                1645                1650

Leu Gln Ile Pro Thr Leu Ser Pro Ala Pro Asp Cys Ser Gln Pro
    1655                1660                1665
```

Leu Asp Val Ile Leu Leu Leu Asp Gly Ser Ser Ser Phe Pro Ala
1670 1675 1680

Ser Tyr Phe Asp Glu Met Lys Ser Phe Ala Lys Ala Phe Ile Ser
1685 1690 1695

Lys Ala Asn Ile Gly Pro Arg Leu Thr Gln Val Ser Val Leu Gln
1700 1705 1710

Tyr Gly Ser Ile Thr Thr Ile Asp Val Pro Trp Asn Val Val Pro
1715 1720 1725

Glu Lys Ala His Leu Leu Ser Leu Val Asp Val Met Gln Arg Glu
1730 1735 1740

Gly Gly Pro Ser Gln Ile Gly Asp Ala Leu Gly Phe Ala Val Arg
1745 1750 1755

Tyr Leu Thr Ser Glu Met His Gly Ala Arg Pro Gly Ala Ser Lys
1760 1765 1770

Ala Val Val Ile Leu Val Thr Asp Val Ser Val Asp Ser Val Asp
1775 1780 1785

Ala Ala Ala Asp Ala Ala Arg Ser Asn Arg Val Thr Val Phe Pro
1790 1795 1800

Ile Gly Ile Gly Asp Arg Tyr Asp Ala Ala Gln Leu Arg Ile Leu
1805 1810 1815

Ala Gly Pro Ala Gly Asp Ser Asn Val Val Lys Leu Gln Arg Ile
1820 1825 1830

Glu Asp Leu Pro Thr Met Val Thr Leu Gly Asn Ser Phe Leu His
1835 1840 1845

Lys Leu Cys Ser Gly Phe Val Arg Ile Cys Met Asp Glu Asp Gly
1850 1855 1860

Asn Glu Lys Arg Pro Gly Asp Val Trp Thr Leu Pro Asp Gln Cys
1865 1870 1875

His Thr Val Thr Cys Gln Pro Asp Gly Gln Thr Leu Leu Lys Ser
1880 1885 1890

His Arg Val Asn Cys Asp Arg Gly Leu Arg Pro Ser Cys Pro Asn
1895 1900 1905

```
Ser Gln  Ser Pro Val Lys Val  Glu Glu Thr Cys Gly  Cys Arg Trp
    1910                1915                1920

Thr Cys  Pro Cys Val Cys Thr  Gly Ser Ser Thr Arg  His Ile Val
    1925                1930                1935

Thr Phe  Asp Gly Gln Asn Phe  Lys Leu Thr Gly Ser  Cys Ser Tyr
    1940                1945                1950

Val Leu  Phe Gln Asn Lys Glu  Gln Asp Leu Glu Val  Ile Leu His
    1955                1960                1965

Asn Gly  Ala Cys Ser Pro Gly  Ala Arg Gln Gly Cys  Met Lys Ser
    1970                1975                1980

Ile Glu  Val Lys His Ser Ala  Leu Ser Val Glu Leu  His Ser Asp
    1985                1990                1995

Met Glu  Val Thr Val Asn Gly  Arg Leu Val Ser Val  Pro Tyr Val
    2000                2005                2010

Gly Gly  Asn Met Glu Val Asn  Val Tyr Gly Ala Ile  Met His Glu
    2015                2020                2025

Val Arg  Phe Asn His Leu Gly  His Ile Phe Thr Phe  Thr Pro Gln
    2030                2035                2040

Asn Asn  Glu Phe Gln Leu Gln  Leu Ser Pro Lys Thr  Phe Ala Ser
    2045                2050                2055

Lys Thr  Tyr Gly Leu Cys Gly  Ile Cys Asp Glu Asn  Gly Ala Asn
    2060                2065                2070

Asp Phe  Met Leu Arg Asp Gly  Thr Val Thr Thr Asp  Trp Lys Thr
    2075                2080                2085

Leu Val  Gln Glu Trp Thr Val  Gln Arg Pro Gly Gln  Thr Cys Gln
    2090                2095                2100

