SEQUENCE LISTING

<110> OBI PHARMA, INC.

<120> IMMUNOGENIC/THERAPEUTIC GLYCOCONJUGATE COMPOSITIONS AND USES THEREOF

<130> G3004-00401

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<141> 2015-09-15

<150> US 62/050,567
<151> 2014-09-14

<160> 2

<170> PatentIn version 3.5

<210> 1
<211> 3125
<212> PRT
<213> Megathura crenulata

<400> 1

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Met Thr Pro Glu Glu Leu Lys Thr Tyr Leu Asp Glu Arg Ser Ser Arg
1               5                   10                  15


Ala Arg Ala Phe Ala Ser Phe Arg Leu Lys Gly Phe Gly Gly Ser Ala
            20                  25                  30


Asn Val Phe Val Tyr Val Cys Ile Pro Asp Asp Asn Asp Arg Asn Asp
        35                  40                  45


Asp His Cys Glu Lys Ala Gly Asp Phe Phe Val Leu Gly Gly Pro Ser
    50                  55                  60


Glu Met Lys Trp Gln Phe Tyr Arg Pro Tyr Leu Phe Asp Leu Ser Asp
65                  70                  75                  80


Thr Val His Lys Met Gly Met Lys Leu Asp Gly His Tyr Thr Val Lys
                85                  90                  95
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```
Ala Glu Leu Phe Ser Val Asn Gly Thr Ala Leu Pro Asp Asp Leu Leu
            100                 105                 110

Pro His Pro Val Val Val His His Pro Glu Lys Gly Phe Thr Asp Pro
        115                 120                 125

Pro Val Lys His His Gln Ser Ala Asn Leu Leu Val Arg Lys Asn Ile
    130                 135                 140

Asn Asp Leu Thr Arg Glu Glu Val Leu Asn Leu Arg Glu Ala Phe His
145                 150                 155                 160

Lys Phe Gln Glu Asp Arg Ser Val Asp Gly Tyr Gln Ala Thr Ala Glu
                165                 170                 175

Tyr His Gly Leu Pro Ala Arg Cys Pro Arg Pro Asp Ala Lys Asp Arg
            180                 185                 190

Tyr Ala Cys Cys Val His Gly Met Pro Ile Phe Pro His Trp His Arg
        195                 200                 205

Leu Phe Val Thr Gln Val Glu Asp Ala Leu Val Gly Arg Gly Ala Thr
    210                 215                 220

Ile Gly Ile Pro Tyr Trp Gly Leu Pro Tyr Trp Asp Trp Thr Glu Pro
225                 230                 235                 240

Met Thr His Ile Pro Gly Leu Ala Gly Asn Lys Thr Tyr Val Asp Ser
                245                 250                 255

His Gly Ala Ser His Thr Asn Pro Phe His Ser Ser Val Ile Ala Phe
            260                 265                 270

Glu Glu Asn Ala Pro His Thr Lys Arg Gln Ile Asp Gln Arg Leu Phe
        275                 280                 285
```

```
Lys Pro Ala Thr Phe Gly His His Thr Asp Leu Phe Asn Gln Ile Leu
    290                 295                 300

Tyr Ala Phe Glu Gln Glu Asp Tyr Cys Asp Phe Glu Val Gln Phe Glu
305                 310                 315                 320

Ile Thr His Asn Thr Ile His Ala Trp Thr Gly Gly Ser Glu His Phe
                325                 330                 335

Ser Met Ser Ser Leu His Tyr Thr Ala Phe Asp Pro Leu Phe Tyr Phe
            340                 345                 350

His His Ser Asn Val Asp Arg Leu Trp Ala Val Trp Gln Ala Leu Gln
        355                 360                 365

Met Arg Arg His Lys Pro Tyr Arg Ala His Cys Ala Ile Ser Leu Glu
    370                 375                 380

His Met His Leu Lys Pro Phe Ala Phe Ser Ser Pro Leu Asn Asn Asn
385                 390                 395                 400

Glu Lys Thr His Ala Asn Ala Met Pro Asn Lys Ile Tyr Asp Tyr Glu
                405                 410                 415

Asn Val Leu His Tyr Thr Tyr Glu Asp Leu Thr Phe Gly Gly Ile Ser
            420                 425                 430

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

Ile Tyr Ala Gly Phe Leu Leu Ala Gly Ile Arg Thr Ser Ala Asn Val
    450                 455                 460

Asp Ile Phe Ile Lys Thr Thr Asp Ser Val Gln His Lys Ala Gly Thr
465                 470                 475                 480
```

```
Phe Ala Val Leu Gly Gly Ser Lys Glu Met Lys Trp Gly Phe Asp Arg
                485                 490                 495

Val Phe Lys Phe Asp Ile Thr His Val Leu Lys Asp Leu Asp Leu Thr
            500                 505                 510

Ala Asp Gly Asp Phe Glu Val Thr Val Asp Ile Thr Glu Val Asp Gly
        515                 520                 525

Thr Lys Leu Ala Ser Ser Leu Ile Pro His Ala Ser Val Ile Arg Glu
    530                 535                 540

His Ala Arg Gly Lys Leu Asn Arg Val Lys Phe Asp Lys Val Pro Arg
545                 550                 555                 560

Ser Arg Leu Ile Arg Lys Asn Val Asp Arg Leu Ser Pro Glu Glu Met
                565                 570                 575

Asn Glu Leu Arg Lys Ala Leu Ala Leu Leu Lys Glu Asp Lys Ser Ala
            580                 585                 590

Gly Gly Phe Gln Gln Leu Gly Ala Phe His Gly Glu Pro Lys Trp Cys
        595                 600                 605

Pro Ser Pro Glu Ala Ser Lys Lys Phe Ala Cys Cys Val His Gly Met
    610                 615                 620

Ser Val Phe Pro His Trp His Arg Leu Leu Thr Val Gln Ser Glu Asn
625                 630                 635                 640

Ala Leu Arg Arg His Gly Tyr Asp Gly Ala Leu Pro Tyr Trp Asp Trp
                645                 650                 655

