<110> 2D GENOMICS INC.

<120> METHODS FOR PROCESSING NUCLEIC ACID SAMPLES

<130> 51160-701.601

<140> PCT/US2017/061197
<141> 2017-11-10

<150> 62/477,211
<151> 2017-03-27

<150> 62/421,028
<151> 2016-11-11

<160> 191

<170> PatentIn version 3.5

<210> 1
<211> 1114
<212> PRT
<213> Bombyx mori

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Met Met Ala Ser Thr Ala Leu Ser Leu Met Gly Arg Cys Asn Pro Asp
1 5 10 15

Gly Cys Thr Arg Gly Lys His Val Thr Ala Ala Pro Met Asp Gly Pro
            20 25 30

Arg Gly Pro Ser Ser Leu Ala Gly Thr Phe Gly Trp Gly Leu Ala Ile
        35 40 45

Pro Ala Gly Glu Pro Cys Gly Arg Val Cys Ser Pro Ala Thr Val Gly
    50 55 60

Phe Phe Pro Val Ala Lys Lys Ser Asn Lys Glu Asn Arg Pro Glu Ala
65 70 75 80

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

Arg Gly Ser Ala Gly Ala Asp Pro Val Gly Gln Asp Ala Pro Gly Trp

```
            100                 105                 110

Thr Cys Gln Phe Cys Glu Arg Thr Phe Ser Thr Asn Arg Gly Leu Gly
        115                 120                 125

Val His Lys Arg Arg Ala His Pro Val Glu Thr Asn Thr Asp Ala Ala
    130                 135                 140

Pro Met Met Val Lys Arg Arg Trp His Gly Glu Glu Ile Asp Leu Leu
145                 150                 155                 160

Ala Arg Thr Glu Ala Arg Leu Leu Ala Glu Arg Gly Gln Cys Ser Gly
                165                 170                 175

Gly Asp Leu Phe Gly Ala Leu Pro Gly Phe Gly Arg Thr Leu Glu Ala
            180                 185                 190

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

His Leu Ala Arg Phe Gly Ser Gln Pro Gly Pro Ser Ser Gly Gly Cys
    210                 215                 220

Ser Ala Glu Pro Asp Phe Arg Arg Ala Ser Gly Ala Glu Glu Ala Gly
225                 230                 235                 240

Glu Glu Arg Cys Ala Glu Asp Ala Ala Ala Tyr Asp Pro Ser Ala Val
                245                 250                 255

Gly Gln Met Ser Pro Asp Ala Ala Arg Val Leu Ser Glu Leu Leu Glu
            260                 265                 270

Gly Ala Gly Arg Arg Arg Ala Cys Arg Ala Met Arg Pro Lys Thr Ala
        275                 280                 285

Gly Arg Arg Asn Asp Leu His Asp Asp Arg Thr Ala Ser Ala His Lys
    290                 295                 300

Thr Ser Arg Gln Lys Arg Arg Ala Glu Tyr Ala Arg Val Gln Glu Leu
```

```
305                 310                 315                 320

Tyr Lys Lys Cys Arg Ser Arg Ala Ala Ala Glu Val Ile Asp Gly Ala
                325                 330                 335

Cys Gly Gly Val Gly His Ser Leu Glu Glu Met Glu Thr Tyr Trp Arg
            340                 345                 350

Pro Ile Leu Glu Arg Val Ser Asp Ala Pro Gly Pro Thr Pro Glu Ala
        355                 360                 365

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

Thr Gln Leu Trp Lys Pro Ile Ser Val Glu Glu Ile Lys Ala Ser Arg
385                 390                 395                 400

Phe Asp Trp Arg Thr Ser Pro Gly Pro Asp Gly Ile Arg Ser Gly Gln
                405                 410                 415

Trp Arg Ala Val Pro Val His Leu Lys Ala Glu Met Phe Asn Ala Trp
            420                 425                 430

Met Ala Arg Gly Glu Ile Pro Glu Ile Leu Arg Gln Cys Arg Thr Val
        435                 440                 445

Phe Val Pro Lys Val Glu Arg Pro Gly Gly Pro Gly Glu Tyr Arg Pro
    450                 455                 460

Ile Ser Ile Ala Ser Ile Pro Leu Arg His Phe His Ser Ile Leu Ala