Pro Glu  Gln Cys Leu Val Pro  Asp Ser Ser His Cys  Gln Val Leu
    2105                2110                2115

Leu Leu  Pro Leu Phe Ala Glu  Cys His Lys Val Leu  Ala Pro Ala
    2120                2125                2130

Thr Phe  Tyr Ala Ile Cys Gln  Gln Asp Ser Cys His  Gln Glu Gln
    2135                2140                2145
```

Val Cys Glu Val Ile Ala Ser Tyr Ala His Leu Cys Arg Thr Asn
2150 2155 2160

Gly Val Cys Val Asp Trp Arg Thr Pro Asp Phe Cys Ala Met Ser
2165 2170 2175

Cys Pro Pro Ser Leu Val Tyr Asn His Cys Glu His Gly Cys Pro
2180 2185 2190

Arg His Cys Asp Gly Asn Val Ser Ser Cys Gly Asp His Pro Ser
2195 2200 2205

Glu Gly Cys Phe Cys Pro Pro Asp Lys Val Met Leu Glu Gly Ser
2210 2215 2220

Cys Val Pro Glu Glu Ala Cys Thr Gln Cys Ile Gly Glu Asp Gly
2225 2230 2235

Val Gln His Gln Phe Leu Glu Ala Trp Val Pro Asp His Gln Pro
2240 2245 2250

Cys Gln Ile Cys Thr Cys Leu Ser Gly Arg Lys Val Asn Cys Thr
2255 2260 2265

Thr Gln Pro Cys Pro Thr Ala Lys Ala Pro Thr Cys Gly Leu Cys
2270 2275 2280

Glu Val Ala Arg Leu Arg Gln Asn Ala Asp Gln Cys Cys Pro Glu
2285 2290 2295

Tyr Glu Cys Val Cys Asp Pro Val Ser Cys Asp Leu Pro Pro Val
2300 2305 2310

Pro His Cys Glu Arg Gly Leu Gln Pro Thr Leu Thr Asn Pro Gly
2315 2320 2325

Glu Cys Arg Pro Asn Phe Thr Cys Ala Cys Arg Lys Glu Glu Cys
2330 2335 2340

Lys Arg Val Ser Pro Pro Ser Cys Pro Pro His Arg Leu Pro Thr
2345 2350 2355

Leu Arg Lys Thr Gln Cys Cys Asp Glu Tyr Glu Cys Ala Cys Asn
2360 2365 2370

Cys Val Asn Ser Thr Val Ser Cys Pro Leu Gly Tyr Leu Ala Ser
2375 2380 2385

Thr Ala Thr Asn Asp Cys Gly Cys Thr Thr Thr Thr Cys Leu Pro
2390 2395 2400

Asp Lys Val Cys Val His Arg Ser Thr Ile Tyr Pro Val Gly Gln
2405 2410 2415

Phe Trp Glu Glu Gly Cys Asp Val Cys Thr Cys Thr Asp Met Glu
2420 2425 2430

Asp Ala Val Met Gly Leu Arg Val Ala Gln Cys Ser Gln Lys Pro
2435 2440 2445

Cys Glu Asp Ser Cys Arg Ser Gly Phe Thr Tyr Val Leu His Glu
2450 2455 2460

Gly Glu Cys Cys Gly Arg Cys Leu Pro Ser Ala Cys Glu Val Val
2465 2470 2475

Thr Gly Ser Pro Arg Gly Asp Ser Gln Ser Ser Trp Lys Ser Val
2480 2485 2490

Gly Ser Gln Trp Glu Asn Pro Cys Leu Ile Asn Glu Cys Val Arg
2495 2500 2505

Val Lys Glu Glu Val Phe Ile Gln Gln Arg Asn Val Ser Cys Pro
2510 2515 2520

Gln Leu Glu Val Pro Val Cys Pro Ser Gly Phe Gln Leu Ser Cys
2525 2530 2535

Lys Thr Ser Ala Cys Cys Pro Ser Cys Arg Cys Glu Arg Met Glu
2540 2545 2550

Ala Cys Met Leu Asn Gly Thr Val Ile Gly Pro Gly Lys Thr Val
2555 2560 2565

Met Ile Asp Val Cys Thr Thr Cys Arg Cys Met Val Gln Val Gly
2570 2575 2580

Val Ile Ser Gly Phe Lys Leu Glu Cys Arg Lys Thr Thr Cys Asn
2585 2590 2595

Pro Cys Pro Leu Gly Tyr Lys Glu Glu Asn Asn Thr Gly Glu Cys
2600 2605 2610

Cys Gly Arg Cys Leu Pro Thr Ala Cys Thr Ile Gln Leu Arg Gly
2615 2620 2625