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

```
Val Asp Pro Glu Asp Gly Val Glu Lys His Asn Pro Trp Phe Asp Gly
        675                 680                 685

His Ile Asp Thr Val Asp Lys Thr Thr Thr Arg Ser Val Gln Asn Lys
    690                 695                 700

Leu Phe Glu Gln Pro Glu Phe Gly His Tyr Thr Ser Ile Ala Lys Gln
705                 710                 715                 720

Val Leu Leu Ala Leu Glu Gln Asp Asn Phe Cys Asp Phe Glu Ile Gln
                725                 730                 735

Tyr Glu Ile Ala His Asn Tyr Ile His Ala Leu Val Gly Gly Ala Gln
            740                 745                 750

Pro Tyr Gly Met Ala Ser Leu Arg Tyr Thr Ala Phe Asp Pro Leu Phe
        755                 760                 765

Tyr Leu His His Ser Asn Thr Asp Arg Ile Trp Ala Ile Trp Gln Ala
    770                 775                 780

Leu Gln Lys Tyr Arg Gly Lys Pro Tyr Asn Val Ala Asn Cys Ala Val
785                 790                 795                 800

Thr Ser Met Arg Glu Pro Leu Gln Pro Phe Gly Leu Ser Ala Asn Ile
                805                 810                 815

Asn Thr Asp His Val Thr Lys Glu His Ser Val Pro Phe Asn Val Phe
            820                 825                 830

Asp Tyr Lys Thr Asn Phe Asn Tyr Glu Tyr Asp Thr Leu Glu Phe Asn
        835                 840                 845

Gly Leu Ser Ile Ser Gln Leu Asn Lys Lys Leu Glu Ala Ile Lys Ser
    850                 855                 860
```

```
Gln Asp Arg Phe Phe Ala Gly Phe Leu Leu Ser Gly Phe Lys Lys Ser
865                 870                 875                 880

Ser Leu Val Lys Phe Asn Ile Cys Thr Asp Ser Ser Asn Cys His Pro
                885                 890                 895

Ala Gly Glu Phe Tyr Leu Leu Gly Asp Glu Asn Glu Met Pro Trp Ala
            900                 905                 910

Tyr Asp Arg Val Phe Lys Tyr Asp Ile Thr Glu Lys Leu His Asp Leu
        915                 920                 925

Lys Leu His Ala Glu Asp His Phe Tyr Ile Asp Tyr Glu Val Phe Asp
    930                 935                 940

Leu Lys Pro Ala Ser Leu Gly Lys Asp Leu Phe Lys Gln Pro Ser Val
945                 950                 955                 960

Ile His Glu Pro Arg Ile Gly His His Glu Gly Glu Val Tyr Gln Ala
                965                 970                 975

Glu Val Thr Ser Ala Asn Arg Ile Arg Lys Asn Ile Glu Asn Leu Ser
            980                 985                 990

Leu Gly Glu Leu Glu Ser Leu Arg  Ala Ala Phe Leu Glu  Ile Glu Asn
        995                 1000                1005

Asp Gly  Thr Tyr Glu Ser Ile  Ala Lys Phe His Gly  Ser Pro Gly
    1010                1015                1020

Leu Cys  Gln Leu Asn Gly Asn  Pro Ile Ser Cys Cys  Val His Gly
    1025                1030                1035

Met Pro  Thr Phe Pro His Trp  His Arg Leu Tyr Val  Val Val Val
    1040                1045                1050
```

```
Glu Asn  Ala Leu Leu Lys Lys  Gly Ser Ser Val Ala  Val Pro Tyr
    1055                 1060                 1065

Trp Asp  Trp Thr Lys Arg Ile  Glu His Leu Pro His  Leu Ile Ser
    1070                 1075                 1080

Asp Ala  Thr Tyr Tyr Asn Ser  Arg Gln His His Tyr  Glu Thr Asn
    1085                 1090                 1095

Pro Phe  His His Gly Lys Ile  Thr His Glu Asn Glu  Ile Thr Thr
    1100                 1105                 1110

Arg Asp  Pro Lys Asp Ser Leu  Phe His Ser Asp Tyr  Phe Tyr Glu
    1115                 1120                 1125

Gln Val  Leu Tyr Ala Leu Glu  Gln Asp Asn Phe Cys  Asp Phe Glu
    1130                 1135                 1140

Ile Gln  Leu Glu Ile Leu His  Asn Ala Leu His Ser  Leu Leu Gly
    1145                 1150                 1155

Gly Lys  Gly Lys Tyr Ser Met  Ser Asn Leu Asp Tyr  Ala Ala Phe
    1160                 1165                 1170

Asp Pro  Val Phe Phe Leu His  His Ala Thr Thr Asp  Arg Ile Trp
    1175                 1180                 1185

Ala Ile  Trp Gln Asp Leu Gln  Arg Phe Arg Lys Arg  Pro Tyr Arg
    1190                 1195                 1200

Glu Ala  Asn Cys Ala Ile Gln  Leu Met His Thr Pro  Leu Gln Pro
    1205                 1210                 1215

Phe Asp  Lys Ser Asp Asn Asn  Asp Glu Ala Thr Lys  Thr His Ala
    1220                 1225                 1230
```

```
Thr Pro  His Asp Gly Phe Glu  Tyr Gln Asn Ser Phe  Gly Tyr Ala
    1235                1240                1245

Tyr Asp  Asn Leu Glu Leu Asn  His Tyr Ser Ile Pro  Gln Leu Asp
    1250                1255                1260

His Met  Leu Gln Glu Arg Lys  Arg His Asp Arg Val  Phe Ala Gly
    1265                1270                1275

Phe Leu  Leu His Asn Ile Gly  Thr Ser Ala Asp Gly  His Val Phe
    1280                1285                1290

Val Cys  Leu Pro Thr Gly Glu  His Thr Lys Asp Cys  Ser His Glu
    1295                1300                1305

Ala Gly  Met Phe Ser Ile Leu  Gly Gly Gln Thr Glu  Met Ser Phe
    1310                1315                1320

Val Phe  Asp Arg Leu Tyr Lys  Leu Asp Ile Thr Lys  Ala Leu Lys
    1325                1330                1335

Lys Asn  Gly Val His Leu Gln  Gly Asp Phe Asp Leu  Glu Ile Glu
    1340                1345                1350

Ile Thr  Ala Val Asn Gly Ser  His Leu Asp Ser His  Val Ile His
    1355                1360                1365

Ser Pro  Thr Ile Leu Phe Glu  Ala Gly Thr Asp Ser  Ala His Thr
    1370                1375                1380

Asp Asp  Gly His Thr Glu Pro  Val Met Ile Arg Lys  Asp Ile Thr
    1385                1390                1395

Gln Leu  Asp Lys Arg Gln Gln  Leu Ser Leu Val Lys  Ala Leu Glu
    1400                1405                1410
```

```
Ser Met  Lys Ala Asp His Ser  Ser Asp Gly Phe Gln  Ala Ile Ala
    1415                1420                1425

Ser Phe  His Ala Leu Pro Pro  Leu Cys Pro Ser Pro  Ala Ala Ser
    1430                1435                1440

Lys Arg  Phe Ala Cys Cys Val  His Gly Met Ala Thr  Phe Pro Gln
    1445                1450                1455

Trp His  Arg Leu Tyr Thr Val  Gln Phe Gln Asp Ser  Leu Arg Lys
    1460                1465                1470

His Gly  Ala Val Val Gly Leu  Pro Tyr Trp Asp Trp  Thr Leu Pro
    1475                1480                1485

Arg Ser  Glu Leu Pro Glu Leu  Leu Thr Val Ser Thr  Ile His Asp
    1490                1495                1500

Pro Glu  Thr Gly Arg Asp Ile  Pro Asn Pro Phe Ile  Gly Ser Lys
    1505                1510                1515

Ile Glu  Phe Glu Gly Glu Asn  Val His Thr Lys Arg  Asp Ile Asn
    1520                1525                1530

Arg Asp  Arg Leu Phe Gln Gly  Ser Thr Lys Thr His  His Asn Trp
    1535                1540                1545

Phe Ile  Glu Gln Ala Leu Leu  Ala Leu Glu Gln Thr  Asn Tyr Cys
    1550                1555                1560

Asp Phe  Glu Val Gln Phe Glu  Ile Met His Asn Gly  Val His Thr
    1565                1570                1575

Trp Val  Gly Gly Lys Glu Pro  Tyr Gly Ile Gly His  Leu His Tyr
    1580                1585                1590
```

```
Ala Ser  Tyr Asp Pro Leu Phe  Tyr Ile His His Ser  Gln Thr Asp
    1595                1600                1605

Arg Ile  Trp Ala Ile Trp Gln  Ser Leu Gln Arg Phe  Arg Gly Leu
    1610                1615                1620

Ser Gly  Ser Glu Ala Asn Cys  Ala Val Asn Leu Met  Lys Thr Pro