465                 470                 475                 480

Arg Arg Leu Leu Ala Cys Cys Pro Pro Asp Ala Arg Gln Arg Gly Phe
                485                 490                 495

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

Leu Gly Asp Ser Arg Lys Lys Leu Arg Glu Cys His Val Ala Val Leu
```

```
        515                 520                 525

Asp Phe Ala Lys Ala Phe Asp Thr Val Ser His Glu Ala Leu Val Glu
    530                 535                 540

Leu Leu Arg Leu Arg Gly Met Pro Glu Gln Phe Cys Gly Tyr Ile Ala
545                 550                 555                 560

His Leu Tyr Asp Thr Ala Ser Thr Thr Leu Ala Val Asn Asn Glu Met
                565                 570                 575

Ser Ser Pro Val Lys Val Gly Arg Gly Val Arg Gln Gly Asp Pro Leu
            580                 585                 590

Ser Pro Ile Leu Phe Asn Val Val Met Asp Leu Ile Leu Ala Ser Leu
        595                 600                 605

Pro Glu Arg Val Gly Tyr Arg Leu Glu Met Glu Leu Val Ser Ala Leu
    610                 615                 620

Ala Tyr Ala Asp Asp Leu Val Leu Leu Ala Gly Ser Lys Val Gly Met
625                 630                 635                 640

Gln Glu Ser Ile Ser Ala Val Asp Cys Val Gly Arg Gln Met Gly Leu
                645                 650                 655

Arg Leu Asn Cys Arg Lys Ser Ala Val Leu Ser Met Ile Pro Asp Gly
            660                 665                 670

His Arg Lys Lys His His Tyr Leu Thr Glu Arg Thr Phe Asn Ile Gly
        675                 680                 685

Gly Lys Pro Leu Arg Gln Val Ser Cys Val Glu Arg Trp Arg Tyr Leu
    690                 695                 700

Gly Val Asp Phe Glu Ala Ser Gly Cys Val Thr Leu Glu His Ser Ile
705                 710                 715                 720

Ser Ser Ala Leu Asn Asn Ile Ser Arg Ala Pro Leu Lys Pro Gln Gln
```

```
                725                 730                 735

Arg Leu Glu Ile Leu Arg Ala His Leu Ile Pro Arg Phe Gln His Gly
            740                 745                 750

Phe Val Leu Gly Asn Ile Ser Asp Asp Arg Leu Arg Met Leu Asp Val
        755                 760                 765

Gln Ile Arg Lys Ala Val Gly Gln Trp Leu Arg Leu Pro Ala Asp Val
    770                 775                 780

Pro Lys Ala Tyr Tyr His Ala Ala Val Gln Asp Gly Gly Leu Ala Ile
785                 790                 795                 800

Pro Ser Val Arg Ala Thr Ile Pro Asp Leu Ile Val Arg Arg Phe Gly
                805                 810                 815

Gly Leu Asp Ser Ser Pro Trp Ser Val Ala Arg Ala Ala Ala Lys Ser
            820                 825                 830

Asp Lys Ile Arg Lys Lys Leu Arg Trp Ala Trp Lys Gln Leu Arg Arg
        835                 840                 845

Phe Ser Arg Val Asp Ser Thr Thr Gln Arg Pro Ser Val Arg Leu Phe
    850                 855                 860

Trp Arg Glu His Leu His Ala Ser Val Asp Gly Arg Glu Leu Arg Glu
865                 870                 875                 880

Ser Thr Arg Thr Pro Thr Ser Thr Lys Trp Ile Arg Glu Arg Cys Ala
                885                 890                 895

Gln Ile Thr Gly Arg Asp Phe Val Gln Phe Val His Thr His Ile Asn
            900                 905                 910

Ala Leu Pro Ser Arg Ile Arg Gly Ser Arg Gly Arg Arg Gly Gly Gly
        915                 920                 925

Glu Ser Ser Leu Thr Cys Arg Ala Gly Cys Lys Val Arg Glu Thr Thr
```