```
Gly Gln  Ile Met Thr Leu Lys  Arg Asp Glu Thr Leu  Gln Asp Gly
    2630                 2635                 2640

Cys Asp  Thr His Phe Cys Lys  Val Asn Glu Arg Gly  Glu Tyr Phe
    2645                 2650                 2655

Trp Glu  Lys Arg Val Thr Gly  Cys Pro Pro Phe Asp  Glu His Lys
    2660                 2665                 2670

Cys Leu  Ala Glu Gly Gly Lys  Ile Met Lys Ile Pro  Gly Thr Cys
    2675                 2680                 2685

Cys Asp  Thr Cys Glu Glu Pro  Glu Cys Asn Asp Ile  Thr Ala Arg
    2690                 2695                 2700

Leu Gln  Tyr Val Lys Val Gly  Ser Cys Lys Ser Glu  Val Glu Val
    2705                 2710                 2715

Asp Ile  His Tyr Cys Gln Gly  Lys Cys Ala Ser Lys  Ala Met Tyr
    2720                 2725                 2730

Ser Ile  Asp Ile Asn Asp Val  Gln Asp Gln Cys Ser  Cys Cys Ser
    2735                 2740                 2745

Pro Thr  Arg Thr Glu Pro Met  Gln His Cys Thr Asn  Gly Ser Val
    2750                 2755                 2760

Val Tyr  His Glu Val Leu Asn  Ala Met Glu Cys Lys  Cys Ser Pro
    2765                 2770                 2775

Arg Lys  Cys Ser Lys
    2780
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<210> 3
<211> 2050
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Polypeptide

<220>
<221> MISC_FEATURE
<223> mature vWF

<400> 3

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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 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 Cys
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 Cys 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 Gly Leu
465 470 475 480