    1625                1630                1635

Leu Lys  Pro Phe Ser Phe Gly  Ala Pro Tyr Asn Leu  Asn Asp His
    1640                1645                1650

Thr His  Asp Phe Ser Lys Pro  Glu Asp Thr Phe Asp  Tyr Gln Lys
    1655                1660                1665

Phe Gly  Tyr Ile Tyr Asp Thr  Leu Glu Phe Ala Gly  Trp Ser Ile
    1670                1675                1680

Arg Gly  Ile Asp His Ile Val  Arg Asn Arg Gln Glu  His Ser Arg
    1685                1690                1695

Val Phe  Ala Gly Phe Leu Leu  Glu Gly Phe Gly Thr  Ser Ala Thr
    1700                1705                1710

Val Asp  Phe Gln Val Cys Arg  Thr Ala Gly Asp Cys  Glu Asp Ala
    1715                1720                1725

Gly Tyr  Phe Thr Val Leu Gly  Gly Glu Lys Glu Met  Pro Trp Ala
    1730                1735                1740

Phe Asp  Arg Leu Tyr Lys Tyr  Asp Ile Thr Glu Thr  Leu Asp Lys
    1745                1750                1755

Met Asn  Leu Arg His Asp Glu  Ile Phe Gln Ile Glu  Val Thr Ile
    1760                1765                1770
```

```
Thr Ser  Tyr Asp Gly Thr Val  Leu Asp Ser Gly Leu  Ile Pro Thr
    1775                1780                1785

Pro Ser  Ile Ile Tyr Asp Pro  Ala His His Asp Ile  Ser Ser His
    1790                1795                1800

His Leu  Ser Leu Asn Lys Val  Arg His Asp Leu Ser  Thr Leu Ser
    1805                1810                1815

Glu Arg  Asp Ile Gly Ser Leu  Lys Tyr Ala Leu Ser  Ser Leu Gln
    1820                1825                1830

Ala Asp  Thr Ser Ala Asp Gly  Phe Ala Ala Ile Ala  Ser Phe His
    1835                1840                1845

Gly Leu  Pro Ala Lys Cys Asn  Asp Ser His Asn Asn  Glu Val Ala
    1850                1855                1860

Cys Cys  Ile His Gly Met Pro  Thr Phe Pro His Trp  His Arg Leu
    1865                1870                1875

Tyr Thr  Leu Gln Phe Glu Gln  Ala Leu Arg Arg His  Gly Ser Ser
    1880                1885                1890

Val Ala  Val Pro Tyr Trp Asp  Trp Thr Lys Pro Ile  His Asn Ile
    1895                1900                1905

Pro His  Leu Phe Thr Asp Lys  Glu Tyr Tyr Asp Val  Trp Arg Asn
    1910                1915                1920

Lys Val  Met Pro Asn Pro Phe  Ala Arg Gly Tyr Val  Pro Ser His
    1925                1930                1935

Asp Thr  Tyr Thr Val Arg Asp  Val Gln Glu Gly Leu  Phe His Leu
    1940                1945                1950
```

```
Thr Ser  Thr Gly Glu His Ser  Ala Leu Leu Asn Gln  Ala Leu Leu
    1955                1960                1965

Ala Leu  Glu Gln His Asp Tyr  Cys Asp Phe Ala Val  Gln Phe Glu
    1970                1975                1980

Val Met  His Asn Thr Ile His  Tyr Leu Val Gly Gly  Pro Gln Val
    1985                1990                1995

Tyr Ser  Leu Ser Ser Leu His  Tyr Ala Ser Tyr Asp  Pro Ile Phe
    2000                2005                2010

Phe Ile  His His Ser Phe Val  Asp Lys Val Trp Ala  Val Trp Gln
    2015                2020                2025

Ala Leu  Gln Glu Lys Arg Gly  Leu Pro Ser Asp Arg  Ala Asp Cys
    2030                2035                2040

Ala Val  Ser Leu Met Thr Gln  Asn Met Arg Pro Phe  His Tyr Glu
    2045                2050                2055

Ile Asn  His Asn Gln Phe Thr  Lys Lys His Ala Val  Pro Asn Asp
    2060                2065                2070

Val Phe  Lys Tyr Glu Leu Leu  Gly Tyr Arg Tyr Asp  Asn Leu Glu
    2075                2080                2085

Ile Gly  Gly Met Asn Leu His  Glu Ile Glu Lys Glu  Ile Lys Asp
    2090                2095                2100

Lys Gln  His His Val Arg Val  Phe Ala Gly Phe Leu  Leu His Gly
    2105                2110                2115

Ile Arg  Thr Ser Ala Asp Val  Gln Phe Gln Ile Cys  Lys Thr Ser
    2120                2125                2130
```

```
Glu Asp  Cys His His Gly Gly  Gln Ile Phe Val Leu  Gly Gly Thr
    2135                2140                2145

Lys Glu  Met Ala Trp Ala Tyr  Asn Arg Leu Phe Lys  Tyr Asp Ile
    2150                2155                2160

Thr His  Ala Leu His Asp Ala  His Ile Thr Pro Glu  Asp Val Phe
    2165                2170                2175

His Pro  Ser Glu Pro Phe Phe  Ile Lys Val Ser Val  Thr Ala Val
    2180                2185                2190

Asn Gly  Thr Val Leu Pro Ala  Ser Ile Leu His Ala  Pro Thr Ile
    2195                2200                2205

Ile Tyr  Glu Pro Gly Leu Gly  Asp His His Glu Asp  His His Ser
    2210                2215                2220

Ser Ser  Met Ala Gly His Gly  Val Arg Lys Glu Ile  Asn Thr Leu
    2225                2230                2235

Thr Thr  Ala Glu Val Asp Asn  Leu Lys Asp Ala Met  Arg Ala Val
    2240                2245                2250

Met Ala  Asp His Gly Pro Asn  Gly Tyr Gln Ala Ile  Ala Ala Phe
    2255                2260                2265

His Gly  Asn Pro Pro Met Cys  Pro Met Pro Asp Gly  Lys Asn Tyr
    2270                2275                2280

Ser Cys  Cys Thr His Gly Met  Ala Thr Phe Pro His  Trp His Arg
    2285                2290                2295

Leu Tyr  Thr Lys Gln Met Glu  Asp Ala Leu Thr Ala  His Gly Ala
    2300                2305                2310
```

```
Arg Val  Gly Leu Pro Tyr Trp  Asp Gly Thr Thr Ala  Phe Thr Ala
    2315                2320                2325

Leu Pro  Thr Phe Val Thr Asp  Glu Glu Asp Asn Pro  Phe His His
    2330                2335                2340

Gly His  Ile Asp Tyr Leu Gly  Val Asp Thr Thr Arg  Ser Pro Arg
    2345                2350                2355

Asp Lys  Leu Phe Asn Asp Pro  Glu Arg Gly Ser Glu  Ser Phe Phe
    2360                2365                2370

Tyr Arg  Gln Val Leu Leu Ala  Leu Glu Gln Thr Asp  Phe Cys Gln
    2375                2380                2385

Phe Glu  Val Gln Phe Glu Ile  Thr His Asn Ala Ile  His Ser Trp
    2390                2395                2400

Thr Gly  Gly Leu Thr Pro Tyr  Gly Met Ser Thr Leu  Glu Tyr Thr
    2405                2410                2415

Thr Tyr  Asp Pro Leu Phe Trp  Leu His His Ala Asn  Thr Asp Arg
    2420                2425                2430

Ile Trp  Ala Ile Trp Gln Ala  Leu Gln Glu Tyr Arg  Gly Leu Pro
    2435                2440                2445

Tyr Asp  His Ala Asn Cys Glu  Ile Gln Ala Met Lys  Arg Pro Leu
    2450                2455                2460

Arg Pro  Phe Ser Asp Pro Ile  Asn His Asn Ala Phe  Thr His Ser
    2465                2470                2475

Asn Ala  Lys Pro Thr Asp Val  Phe Glu Tyr Ser Arg  Phe Asn Phe
    2480                2485                2490
```

```
Gln Tyr  Asp Asn Leu Arg Phe  His Gly Met Thr Ile  Lys Lys Leu
    2495                2500                2505

Glu His  Glu Leu Glu Lys Gln  Lys Glu Glu Asp Arg  Thr Phe Ala
    2510                2515                2520

Ala Phe  Leu Leu His Gly Ile  Lys Lys Ser Ala Asp  Val Ser Phe
    2525                2530                2535

Asp Val  Cys Asn His Asp Gly  Glu Cys His Phe Ala  Gly Thr Phe
    2540                2545                2550

Ala Ile  Leu Gly Gly Glu His  Glu Met Pro Trp Ser  Phe Asp Arg
    2555                2560                2565

Leu Phe  Arg Tyr Asp Ile Thr  Gln Val Leu Lys Gln  Met His Leu
    2570                2575                2580

Glu Tyr  Asp Ser Asp Phe Thr  Phe His Met Arg Ile  Ile Asp Thr
    2585                2590                2595

Ser Gly  Lys Gln Leu Pro Ser  Asp Leu Ile Lys Met  Pro Thr Val