930 935 940

Ala His Ile Leu Gln Gln Cys His Arg Thr His Gly Gly Arg Ile Leu
945 950 955 960

Arg His Asn Lys Ile Val Ser Phe Val Ala Lys Ala Met Glu Glu Asn
965 970 975

Lys Trp Thr Val Glu Leu Glu Pro Arg Leu Arg Thr Ser Val Gly Leu
980 985 990

Arg Lys Pro Asp Ile Ile Ala Ser Arg Asp Gly Val Gly Val Ile Val
995 1000 1005

Asp Val Gln Val Val Ser Gly Gln Arg Ser Leu Asp Glu Leu His
1010 1015 1020

Arg Glu Lys Arg Asn Lys Tyr Gly Asn His Gly Glu Leu Val Glu
1025 1030 1035

Leu Val Ala Gly Arg Leu Gly Leu Pro Lys Ala Glu Cys Val Arg
1040 1045 1050

Ala Thr Ser Cys Thr Ile Ser Trp Arg Gly Val Trp Ser Leu Thr
1055 1060 1065

Ser Tyr Lys Glu Leu Arg Ser Ile Ile Gly Leu Arg Glu Pro Thr
1070 1075 1080

Leu Gln Ile Val Pro Ile Leu Ala Leu Arg Gly Ser His Met Asn
1085 1090 1095

Trp Thr Arg Phe Asn Gln Met Thr Ser Val Met Gly Gly Gly Val
1100 1105 1110

Gly

<210> 2

<211> 1114
<212> PRT
<213> Bombyx mori

<400> 2

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Met Met Ala Ser Thr Ala Leu Ser Leu Met Gly Arg Cys Asn Pro Asp
1               5                  10                  15

Gly Cys Thr Arg Gly Lys His Val Thr Ala Ala Pro Met Asp Gly Pro
            20                  25                  30

Arg Gly Pro Ser Ser Leu Ala Gly Thr Phe Gly Trp Gly Leu Ala Ile
        35                  40                  45

Pro Ala Gly Glu Pro Cys Gly Arg Val Cys Ser Pro Ala Thr Val Gly
    50                  55                  60

Phe Phe Pro Val Ala Lys Lys Ser Asn Lys Glu Asn Arg Pro Glu Ala
65                  70                  75                  80

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

Arg Gly Ser Ala Gly Ala Asp Pro Val Gly Gln Asp Ala Pro Gly Trp
            100                 105                 110

Thr Cys Gln Phe Cys Glu Arg Thr Phe Ser Thr Asn Arg Gly Leu Gly
        115                 120                 125

Val His Lys Arg Arg Ala His Pro Val Glu Thr Asn Thr Asp Ala Ala
    130                 135                 140

Pro Met Met Val Lys Arg Arg Trp His Gly Glu Glu Ile Asp Leu Leu
145                 150                 155                 160

Ala Arg Thr Glu Ala Arg Leu Leu Ala Glu Arg Gly Gln Cys Ser Gly
                165                 170                 175

Gly Asp Leu Phe Gly Ala Leu Pro Gly Phe Gly Arg Thr Leu Glu Ala
            180                 185                 190
```

```
Ile Lys Gly Gln Arg Arg Arg Glu Pro Tyr Arg Ala Leu Val Gln Ala
        195                 200                 205

His Leu Ala Arg Phe Gly Ser Gln Pro Gly Pro Ser Ser Gly Gly Cys
    210                 215                 220

Ser Ala Glu Pro Asp Phe Arg Arg Ala Ser Gly Ala Glu Glu Ala Gly
225                 230                 235                 240