Val Val Pro Pro Thr Asp Ala Pro Val Ser Pro Thr Thr Leu Tyr Val
485 490 495

Glu Asp Ile Ser Glu Pro Pro Leu His Asp Phe Tyr Cys Ser Arg Leu
500 505 510

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

```
Glu Phe Glu Val Leu Lys Ala Phe Val Val Asp Met Met Glu Arg Leu
    530                 535                 540

Arg Ile Ser Gln Lys Trp Val Arg Val Ala Val Val Glu Tyr His Asp
545                 550                 555                 560

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

Leu Arg Arg Ile Ala Ser Gln Val Lys Tyr Ala Gly Ser Gln Val Ala
            580                 585                 590

Ser Thr Ser Glu Val Leu Lys Tyr Thr Leu Phe Gln Ile Phe Ser Lys
        595                 600                 605

Ile Asp Arg Pro Glu Ala Ser Arg Ile Thr Leu Leu Leu Met Ala Ser
    610                 615                 620

Gln Glu Pro Gln Arg Met Ser Arg Asn Phe Val Arg Tyr Val Gln Gly
625                 630                 635                 640

Leu Lys Lys Lys Lys Val Ile Val Ile Pro Val Gly Ile Gly Pro His
                645                 650                 655

Ala Asn Leu Lys Gln Ile Arg Leu Ile Glu Lys Gln Ala Pro Glu Asn
            660                 665                 670

Lys Ala Phe Val Leu Ser Ser Val Asp Glu Leu Glu Gln Gln Arg Asp
        675                 680                 685

Glu Ile Val Ser Tyr Leu Cys Asp Leu Ala Pro Glu Ala Pro Pro Pro
    690                 695                 700

Thr Leu Pro Pro Asp Met Ala Gln Val Thr Val Gly Pro Gly Leu Leu
705                 710                 715                 720

Gly Val Ser Thr Leu Gly Pro Lys Arg Asn Ser Met Val Leu Asp Val
                725                 730                 735

Ala Phe Val Leu Glu Gly Ser Asp Lys Ile Gly Glu Ala Asp Phe Asn
            740                 745                 750

Arg Ser Lys Glu Phe Met Glu Glu Val Ile Gln Arg Met Asp Val Gly
        755                 760                 765

Gln Asp Ser Ile His Val Thr Val Leu Gln Tyr Ser Tyr Met Val Thr
    770                 775                 780
```

```
Val Glu Tyr Pro Phe Ser Glu Ala Gln Ser Lys Gly Asp Ile Leu Gln
785                 790                 795                 800

Arg Val Arg Glu Ile Arg Tyr Gln Gly Gly Asn Arg Thr Asn Thr Gly
                805                 810                 815

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

Asp Arg Glu Gln Ala Pro Asn Leu Val Tyr Met Val Thr Gly Asn Pro
        835                 840                 845

Ala Ser Asp Glu Ile Lys Arg Leu Pro Gly Asp Ile Gln Val Val Pro
    850                 855                 860

Ile Gly Val Gly Pro Asn Ala Asn Val Gln Glu Leu Glu Arg Ile Gly
865                 870                 875                 880

Trp Pro Asn Ala Pro Ile Leu Ile Gln Asp Phe Glu Thr Leu Pro Arg
                885                 890                 895

Glu Ala Pro Asp Leu Val Leu Gln Arg Cys Cys Ser Gly Glu Gly Leu
            900                 905                 910

Gln Ile Pro Thr Leu Ser Pro Ala Pro Asp Cys Ser Gln Pro Leu Asp
        915                 920                 925

Val Ile Leu Leu Leu Asp Gly Ser Ser Ser Phe Pro Ala Ser Tyr Phe
    930                 935                 940

Asp Glu Met Lys Ser Phe Ala Lys Ala Phe Ile Ser Lys Ala Asn Ile
945                 950                 955                 960

Gly Pro Arg Leu Thr Gln Val Ser Val Leu Gln Tyr Gly Ser Ile Thr
                965                 970                 975

Thr Ile Asp Val Pro Trp Asn Val Val Pro Glu Lys Ala His Leu Leu
            980                 985                 990

Ser Leu Val Asp Val Met Gln Arg  Glu Gly Gly Pro Ser  Gln Ile Gly
        995                 1000                1005

Asp Ala  Leu Gly Phe Ala Val  Arg Tyr Leu Thr Ser  Glu Met His
    1010                1015                1020

Gly Ala  Arg Pro Gly Ala Ser  Lys Ala Val Val Ile  Leu Val Thr
    1025                1030                1035
```