    2600                2605                2610

Glu His  Ser Pro Gly Gly Lys  His His Glu Lys His  His Glu Asp
    2615                2620                2625

His His  Glu Asp Ile Leu Val  Arg Lys Asn Ile His  Ser Leu Ser
    2630                2635                2640

His His  Glu Ala Glu Glu Leu  Arg Asp Ala Leu Tyr  Lys Leu Gln
    2645                2650                2655

Asn Asp  Glu Ser His Gly Gly  Tyr Glu His Ile Ala  Gly Phe His
    2660                2665                2670
```

```
Gly Tyr  Pro Asn Leu Cys Pro  Glu Lys Gly Asp Glu  Lys Tyr Pro
    2675                 2680                 2685

Cys Cys  Val His Gly Met Ser  Ile Phe Pro His Trp  His Arg Leu
    2690                 2695                 2700

His Thr  Ile Gln Phe Glu Arg  Ala Leu Lys Lys His  Gly Ser His
    2705                 2710                 2715

Leu Gly  Ile Pro Tyr Trp Asp  Trp Thr Gln Thr Ile  Ser Ser Leu
    2720                 2725                 2730

Pro Thr  Phe Phe Ala Asp Ser  Gly Asn Asn Asn Pro  Phe Phe Lys
    2735                 2740                 2745

Tyr His  Ile Arg Ser Ile Asn  Gln Asp Thr Val Arg  Asp Val Asn
    2750                 2755                 2760

Glu Ala  Ile Phe Gln Gln Thr  Lys Phe Gly Glu Phe  Ser Ser Ile
    2765                 2770                 2775

Phe Tyr  Leu Ala Leu Gln Ala  Leu Glu Glu Asp Asn  Tyr Cys Asp
    2780                 2785                 2790

Phe Glu  Val Gln Tyr Glu Ile  Leu His Asn Glu Val  His Ala Leu
    2795                 2800                 2805

Ile Gly  Gly Ala Glu Lys Tyr  Ser Met Ser Thr Leu  Glu Tyr Ser
    2810                 2815                 2820

Ala Phe  Asp Pro Tyr Phe Met  Ile His His Ala Ser  Leu Asp Lys
    2825                 2830                 2835

Ile Trp  Ile Ile Trp Gln Glu  Leu Gln Lys Arg Arg  Val Lys Pro
    2840                 2845                 2850
```

```
Ala His  Ala Gly Ser Cys Ala  Gly Asp Ile Met His  Val Pro Leu
    2855                 2860                 2865

His Pro  Phe Asn Tyr Glu Ser  Val Asn Asn Asp Asp  Phe Thr Arg
    2870                 2875                 2880

Glu Asn  Ser Leu Pro Asn Ala  Val Val Asp Ser His  Arg Phe Asn
    2885                 2890                 2895

Tyr Lys  Tyr Asp Asn Leu Asn  Leu His Gly His Asn  Ile Glu Glu
    2900                 2905                 2910

Leu Glu  Glu Val Leu Arg Ser  Leu Arg Leu Lys Ser  Arg Val Phe
    2915                 2920                 2925

Ala Gly  Phe Val Leu Ser Gly  Ile Arg Thr Thr Ala  Val Val Lys
    2930                 2935                 2940

Val Tyr  Ile Lys Ser Gly Thr  Asp Ser Asp Asp Glu  Tyr Ala Gly
    2945                 2950                 2955

Ser Phe  Val Ile Leu Gly Gly  Ala Lys Glu Met Pro  Trp Ala Tyr
    2960                 2965                 2970

Glu Arg  Leu Tyr Arg Phe Asp  Ile Thr Glu Thr Val  His Asn Leu
    2975                 2980                 2985

Asn Leu  Thr Asp Asp His Val  Lys Phe Arg Phe Asp  Leu Lys Lys
    2990                 2995                 3000

Tyr Asp  His Thr Glu Leu Asp  Ala Ser Val Leu Pro  Ala Pro Ile
    3005                 3010                 3015

Ile Val  Arg Arg Pro Asn Asn  Ala Val Phe Asp Ile  Ile Glu Ile
    3020                 3025                 3030
```

```
Pro Ile  Gly Lys Asp Val Asn  Leu Pro Pro Lys Val  Val Val Lys
    3035                3040                3045


Arg Gly  Thr Lys Ile Met Phe  Met Ser Val Asp Glu  Ala Val Thr
    3050                3055                3060


Thr Pro  Met Leu Asn Leu Gly  Ser Tyr Thr Ala Met  Phe Lys Cys
    3065                3070                3075


Lys Val  Pro Pro Phe Ser Phe  His Ala Phe Glu Leu  Gly Lys Met
    3080                3085                3090


Tyr Ser  Val Glu Ser Gly Asp  Tyr Phe Met Thr Ala  Ser Thr Thr
    3095                3100                3105


Glu Leu  Cys Asn Asp Asn Asn  Leu Arg Ile His Val  His Val Asp
    3110                3115                3120


Asp Glu
    3125


<210>  2
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<212>  PRT
<213>  Megathura crenulata

<400>  2

Met Trp Thr Ile Leu Ala Leu Leu Thr Ala Thr Leu Leu Phe Glu Gly
1               5                   10                  15


Ala Phe Ser Val Asp Thr Val Val Arg Lys Asn Val Asp Ser Leu Ser
            20                  25                  30


Ser Asp Glu Val Leu Ala Leu Glu Lys Ala Leu Asp Asp Leu Gln Gln
        35                  40                  45
```

```
Asp Asp Ser Asn Gln Gly Tyr Gln Ala Ile Ala Gly Tyr His Gly Val
    50                  55                  60

Pro Thr Met Cys Val Asp Lys His Glu Lys Asn Val Ala Cys Cys Leu
65                  70                  75                  80

His Gly Met Pro Ser Phe Pro Leu Trp His Arg Leu Tyr Val Val Gln
                85                  90                  95

Leu Glu Arg Ala Leu Ile Arg Lys Lys Ala Thr Ile Ser Ile Pro Tyr
            100                 105                 110

Trp Asp Trp Thr Ser Glu Leu Thr His Leu Pro Glu Leu Val Ser His
        115                 120                 125

Pro Leu Phe Val Gly Thr Glu Gly Gly Lys Ala His Asp Asn Ser Trp
    130                 135                 140

Tyr Arg Ala Asp Ile Thr Phe Leu Asn Lys Lys Thr Ser Arg Ala Val
145                 150                 155                 160

Asp Asp Arg Leu Phe Glu Lys Val Gln Pro Gly His His Thr Arg Leu
                165                 170                 175

Met Glu Gly Ile Leu Asp Ala Leu Glu Gln Asp Glu Phe Cys Lys Phe
            180                 185                 190

Glu Ile Gln Phe Glu Leu Ala His Asn Ala Ile His Tyr Leu Val Gly
        195                 200                 205

Gly Arg His Thr Tyr Ser Met Ser His Leu Glu Tyr Thr Ser Tyr Asp
    210                 215                 220

Pro Leu Phe Phe Leu His His Ser Asn Thr Asp Arg Ile Phe Ala Ile
225                 230                 235                 240
```

```
Trp Gln Arg Leu Gln Gln Leu Arg Gly Lys Asp Pro Asn Ser Ala Asp
                245                 250                 255

Cys Ala His Asn Leu Ile His Thr Pro Met Glu Pro Phe Asp Arg Asp
            260                 265                 270

Thr Asn Pro Leu Asp Leu Thr Arg Glu His Ala Lys Pro Ala Asp Ser
        275                 280                 285

Phe Asp Tyr Gly Arg Leu Gly Tyr Gln Tyr Asp Asp Leu Ser Leu Asn
    290                 295                 300

Gly Met Ser Pro Glu Glu Leu Asn Val Tyr Leu Gly Glu Arg Ala Ala
305                 310                 315                 320

Lys Glu Arg Thr Phe Ala Ser Phe Ile Leu Ser Gly Phe Gly Gly Ser
                325                 330                 335

Ala Asn Val Val Val Tyr Val Cys Arg Pro Ala His Asp Glu Ile Ser
            340                 345                 350

Asp Asp Gln Cys Ile Lys Ala Gly Asp Phe Phe Leu Leu Gly Gly Pro
        355                 360                 365

Thr Glu Met Lys Trp Gly Phe Tyr Arg Ala Tyr His Phe Asp Val Thr
    370                 375                 380

Asp Ser Val Ala Ser Ile Asp Asp Asp Gly His Gly His Tyr Tyr Val
385                 390                 395                 400

Lys Ser Glu Leu Phe Ser Val Asn Gly Ser Ala Leu Ser Asn Asp Ile
                405                 410                 415

Leu Arg Gln Pro Thr Leu Val His Arg Pro Ala Lys Gly His Phe Asp
            420                 425                 430
```