Glu Glu Arg Cys Ala Glu Asp Ala Ala Ala Tyr Asp Pro Ser Ala Val
                245                 250                 255

Gly Gln Met Ser Pro Asp Ala Ala Arg Val Leu Ser Glu Leu Leu Glu
            260                 265                 270

Gly Ala Gly Arg Arg Arg Ala Cys Arg Ala Met Arg Pro Lys Thr Ala
        275                 280                 285

Gly Arg Arg Asn Asp Leu His Asp Asp Arg Thr Ala Ser Ala His Lys
    290                 295                 300

Thr Ser Arg Gln Lys Arg Arg Ala Glu Tyr Ala Arg Val Gln Glu Leu
305                 310                 315                 320

Tyr Lys Lys Cys Arg Ser Arg Ala Ala Ala Glu Val Ile Asp Gly Ala
                325                 330                 335

Cys Gly Gly Val Gly His Ser Leu Glu Glu Met Glu Thr Tyr Trp Arg
            340                 345                 350

Pro Ile Leu Glu Arg Val Ser Asp Ala Pro Gly Pro Thr Pro Glu Ala
        355                 360                 365

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

Thr Gln Leu Trp Lys Pro Ile Ser Val Glu Glu Ile Lys Ala Ser Arg
385                 390                 395                 400
```

```
Phe Asp Trp Arg Thr Ser Pro Gly Pro Asp Gly Ile Arg Ser Gly Gln
               405                 410                 415

Trp Arg Ala Val Pro Val His Leu Lys Ala Glu Met Phe Asn Ala Trp
            420                 425                 430

Met Ala Arg Gly Glu Ile Pro Glu Ile Leu Arg Gln Cys Arg Thr Val
        435                 440                 445

Phe Val Pro Lys Val Glu Arg Pro Gly Gly Pro Gly Glu Tyr Arg Pro
    450                 455                 460

Ile Ser Ile Ala Ser Ile Pro Leu Arg His Phe His Ser Ile Leu Ala
465                 470                 475                 480

Arg Arg Leu Leu Ala Cys Cys Pro Pro Asp Ala Arg Gln Arg Gly Phe
               485                 490                 495

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

Leu Gly Asp Ser Arg Lys Lys Leu Arg Glu Cys His Val Ala Val Leu
        515                 520                 525

Asp Phe Ala Lys Ala Phe Asp Thr Val Ser His Glu Ala Leu Val Glu
    530                 535                 540

Leu Leu Arg Leu Arg Gly Met Pro Glu Gln Phe Cys Gly Tyr Ile Ala
545                 550                 555                 560

His Leu Tyr Asp Thr Ala Ser Thr Thr Leu Ala Val Asn Asn Glu Met
               565                 570                 575

Ser Ser Pro Val Lys Val Gly Arg Gly Val Arg Gln Gly Asp Pro Leu
            580                 585                 590

Ser Pro Ile Leu Phe Asn Val Val Met Asp Leu Ile Leu Ala Ser Leu
        595                 600                 605
```

```
Pro Glu Arg Val Gly Tyr Arg Leu Glu Met Glu Leu Val Ser Ala Leu
    610                 615                 620

Ala Tyr Ala Asp Asp Leu Val Leu Leu Ala Gly Ser Lys Val Gly Met
625                 630                 635                 640

Gln Glu Ser Ile Ser Ala Val Asp Cys Val Gly Arg Gln Met Gly Leu
                645                 650                 655

Arg Leu Asn Cys Arg Lys Ser Ala Val Leu Ser Met Ile Pro Asp Gly
            660                 665                 670

His Arg Lys Lys His His Tyr Leu Thr Glu Arg Thr Phe Asn Ile Gly
        675                 680                 685

Gly Lys Pro Leu Arg Gln Val Ser Cys Val Glu Arg Trp Arg Tyr Leu
    690                 695                 700

Gly Val Asp Phe Glu Ala Ser Gly Cys Val Thr Leu Glu His Ser Ile
705                 710                 715                 720