Asp Val Ser Val Asp Ser Val Asp Ala Ala Ala Asp Ala Ala Arg
1040 1045 1050

Ser Asn Arg Val Thr Val Phe Pro Ile Gly Ile Gly Asp Arg Tyr
1055 1060 1065

Asp Ala Ala Gln Leu Arg Ile Leu Ala Gly Pro Ala Gly Asp Ser
1070 1075 1080

Asn Val Val Lys Leu Gln Arg Ile Glu Asp Leu Pro Thr Met Val
1085 1090 1095

Thr Leu Gly Asn Ser Phe Leu His Lys Leu Cys Ser Gly Phe Val
1100 1105 1110

Arg Ile Cys Met Asp Glu Asp Gly Asn Glu Lys Arg Pro Gly Asp
1115 1120 1125

Val Trp Thr Leu Pro Asp Gln Cys His Thr Val Thr Cys Gln Pro
1130 1135 1140

Asp Gly Gln Thr Leu Leu Lys Ser His Arg Val Asn Cys Asp Arg
1145 1150 1155

Gly Leu Arg Pro Ser Cys Pro Asn Ser Gln Ser Pro Val Lys Val
1160 1165 1170

Glu Glu Thr Cys Gly Cys Arg Trp Thr Cys Pro Cys Val Cys Thr
1175 1180 1185

Gly Ser Ser Thr Arg His Ile Val Thr Phe Asp Gly Gln Asn Phe
1190 1195 1200

Lys Leu Thr Gly Ser Cys Ser Tyr Val Leu Phe Gln Asn Lys Glu
1205 1210 1215

Gln Asp Leu Glu Val Ile Leu His Asn Gly Ala Cys Ser Pro Gly
1220 1225 1230

Ala Arg Gln Gly Cys Met Lys Ser Ile Glu Val Lys His Ser Ala
1235 1240 1245

Leu Ser Val Glu Leu His Ser Asp Met Glu Val Thr Val Asn Gly
1250 1255 1260

Arg Leu Val Ser Val Pro Tyr Val Gly Gly Asn Met Glu Val Asn
1265 1270 1275

Val Tyr Gly Ala Ile Met His Glu Val Arg Phe Asn His Leu Gly
1280 1285 1290

His Ile Phe Thr Phe Thr Pro Gln Asn Asn Glu Phe Gln Leu Gln
1295 1300 1305

Leu Ser Pro Lys Thr Phe Ala Ser Lys Thr Tyr Gly Leu Cys Gly
1310 1315 1320

Ile Cys Asp Glu Asn Gly Ala Asn Asp Phe Met Leu Arg Asp Gly
1325 1330 1335

Thr Val Thr Thr Asp Trp Lys Thr Leu Val Gln Glu Trp Thr Val
1340 1345 1350

Gln Arg Pro Gly Gln Thr Cys Gln Pro Ile Leu Glu Glu Gln Cys
1355 1360 1365

Leu Val Pro Asp Ser Ser His Cys Gln Val Leu Leu Leu Pro Leu
1370 1375 1380

Phe Ala Glu Cys His Lys Val Leu Ala Pro Ala Thr Phe Tyr Ala
1385 1390 1395

Ile Cys Gln Gln Asp Ser Cys His Gln Glu Gln Val Cys Glu Val
1400 1405 1410

Ile Ala Ser Tyr Ala His Leu Cys Arg Thr Asn Gly Val Cys Val
1415 1420 1425

Asp Trp Arg Thr Pro Asp Phe Cys Ala Met Ser Cys Pro Pro Ser
1430 1435 1440

Leu Val Tyr Asn His Cys Glu His Gly Cys Pro Arg His Cys Asp
1445 1450 1455

Gly Asn Val Ser Ser Cys Gly Asp His Pro Ser Glu Gly Cys Phe
1460 1465 1470

Cys Pro Pro Asp Lys Val Met Leu Glu Gly Ser Cys Val Pro Glu
1475 1480 1485

Glu Ala Cys Thr Gln Cys Ile Gly Glu Asp Gly Val Gln His Gln
1490 1495 1500

Phe Leu Glu Ala Trp Val Pro Asp His Gln Pro Cys Gln Ile Cys
1505 1510 1515

```
Thr Cys  Leu Ser Gly Arg Lys  Val Asn Cys Thr Thr  Gln Pro Cys
    1520                1525                1530

Pro Thr  Ala Lys Ala Pro Thr  Cys Gly Leu Cys Glu  Val Ala Arg
    1535                1540                1545

Leu Arg  Gln Asn Ala Asp Gln  Cys Cys Pro Glu Tyr  Glu Cys Val
    1550                1555                1560

Cys Asp  Pro Val Ser Cys Asp  Leu Pro Pro Val Pro  His Cys Glu
    1565                1570                1575

Arg Gly  Leu Gln Pro Thr Leu  Thr Asn Pro Gly Glu  Cys Arg Pro
    1580                1585                1590

Asn Phe  Thr Cys Ala Cys Arg  Lys Glu Glu Cys Lys  Arg Val Ser
    1595                1600                1605

Pro Pro  Ser Cys Pro Pro His  Arg Leu Pro Thr Leu  Arg Lys Thr
    1610                1615                1620