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Lys Pro Pro Val Pro Val Ala Gln Ala Asn Leu Ala Val Arg Lys Asn
        435                 440                 445

Ile Asn Asp Leu Thr Ala Glu Glu Thr Tyr Ser Leu Arg Lys Ala Met
    450                 455                 460

Glu Arg Phe Gln Asn Asp Lys Ser Val Asp Gly Tyr Gln Ala Thr Val
465                 470                 475                 480

Glu Phe His Ala Leu Pro Ala Arg Cys Pro Arg Pro Asp Ala Lys Asp
                485                 490                 495

Arg Phe Ala Cys Cys Val His Gly Met Ala Thr Phe Pro His Trp His
            500                 505                 510

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

Thr Ile Gly Leu Pro Asn Trp Asp Trp Thr Met Pro Met Asp His Leu
    530                 535                 540

Pro Glu Leu Ala Thr Ser Glu Thr Tyr Leu Asp Pro Val Thr Gly Glu
545                 550                 555                 560

Thr Lys Asn Asn Pro Phe His His Ala Gln Val Ala Phe Glu Asn Gly
                565                 570                 575

Val Thr Ser Arg Asn Pro Asp Ala Lys Leu Phe Met Lys Pro Thr Tyr
            580                 585                 590

Gly Asp His Thr Tyr Leu Phe Asp Ser Met Ile Tyr Ala Phe Glu Gln
        595                 600                 605

Glu Asp Phe Cys Asp Phe Glu Val Gln Tyr Glu Leu Thr His Asn Ala
    610                 615                 620
```

```
Ile His Ala Trp Val Gly Gly Ser Glu Lys Tyr Ser Met Ser Ser Leu
625                 630                 635                 640


His Tyr Thr Ala Phe Asp Pro Ile Phe Tyr Leu His His Ser Asn Val
                645                 650                 655


Asp Arg Leu Trp Ala Ile Trp Gln Ala Leu Gln Ile Arg Arg Gly Lys
            660                 665                 670


Ser Tyr Lys Ala His Cys Ala Ser Ser Gln Glu Arg Glu Pro Leu Lys
        675                 680                 685


Pro Phe Ala Phe Ser Ser Pro Leu Asn Asn Asn Glu Lys Thr Tyr His
    690                 695                 700


Asn Ser Val Pro Thr Asn Val Tyr Asp Tyr Val Gly Val Leu His Tyr
705                 710                 715                 720


Arg Tyr Asp Asp Leu Gln Phe Gly Gly Met Thr Met Ser Glu Leu Glu
                725                 730                 735


Glu Tyr Ile His Lys Gln Thr Gln His Asp Arg Thr Phe Ala Gly Phe
            740                 745                 750


Phe Leu Ser Tyr Ile Gly Thr Ser Ala Ser Val Asp Ile Phe Ile Asn
        755                 760                 765


Arg Glu Gly His Asp Lys Tyr Lys Val Gly Ser Phe Val Val Leu Gly
    770                 775                 780


Gly Ser Lys Glu Met Lys Trp Gly Phe Asp Arg Met Tyr Lys Tyr Glu
785                 790                 795                 800


Ile Thr Glu Ala Leu Lys Thr Leu Asn Val Ala Val Asp Asp Gly Phe
                805                 810                 815
```

```
Ser Ile Thr Val Glu Ile Thr Asp Val Asp Gly Ser Pro Pro Ser Ala
            820                 825                 830

Asp Leu Ile Pro Pro Pro Ala Ile Ile Phe Glu Arg Ala Asp Ala Lys
        835                 840                 845

Asp Phe Gly His Ser Arg Lys Ile Arg Lys Ala Val Asp Ser Leu Thr
    850                 855                 860

Val Glu Glu Gln Thr Ser Leu Arg Arg Ala Met Ala Asp Leu Gln Asp
865                 870                 875                 880

Asp Lys Thr Ser Gly Gly Phe Gln Gln Ile Ala Ala Phe His Gly Glu
                885                 890                 895

Pro Lys Trp Cys Pro Ser Pro Glu Ala Glu Lys Lys Phe Ala Cys Cys
            900                 905                 910

Val His Gly Met Ala Val Phe Pro His Trp His Arg Leu Leu Thr Val
        915                 920                 925

Gln Gly Glu Asn Ala Leu Arg Lys His Gly Phe Thr Gly Gly Leu Pro
    930                 935                 940

Tyr Trp Asp Trp Thr Arg Ser Met Ser Ala Leu Pro His Phe Val Ala
945                 950                 955                 960

Asp Pro Thr Tyr Asn Asp Ala Ile Ser Ser Gln Glu Glu Asp Asn Pro
                965                 970                 975

Trp His His Gly His Ile Asp Ser Val Gly His Asp Thr Thr Arg Asp
            980                 985                 990

Val Arg Asp Asp Leu Tyr Gln Ser  Pro Gly Phe Gly His  Tyr Thr Asp
        995                 1000                1005
```