Ser Ser Ala Leu Asn Asn Ile Ser Arg Ala Pro Leu Lys Pro Gln Gln
                725                 730                 735

Arg Leu Glu Ile Leu Arg Ala His Leu Ile Pro Arg Phe Gln His Gly
            740                 745                 750

Phe Val Leu Gly Asn Ile Ser Asp Asp Arg Leu Arg Met Leu Asp Val
        755                 760                 765

Gln Ile Arg Lys Ala Val Gly Gln Trp Leu Arg Leu Pro Ala Asp Val
    770                 775                 780

Pro Lys Ala Tyr Tyr His Ala Ala Val Gln Asp Gly Gly Leu Ala Ile
785                 790                 795                 800

Pro Ser Val Arg Ala Thr Ile Pro Asp Leu Ile Val Arg Arg Phe Gly
                805                 810                 815
```

```
Gly Leu Asp Ser Ser Pro Trp Ser Val Ala Arg Ala Ala Ala Lys Ser
            820                 825                 830

Asp Lys Ile Arg Lys Lys Leu Arg Trp Ala Trp Lys Gln Leu Arg Arg
        835                 840                 845

Phe Ser Arg Val Asp Ser Thr Thr Gln Arg Pro Ser Val Arg Leu Phe
    850                 855                 860

Trp Arg Glu His Leu His Ala Ser Val Asp Gly Arg Glu Leu Arg Glu
865                 870                 875                 880

Ser Thr Arg Thr Pro Thr Ser Thr Lys Trp Ile Arg Glu Arg Cys Ala
                885                 890                 895

Gln Ile Thr Gly Arg Asp Phe Val Gln Phe Val His Thr His Ile Asn
            900                 905                 910

Ala Leu Pro Ser Arg Ile Arg Gly Ser Arg Gly Arg Arg Gly Gly Gly
        915                 920                 925

Glu Ser Ser Leu Thr Cys Arg Ala Gly Cys Lys Val Arg Glu Thr Thr
    930                 935                 940

Ala His Ile Leu Gln Gln Cys His Arg Thr His Gly Gly Arg Ile Leu
945                 950                 955                 960

Arg His Asn Lys Ile Val Ser Phe Val Ala Lys Ala Met Glu Glu Asn
                965                 970                 975

Lys Trp Thr Val Glu Leu Glu Pro Arg Leu Arg Thr Ser Val Gly Leu
            980                 985                 990

Arg Lys Pro Asp Ile Ile Ala Ser  Arg Asp Gly Val Gly  Val Ile Val
        995                 1000                1005

Asp Val  Gln Val Val Ser Gly  Gln Arg Ser Leu Asp  Glu Leu His
    1010                1015                1020
```

```
Arg Glu  Lys Arg Asn Lys Tyr  Gly Asn His Gly Glu  Leu Val Glu
    1025                1030                1035


Leu Val  Ala Gly Arg Leu Gly  Leu Pro Lys Ala Glu  Cys Val Arg
    1040                1045                1050


Ala Thr  Ser Cys Thr Ile Ser  Trp Arg Gly Val Trp  Ser Leu Thr
    1055                1060                1065


Ser Tyr  Lys Glu Leu Arg Ser  Ile Ile Gly Leu Arg  Glu Pro Thr
    1070                1075                1080


Leu Gln  Ile Val Pro Ile Leu  Ala Leu Arg Gly Ser  His Met Asn
    1085                1090                1095


Trp Thr  Arg Phe Asn Gln Met  Thr Ser Val Met Gly  Gly Gly Val
    1100                1105                1110


Gly
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<211> 1451
<212> PRT
<213> Lasius niger

<400> 3

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Met Ser Gly Pro Gly Gly Gly Thr Pro Gln His Ala Gly Pro Ser Ala
1               5                  10                  15


Leu Ser Ser Lys Leu Asp Glu Phe Arg Leu Arg Val Cys Ser Glu Gly
            20                  25                  30