Gln Cys  Cys Asp Glu Tyr Glu  Cys Ala Cys Asn Cys  Val Asn Ser
    1625                1630                1635

Thr Val  Ser Cys Pro Leu Gly  Tyr Leu Ala Ser Thr  Ala Thr Asn
    1640                1645                1650

Asp Cys  Gly Cys Thr Thr Thr  Thr Cys Leu Pro Asp  Lys Val Cys
    1655                1660                1665

Val His  Arg Ser Thr Ile Tyr  Pro Val Gly Gln Phe  Trp Glu Glu
    1670                1675                1680

Gly Cys  Asp Val Cys Thr Cys  Thr Asp Met Glu Asp  Ala Val Met
    1685                1690                1695

Gly Leu  Arg Val Ala Gln Cys  Ser Gln Lys Pro Cys  Glu Asp Ser
    1700                1705                1710

Cys Arg  Ser Gly Phe Thr Tyr  Val Leu His Glu Gly  Glu Cys Cys
    1715                1720                1725

Gly Arg  Cys Leu Pro Ser Ala  Cys Glu Val Val Thr  Gly Ser Pro
    1730                1735                1740

Arg Gly  Asp Ser Gln Ser Ser  Trp Lys Ser Val Gly  Ser Gln Trp
    1745                1750                1755
```

```
Ala Ser  Pro Glu Asn Pro Cys  Leu Ile Asn Glu Cys  Val Arg Val
    1760                 1765                 1770

Lys Glu  Glu Val Phe Ile Gln  Gln Arg Asn Val Ser  Cys Pro Gln
    1775                 1780                 1785

Leu Glu  Val Pro Val Cys Pro  Ser Gly Phe Gln Leu  Ser Cys Lys
    1790                 1795                 1800

Thr Ser  Ala Cys Cys Pro Ser  Cys Arg Cys Glu Arg  Met Glu Ala
    1805                 1810                 1815

Cys Met  Leu Asn Gly Thr Val  Ile Gly Pro Gly Lys  Thr Val Met
    1820                 1825                 1830

Ile Asp  Val Cys Thr Thr Cys  Arg Cys Met Val Gln  Val Gly Val
    1835                 1840                 1845

Ile Ser  Gly Phe Lys Leu Glu  Cys Arg Lys Thr Thr  Cys Asn Pro
    1850                 1855                 1860

Cys Pro  Leu Gly Tyr Lys Glu  Glu Asn Asn Thr Gly  Glu Cys Cys
    1865                 1870                 1875

Gly Arg  Cys Leu Pro Thr Ala  Cys Thr Ile Gln Leu  Arg Gly Gly
    1880                 1885                 1890

Gln Ile  Met Thr Leu Lys Arg  Asp Glu Thr Leu Gln  Asp Gly Cys
    1895                 1900                 1905

Asp Thr  His Phe Cys Lys Val  Asn Glu Arg Gly Glu  Tyr Phe Trp
    1910                 1915                 1920

Glu Lys  Arg Val Thr Gly Cys  Pro Pro Phe Asp Glu  His Lys Cys
    1925                 1930                 1935

Leu Ala  Glu Gly Gly Lys Ile  Met Lys Ile Pro Gly  Thr Cys Cys
    1940                 1945                 1950

Asp Thr  Cys Glu Glu Pro Glu  Cys Asn Asp Ile Thr  Ala Arg Leu
    1955                 1960                 1965

Gln Tyr  Val Lys Val Gly Ser  Cys Lys Ser Glu Val  Glu Val Asp
    1970                 1975                 1980

Ile His  Tyr Cys Gln Gly Lys  Cys Ala Ser Lys Ala  Met Tyr Ser
    1985                 1990                 1995
```

```
Ile Asp  Ile Asn Asp Val Gln  Asp Gln Cys Ser Cys  Cys Ser Pro
    2000                2005                2010

Thr Arg  Thr Glu Pro Met Gln  Val Ala Leu His Cys  Thr Asn Gly
    2015                2020                2025

Ser Val  Val Tyr His Glu Val  Leu Asn Ala Met Glu  Cys Lys Cys
    2030                2035                2040

Ser Pro  Arg Lys Cys Ser Lys
    2045                2050
```