```
Ile Ala  Lys Gln Val Leu Leu  Ala Phe Glu Gln Asp  Asp Phe Cys
    1010                1015                1020

Asp Phe  Glu Val Gln Phe Glu  Ile Ala His Asn Phe  Ile His Ala
    1025                1030                1035

Leu Val  Gly Gly Asn Glu Pro  Tyr Ser Met Ser Ser  Leu Arg Tyr
    1040                1045                1050

Thr Thr  Tyr Asp Pro Ile Phe  Phe Leu His Arg Ser  Asn Thr Asp
    1055                1060                1065

Arg Leu  Trp Ala Ile Trp Gln  Ala Leu Gln Lys Tyr  Arg Gly Lys
    1070                1075                1080

Pro Tyr  Asn Thr Ala Asn Cys  Ala Ile Ala Ser Met  Arg Lys Pro
    1085                1090                1095

Leu Gln  Pro Phe Gly Leu Asp  Ser Val Ile Asn Pro  Asp Asp Glu
    1100                1105                1110

Thr Arg  Glu His Ser Val Pro  Phe Arg Val Phe Asp  Tyr Lys Asn
    1115                1120                1125

Asn Phe  Asp Tyr Glu Tyr Glu  Ser Leu Ala Phe Asn  Gly Leu Ser
    1130                1135                1140

Ile Ala  Gln Leu Asp Arg Glu  Leu Gln Arg Arg Lys  Ser His Asp
    1145                1150                1155

Arg Val  Phe Ala Gly Phe Leu  Leu His Glu Ile Gly  Gln Ser Ala
    1160                1165                1170

Leu Val  Lys Phe Tyr Val Cys  Lys His Asn Val Ser  Asp Cys Asp
    1175                1180                1185
```

```
His Tyr  Ala Gly Glu Phe Tyr  Ile Leu Gly Asp Glu  Ala Glu Met
    1190                1195                1200

Pro Trp  Arg Tyr Asp Arg Val  Tyr Lys Tyr Glu Ile  Thr Gln Gln
    1205                1210                1215

Leu His  Asp Leu Asp Leu His  Val Gly Asp Asn Phe  Phe Leu Lys
    1220                1225                1230

Tyr Glu  Ala Phe Asp Leu Asn  Gly Gly Ser Leu Gly  Gly Ser Ile
    1235                1240                1245

Phe Ser  Gln Pro Ser Val Ile  Phe Glu Pro Ala Ala  Gly Ser His
    1250                1255                1260

Gln Ala  Asp Glu Tyr Arg Glu  Ala Val Thr Ser Ala  Ser His Ile
    1265                1270                1275

Arg Lys  Asn Ile Arg Asp Leu  Ser Glu Gly Glu Ile  Glu Ser Ile
    1280                1285                1290

Arg Ser  Ala Phe Leu Gln Ile  Gln Lys Glu Gly Ile  Tyr Glu Asn
    1295                1300                1305

Ile Ala  Lys Phe His Gly Lys  Pro Gly Leu Cys Glu  His Asp Gly
    1310                1315                1320

His Pro  Val Ala Cys Cys Val  His Gly Met Pro Thr  Phe Pro His
    1325                1330                1335

Trp His  Arg Leu Tyr Val Leu  Gln Val Glu Asn Ala  Leu Leu Glu
    1340                1345                1350

Arg Gly  Ser Ala Val Ala Val  Pro Tyr Trp Asp Trp  Thr Glu Lys
    1355                1360                1365
```

```
Ala Asp  Ser Leu Pro Ser Leu  Ile Asn Asp Ala Thr  Tyr Phe Asn
    1370                1375                1380

Ser Arg  Ser Gln Thr Phe Asp  Pro Asn Pro Phe Phe  Arg Gly His
    1385                1390                1395

Ile Ala  Phe Glu Asn Ala Val  Thr Ser Arg Asp Pro  Gln Pro Glu
    1400                1405                1410

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

Glu Gln  Asp Asn Phe Cys Asp  Phe Glu Ile Gln Leu  Glu Leu Ile
    1430                1435                1440

His Asn  Ala Leu His Ser Arg  Leu Gly Gly Arg Ala  Lys Tyr Ser
    1445                1450                1455

Leu Ser  Ser Leu Asp Tyr Thr  Ala Phe Asp Pro Val  Phe Phe Leu
    1460                1465                1470

His His  Ala Asn Val Asp Arg  Ile Trp Ala Ile Trp  Gln Asp Leu
    1475                1480                1485

Gln Arg  Tyr Arg Lys Lys Pro  Tyr Asn Glu Ala Asp  Cys Ala Val
    1490                1495                1500

Asn Glu  Met Arg Lys Pro Leu  Gln Pro Phe Asn Asn  Pro Glu Leu
    1505                1510                1515

Asn Ser  Asp Ser Met Thr Leu  Lys His Asn Leu Pro  Gln Asp Ser
    1520                1525                1530

Phe Asp  Tyr Gln Asn Arg Phe  Arg Tyr Gln Tyr Asp  Asn Leu Gln
    1535                1540                1545
```

```
Phe Asn  His Phe Ser Ile Gln  Lys Leu Asp Gln Thr  Ile Gln Ala
    1550                1555                1560

Arg Lys  Gln His Asp Arg Val  Phe Ala Gly Phe Ile  Leu His Asn
    1565                1570                1575

Ile Gly  Thr Ser Ala Val Val  Asp Ile Tyr Ile Cys  Val Glu Gln
    1580                1585                1590

Gly Gly  Glu Gln Asn Cys Lys  Thr Lys Ala Gly Ser  Phe Thr Ile
    1595                1600                1605

Leu Gly  Gly Glu Thr Glu Met  Pro Phe His Phe Asp  Arg Leu Tyr
    1610                1615                1620

Lys Phe  Asp Ile Thr Ser Ala  Leu His Lys Leu Gly  Val Pro Leu
    1625                1630                1635

Asp Gly  His Gly Phe Asp Ile  Lys Val Asp Val Arg  Ala Val Asn
    1640                1645                1650

Gly Ser  His Leu Asp Gln His  Ile Leu Asn Glu Pro  Ser Leu Leu
    1655                1660                1665

Phe Val  Pro Gly Glu Arg Lys  Asn Ile Tyr Tyr Asp  Gly Leu Ser
    1670                1675                1680

Gln His  Asn Leu Val Arg Lys  Glu Val Ser Ser Leu  Thr Thr Leu
    1685                1690                1695

Glu Lys  His Phe Leu Arg Lys  Ala Leu Lys Asn Met  Gln Ala Asp
    1700                1705                1710

Asp Ser  Pro Asp Gly Tyr Gln  Ala Ile Ala Ser Phe  His Ala Leu
    1715                1720                1725
```

```
Pro Pro  Leu Cys Pro Ser Pro  Ser Ala Ala His Arg  His Ala Cys
    1730                1735                1740

Cys Leu  His Gly Met Ala Thr  Phe Pro Gln Trp His  Arg Leu Tyr
    1745                1750                1755

Thr Val  Gln Phe Glu Asp Ser  Leu Lys Arg His Gly  Ser Ile Val
    1760                1765                1770

Gly Leu  Pro Tyr Trp Asp Trp  Leu Lys Pro Gln Ser  Ala Leu Pro
    1775                1780                1785

Asp Leu  Val Thr Gln Glu Thr  Tyr Glu His Leu Phe  Ser His Lys
    1790                1795                1800

Thr Phe  Pro Asn Pro Phe Leu  Lys Ala Asn Ile Glu  Phe Glu Gly
    1805                1810                1815