Ser Ala Leu His Gly Gln Asp Ala Ala Gln Arg Arg Ala Lys Arg Leu
        35                  40                  45


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


Pro Leu Ser Asp Ala Gly Leu Arg Gly Ile Lys Asp Glu Leu Ser Ala
```

```
65                  70                  75                  80

His Asp Ile Thr Phe Ala Ser Ile Asn Ala Thr Ser Lys Glu Ser Val
                85                  90                  95

Asn Arg Lys Lys Glu Leu Glu Glu Val Ile Ala Ala Tyr Arg Arg Ala
            100                 105                 110

Val Asp Asp Leu Met Met Ala Tyr Ile Lys Ile Lys Thr Glu Arg Asp
        115                 120                 125

Thr Thr Ala Lys Ile Trp Lys Met Met Arg Ser Thr Ser Arg Gly Asp
    130                 135                 140

Ser Gly Ser Asp Leu Gly Ile Glu Ile Ala Gly Ala Val Gln Glu Ser
145                 150                 155                 160

Thr Gly Ala Ala Ile Arg Gly Met Leu Gly Glu Trp His Ala Arg Glu
                165                 170                 175

Ser Glu Arg Thr Lys Ala Leu Val Thr Glu Met Thr Ala Ser Met Ser
            180                 185                 190

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

Phe Arg Glu Ala Pro Ser Val Pro Gln Ile Ala Gly Arg Ser Tyr Ala
    210                 215                 220

Gly Ala Val Arg Ala Ser Gly Ala Val Ala Gly Pro Gln Leu Pro Ser
225                 230                 235                 240

Gly Arg Arg Glu Leu Arg Asp Gln Ser Arg Leu Glu Thr Ile Glu Val
                245                 250                 255

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

Cys Arg Ala Val Leu Thr Ser Ile Lys Pro Ser Glu Ala Gly Ile Lys
```

```
        275                 280                 285

Val Asp Arg Val Ile Lys Gly Arg Asn Lys Thr Val Arg Ile Val Ala
    290                 295                 300

Asp Gln Asp Glu Ile Ser Arg Leu Arg Pro Met Leu Asp Asn Leu Gly
305                 310                 315                 320

Met Glu Val Lys Arg Val Asp Lys Leu Asn Pro Arg Leu Arg Ile Arg
                325                 330                 335

Asp Ile Pro Val Gly Thr Asp Lys Ser Leu Phe Val Lys Asp Leu Ile
            340                 345                 350

Lys Gln Asn Leu Asp Gly Ala Ser Glu Glu Asp Ile Arg Leu Val Tyr
        355                 360                 365

Trp Ser Pro Ala Lys Gly Arg Met Gly Pro Ala Ala Val Ile Glu Val
    370                 375                 380

Ser Pro Asp Ile Arg Ile Arg Leu Leu Asn Gln Gly Arg Val Tyr Leu
385                 390                 395                 400

Gly Trp Ser Ser Cys Arg Val Ala Asp His Leu Arg Val Leu Gln Cys
                405                 410                 415

Phe Lys Cys Leu Gly Phe Gly His Thr Ala Asn Asn Cys Gln Ala Gly
            420                 425                 430

Ser Asp Thr Cys Gly His Cys Asp Asn Val His Asn Ser Val Asp Asn
        435                 440                 445

Leu Asn Val Gly Arg Leu Asp Gly Phe Val Cys Pro Ile Cys Leu Arg
    450                 455                 460

Ser Phe Ser Ser Lys Ile Gly Leu Gly Leu His Lys Lys Lys Lys His
465                 470                 475                 480

Pro Val Glu Tyr Asn Glu Glu Ile Val Val Ala Arg Val Arg Pro Arg
```

```
                485                 490                 495

Trp Thr Asp Glu Glu Ile Arg Leu Leu Ala Ile Asp Glu Ala Gly Ala
            500                 505                 510