Glu Gly  Val Thr Thr Glu Arg  Asp Val Asp Ala Glu  His Leu Phe
    1820                1825                1830

Ala Lys  Gly Asn Leu Val Tyr  Asn Asn Trp Phe Cys  Asn Gln Ala
    1835                1840                1845

Leu Tyr  Ala Leu Glu Gln Glu  Asn Tyr Cys Asp Phe  Glu Ile Gln
    1850                1855                1860

Phe Glu  Ile Leu His Asn Gly  Ile His Ser Trp Val  Gly Gly Ser
    1865                1870                1875

Lys Thr  His Ser Ile Gly His  Leu His Tyr Ala Ser  Tyr Asp Pro
    1880                1885                1890

Leu Phe  Tyr Ile His His Ser  Gln Thr Asp Arg Ile  Trp Ala Ile
    1895                1900                1905
```

```
Trp Gln  Ala Leu Gln Glu His  Arg Gly Leu Ser Gly  Lys Glu Ala
    1910                1915                1920

His Cys  Ala Leu Glu Gln Met  Lys Asp Pro Leu Lys  Pro Phe Ser
    1925                1930                1935

Phe Gly  Ser Pro Tyr Asn Leu  Asn Lys Arg Thr Gln  Glu Phe Ser
    1940                1945                1950

Lys Pro  Glu Asp Thr Phe Asp  Tyr His Arg Phe Gly  Tyr Glu Tyr
    1955                1960                1965

Asp Ser  Leu Glu Phe Val Gly  Met Ser Val Ser Ser  Leu His Asn
    1970                1975                1980

Tyr Ile  Lys Gln Gln Gln Glu  Ala Asp Arg Val Phe  Ala Gly Phe
    1985                1990                1995

Leu Leu  Lys Gly Phe Gly Gln  Ser Ala Ser Val Ser  Phe Asp Ile
    2000                2005                2010

Cys Arg  Pro Asp Gln Ser Cys  Gln Glu Ala Gly Tyr  Phe Ser Val
    2015                2020                2025

Leu Gly  Gly Ser Ser Glu Met  Pro Trp Gln Phe Asp  Arg Leu Tyr
    2030                2035                2040

Lys Tyr  Asp Ile Thr Lys Thr  Leu Lys Asp Met Lys  Leu Arg Tyr
    2045                2050                2055

Asp Asp  Thr Phe Thr Ile Lys  Val His Ile Lys Asp  Ile Ala Gly
    2060                2065                2070

Ala Glu  Leu Asp Ser Asp Leu  Ile Pro Thr Pro Ser  Val Leu Leu
    2075                2080                2085
```

```
Glu Glu  Gly Lys His Gly Ile  Asn Val Arg His Val  Gly Arg Asn
    2090                2095                2100

Arg Ile  Arg Met Glu Leu Ser  Glu Leu Thr Glu Arg  Asp Leu Ala
    2105                2110                2115

Ser Leu  Lys Ser Ala Met Arg  Ser Leu Gln Ala Asp  Asp Gly Val
    2120                2125                2130

Asn Gly  Tyr Gln Ala Ile Ala  Ser Phe His Gly Leu  Pro Ala Ser
    2135                2140                2145

Cys His  Asp Asp Glu Gly His  Glu Ile Ala Cys Cys  Ile His Gly
    2150                2155                2160

Met Pro  Val Phe Pro His Trp  His Arg Leu Tyr Thr  Leu Gln Met
    2165                2170                2175

Asp Met  Ala Leu Leu Ser His  Gly Ser Ala Val Ala  Ile Pro Tyr
    2180                2185                2190

Trp Asp  Trp Thr Lys Pro Ile  Ser Lys Leu Pro Asp  Leu Phe Thr
    2195                2200                2205

Ser Pro  Glu Tyr Tyr Asp Pro  Trp Arg Asp Ala Val  Val Asn Asn
    2210                2215                2220

Pro Phe  Ala Lys Gly Tyr Ile  Lys Ser Glu Asp Ala  Tyr Thr Val
    2225                2230                2235

Arg Asp  Pro Gln Asp Ile Leu  Tyr His Leu Gln Asp  Glu Thr Gly
    2240                2245                2250

Thr Ser  Val Leu Leu Asp Gln  Thr Leu Leu Ala Leu  Glu Gln Thr
    2255                2260                2265
```

```
Asp Phe  Cys Asp Phe Glu Val  Gln Phe Glu Val Val  His Asn Ala
    2270                2275                2280

Ile His  Tyr Leu Val Gly Gly  Arg Gln Val Tyr Ala  Leu Ser Ser
    2285                2290                2295

Gln His  Tyr Ala Ser Tyr Asp  Pro Ala Phe Phe Ile  His His Ser
    2300                2305                2310

Phe Val  Asp Lys Ile Trp Ala  Val Trp Gln Ala Leu  Gln Lys Lys
    2315                2320                2325

Arg Lys  Arg Pro Tyr His Lys  Ala Asp Cys Ala Leu  Asn Met Met
    2330                2335                2340

Thr Lys  Pro Met Arg Pro Phe  Ala His Asp Phe Asn  His Asn Gly
    2345                2350                2355

Phe Thr  Lys Met His Ala Val  Pro Asn Thr Leu Phe  Asp Phe Gln
    2360                2365                2370

Asp Leu  Phe Tyr Thr Tyr Asp  Asn Leu Glu Ile Ala  Gly Met Asn
    2375                2380                2385

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

Arg Val  Phe Ala Gly Phe Leu  Leu His Gly Ile Gly  Arg Ser Ala
    2405                2410                2415

Asp Val  Arg Phe Trp Ile Cys  Lys Thr Ala Asp Asp  Cys His Ala
    2420                2425                2430

Ser Gly  Met Ile Phe Ile Leu  Gly Gly Ser Lys Glu  Met His Trp
    2435                2440                2445
```

```
Ala Tyr  Asp Arg Asn Phe Lys  Tyr Asp Ile Thr Gln  Ala Leu Lys
    2450                2455                2460

Ala Gln  Ser Ile His Pro Glu  Asp Val Phe Asp Thr  Asp Ala Pro
    2465                2470                2475

Phe Phe  Ile Lys Val Glu Val  His Gly Val Asn Lys  Thr Ala Leu
    2480                2485                2490

Pro Ser  Ser Ala Ile Pro Ala  Pro Thr Ile Ile Tyr  Ser Ala Gly
    2495                2500                2505

Glu Gly  His Thr Asp Asp His  Gly Ser Asp His Ile  Ala Gly Ser
    2510                2515                2520

Gly Val  Arg Lys Asp Val Thr  Ser Leu Thr Ala Ser  Glu Ile Glu
    2525                2530                2535

Asn Leu  Arg His Ala Leu Gln  Ser Val Met Asp Asp  Asp Gly Pro
    2540                2545                2550

Asn Gly  Phe Gln Ala Ile Ala  Ala Tyr His Gly Ser  Pro Pro Met
    2555                2560                2565

Cys His  Met His Asp Gly Arg  Asp Val Ala Cys Cys  Thr His Gly
    2570                2575                2580

Met Ala  Ser Phe Pro His Trp  His Arg Leu Phe Val  Lys Gln Met
    2585                2590                2595

Glu Asp  Ala Leu Ala Ala His  Gly Ala His Ile Gly  Ile Pro Tyr
    2600                2605                2610

Trp Asp  Trp Thr Ser Ala Phe  Ser His Leu Pro Ala  Leu Val Thr
    2615                2620                2625
```