Pro Pro Gln Thr Arg Ser Met Asn Ser Tyr Leu Leu Glu Arg Arg Gly
        515                 520                 525

Asp Asp Arg Ser Leu Glu Ser Ile Lys Gly Val Arg Arg Lys Gln Ala
    530                 535                 540

Tyr Lys Asp Leu Val Ala Glu Tyr Arg Gly Gln Leu Leu Asp Gln Arg
545                 550                 555                 560

Ile Asp Glu Ser Leu Ser Gln Pro Asp Ala Arg Pro Ile Ala Ala Met
                565                 570                 575

Val Asp Gly Val Pro Leu Ser Gly Ser Val Ala Ala Lys Asp Trp Leu
            580                 585                 590

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

Ile Arg Thr Ala Ile Arg Arg Leu Glu Glu Gly Gln Ser Pro Glu Gly
    610                 615                 620

Ala Leu Asp Asp Trp Trp Asn Asn Val Phe Ser Asp Leu Glu Val Thr
625                 630                 635                 640

Gly Arg Lys Arg Val Ala Arg Gly Pro Arg Ala Ile Pro Val Leu Ser
                645                 650                 655

Lys Arg Lys Ala Arg Arg Ile Glu Tyr Arg Arg Met Gln Gln Leu Trp
            660                 665                 670

Arg Thr Asn Met Thr Lys Ala Ala His Lys Val Leu Asp Gly Asp Ala
        675                 680                 685

Gly Ser Leu Pro His Pro Thr Leu Ala Ala Gln Leu Gly Phe Trp Lys
```

690 695 700

Pro Val Leu Glu Ala Glu Ser Val Asp Leu Ala Trp Pro Phe Ala Val
705 710 715 720

Gly His Pro Gly Val Ala Val Gly Asp Leu Trp Ser Pro Ile Thr Glu
725 730 735

Gly Glu Val Ile Asn Ile Arg Leu Pro Arg Thr Ser Ser Pro Gly Leu
740 745 750

Asp Gly Leu Thr Val His Arg Trp Phe Thr Glu Val Pro Ala Ile Leu
755 760 765

Arg Ala Thr Ile Leu Asn Ile Phe Met Ala Thr Gly Trp Val Pro Pro
770 775 780

Arg Phe Arg His Ser Arg Thr Val Leu Ile Pro Lys Ser Ser Asp Leu
785 790 795 800

Met Asp Pro Ala Tyr Tyr Arg Pro Ile Ser Val Ser Ser Val Ile Leu
805 810 815

Arg His Phe His Lys Ile Leu Ala Arg Arg Val Ala Ala Cys Glu Leu
820 825 830

Leu Asp Val Arg Gln Arg Ala Phe Ile Ala Ala Asp Gly Cys Ala Glu
835 840 845

Asn Val Ala Val Leu Ser Ala Ile Leu Phe Asp Ala Arg Thr Asn Arg
850 855 860

Arg Gln Leu His Val Ile Thr Leu Asp Val Arg Lys Ala Phe Asp Thr
865 870 875 880

Val Ser His Asn Ala Ile Arg Tyr Val Leu Ser Lys His Gly Met Pro
885 890 895

Gln Ile Met Val Glu Tyr Leu Ser Thr Leu Tyr Arg Thr Ala Ala Val

```
            900                 905                 910

Arg Leu Glu Val Asp Gly Glu Phe Ser Asp Glu Ile Leu Pro Gly Arg
        915                 920                 925

Gly Val Arg Gln Gly Asp Pro Leu Ser Pro Leu Leu Phe Asn Leu Ile
    930                 935                 940

Met Asn Glu Ile Leu Ala Glu Val Pro Asp Gln Val Gly Tyr Cys Met
945                 950                 955                 960

Met Asp Arg Asn Val Asn Ala Leu Ala Phe Ala Asp Asp Leu Val Leu
                965                 970                 975

Ile Gly Ala Thr Arg Asp Gly Ala Gln Arg Ser Leu Glu Arg Val Met
            980                 985                 990