```
Asp His  Glu His Asn Pro Phe  His His Gly His Ile  Ala His Arg
    2630                2635                2640

Asn Val  Asp Thr Ser Arg Ser  Pro Arg Asp Met Leu  Phe Asn Asp
    2645                2650                2655

Pro Glu  His Gly Ser Glu Ser  Phe Phe Tyr Arg Gln  Val Leu Leu
    2660                2665                2670

Ala Leu  Glu Gln Thr Asp Phe  Cys Gln Phe Glu Val  Gln Phe Glu
    2675                2680                2685

Ile Thr  His Asn Ala Ile His  Ser Trp Thr Gly Gly  His Thr Pro
    2690                2695                2700

Tyr Gly  Met Ser Ser Leu Glu  Tyr Thr Ala Tyr Asp  Pro Leu Phe
    2705                2710                2715

Tyr Leu  His His Ser Asn Thr  Asp Arg Ile Trp Ala  Ile Trp Gln
    2720                2725                2730

Ala Leu  Gln Lys Tyr Arg Gly  Phe Gln Tyr Asn Ala  Ala His Cys
    2735                2740                2745

Asp Ile  Gln Val Leu Lys Gln  Pro Leu Lys Pro Phe  Ser Glu Ser
    2750                2755                2760

Arg Asn  Pro Asn Pro Val Thr  Arg Ala Asn Ser Arg  Ala Val Asp
    2765                2770                2775

Ser Phe  Asp Tyr Glu Arg Leu  Asn Tyr Gln Tyr Asp  Thr Leu Thr
    2780                2785                2790

Phe His  Gly His Ser Ile Ser  Glu Leu Asp Ala Met  Leu Gln Glu
    2795                2800                2805
```

```
Arg Lys  Lys Glu Glu Arg Thr  Phe Ala Ala Phe Leu  Leu His Gly
    2810                 2815                 2820

Phe Gly  Ala Ser Ala Asp Val  Ser Phe Asp Val Cys  Thr Pro Asp
    2825                 2830                 2835

Gly His  Cys Ala Phe Ala Gly  Thr Phe Ala Val Leu  Gly Gly Glu
    2840                 2845                 2850

Leu Glu  Met Pro Trp Ser Phe  Glu Arg Leu Phe Arg  Tyr Asp Ile
    2855                 2860                 2865

Thr Lys  Val Leu Lys Gln Met  Asn Leu His Tyr Asp  Ser Glu Phe
    2870                 2875                 2880

His Phe  Glu Leu Lys Ile Val  Gly Thr Asp Gly Thr  Glu Leu Pro
    2885                 2890                 2895

Ser Asp  Arg Ile Lys Ser Pro  Thr Ile Glu His His  Gly Gly Asp
    2900                 2905                 2910

His His  Gly Gly Asp Thr Ser  Gly His Asp His Ser  Glu Arg His
    2915                 2920                 2925

Asp Gly  Phe Phe Arg Lys Glu  Val Gly Ser Leu Ser  Leu Asp Glu
    2930                 2935                 2940

Ala Asn  Asp Leu Lys Asn Ala  Leu Tyr Lys Leu Gln  Asn Asp Gln
    2945                 2950                 2955

Gly Pro  Asn Gly Tyr Glu Ser  Ile Ala Gly Tyr His  Gly Tyr Pro
    2960                 2965                 2970

Phe Leu  Cys Pro Glu His Gly  Glu Asp Gln Tyr Ala  Cys Cys Val
    2975                 2980                 2985
```

```
His Gly  Met Pro Val Phe Pro  His Trp His Arg Leu  His Thr Ile
    2990                2995                3000

Gln Phe  Glu Arg Ala Leu Lys  Glu His Gly Ser His  Leu Gly Ile
    3005                3010                3015

Pro Tyr  Trp Asp Trp Thr Lys  Ser Met Ile Ala Leu  Pro Ala Phe
    3020                3025                3030

Phe Ala  Asp Ser Ser Asn Ser  Asn Pro Phe Tyr Lys  Tyr His Ile
    3035                3040                3045

Met Lys  Ala Gly His Asp Thr  Ala Arg Ser Pro Ser  Asp Leu Leu
    3050                3055                3060

Phe Asn  Gln Pro Gln Leu His  Gly Tyr Asp Tyr Leu  Tyr Tyr Leu
    3065                3070                3075

Ala Leu  Ser Thr Leu Glu Glu  Asp Asn Tyr Cys Asp  Phe Glu Val
    3080                3085                3090

His Tyr  Glu Ile Leu His Asn  Ala Val His Leu Trp  Leu Gly Gly
    3095                3100                3105

Thr Glu  Thr Tyr Ser Met Ser  Ser Leu Ala Phe Ser  Ala Tyr Asp
    3110                3115                3120

Pro Val  Phe Met Ile Leu His  Ser Gly Leu Asp Arg  Leu Trp Ile
    3125                3130                3135

Ile Trp  Gln Glu Leu Gln Lys  Leu Arg Lys Lys Pro  Tyr Asn Ala
    3140                3145                3150

Ala Lys  Cys Ala Gly His Met  Met Asp Glu Pro Leu  His Pro Phe
    3155                3160                3165
```

```
Asn Tyr  Glu Ser Ala Asn His  Asp Ser Phe Thr Arg  Ala Asn Ala
    3170                 3175                 3180

Lys Pro  Ser Thr Val Phe Asp  Ser His Lys Phe Asn  Tyr His Tyr
    3185                 3190                 3195

Asp Asn  Pro Asp Val Arg Gly  Asn Ser Ile Gln Glu  Ile Ser Ala
    3200                 3205                 3210

Ile Ile  His Asp Leu Arg Asn  Gln Pro Arg Val Phe  Ala Gly Phe
    3215                 3220                 3225

Val Leu  Ser Gly Ile Tyr Thr  Ser Ala Asn Val Lys  Ile Tyr Leu
    3230                 3235                 3240

Val Arg  Glu Gly His Asp Asp  Glu Asn Val Gly Ser  Phe Val Val
    3245                 3250                 3255

Leu Gly  Gly Pro Lys Glu Met  Pro Trp Ala Tyr Glu  Arg Ile Phe
    3260                 3265                 3270

Lys Tyr  Asp Ile Thr Glu Val  Ala Asn Arg Leu Asn  Met His His
    3275                 3280                 3285

Asp Asp  Thr Phe Asn Phe Arg  Leu Glu Val Gln Ser  Tyr Thr Gly
    3290                 3295                 3300

Glu Met  Val Thr His His Leu  Pro Glu Pro Leu Ile  Ile Tyr Arg
    3305                 3310                 3315

Pro Ala  Lys Gln Glu Tyr Asp  Val Leu Val Ile Pro  Leu Gly Ser
    3320                 3325                 3330

Gly His  Lys Leu Pro Pro Lys  Val Ile Val Lys Arg  Gly Thr Arg
    3335                 3340                 3345
```

```
Ile Met  Phe His Pro Val Asp  Asp Thr Val Asn Arg  Pro Val Val
    3350                3355                3360


Asp Leu  Gly Ser His Thr Ala  Leu Tyr Asn Cys Val  Val Pro Pro
    3365                3370                3375


Phe Thr  Tyr Asn Gly Tyr Glu  Leu Asp His Ala Tyr  Ser Leu Arg
    3380                3385                3390


Asp Gly  His Tyr Tyr Ile Ala  Gly Pro Thr Lys Asp  Leu Cys Thr
    3395                3400                3405


Ser Gly  Asn Val Arg Ile His  Ile His Ile Glu Asp  Glu
    3410                3415                3420
```