Ala Ala Leu Tyr Arg Phe Gly Leu  Glu Leu Ala Pro Ala  Lys Cys Ala
        995                 1000                1005

Ala Phe  Ser Leu Val Pro Cys  Gly Lys Thr Lys Arg  Ile Lys Ile
    1010                1015                1020

Leu Thr  Asp Pro Gln Phe Val  Ala Gly Asp Arg Pro  Ile Pro Gln
    1025                1030                1035

Leu Gly  Val Leu His Thr Val  Arg Tyr Leu Gly Val  Arg Phe Gly
    1040                1045                1050

Glu Thr  Gly Pro Val Ile Gln  Gly Val Glu Leu Leu  Pro Leu Leu
    1055                1060                1065

Glu Arg  Ile Thr Arg Ala Pro  Leu Lys Pro Gln Gln  Arg Leu Lys
    1070                1075                1080

Ile Leu  Arg Thr Tyr Leu Ile  Pro Arg Tyr Thr His  Asn Leu Val
    1085                1090                1095

Leu Gly  Arg Val Ser Tyr Ser  Met Leu Arg Lys Leu  Asp Lys Gln
```

```
    1100                1105                1110

Thr Arg  Ala Ala Val Arg Arg  Trp Leu Val Leu Pro  Asp Asp Val
    1115                1120                1125

Pro Val  Ala Phe Phe His Cys  Pro Ile Lys Gln Gly  Gly Leu Gly
    1130                1135                1140

Ile Gln  Ser Phe Glu Thr Ala  Ile Pro Arg Leu Thr  Leu Leu Arg
    1145                1150                1155

Leu Asn  Arg Leu Lys Asp Ser  Gln Tyr Glu Met Ala  Arg Val Val
    1160                1165                1170

Gly Ser  Ser Ala Trp Ala Asp  Arg Arg Met Arg Trp  Cys Arg Phe
    1175                1180                1185

Ala Arg  Arg Arg Asp Glu Asp  Trp Pro Ser Glu Leu  His Ala Lys
    1190                1195                1200

Val Asp  Gly Phe Glu Leu Arg  Glu Ala Gly Asn Val  Ser Val Ser
    1205                1210                1215

Thr Arg  Trp Leu Asp Asp Ala  Met Val His Ile Pro  Ser Ser Asp
    1220                1225                1230

Trp Leu  Gln Tyr Val Lys Val  Trp Ile Asn Ala Leu  Pro Thr Arg
    1235                1240                1245

Ile Arg  Thr Thr Arg Gly Ser  Arg Arg Leu Arg Glu  Asp Val Asn
    1250                1255                1260

Cys Arg  Gly Gly Cys Gly Val  Gln Glu Thr Ala Ala  His Val Val
    1265                1270                1275

Gln Gln  Cys Phe Arg Thr His  Gly Gly Arg Ile Met  Arg His Asp
    1280                1285                1290

Ala Val  Ala Ser Ala Leu Ala  Gly Glu Leu Gln Arg  Gly Gly Tyr
```

1295 1300 1305

Asn Val His Arg Glu Arg Val Phe Arg Thr Arg Glu Gly Val Arg
1310 1315 1320

Lys Pro Asp Ile Leu Ala Ala Lys Gly Thr His Gly His Val Leu
1325 1330 1335

Asp Val Gln Ile Ile Ser Gly Ala Arg Pro Leu Ser Asp Gly His
1340 1345 1350

Asp Arg Lys Arg Ser Tyr Tyr Ala Asn Asn Ala Asp Leu Leu Ala
1355 1360 1365

Arg Ile Ser Ala Leu Leu Gln Val Pro Val Arg Asn Leu Asp Val
1370 1375 1380

Ser Thr Val Thr Leu Ser Trp Arg Gly Val Trp Ala Arg Glu Ser
1385 1390 1395

Ala Ala Val Leu Thr Ser Leu Gly Val Ser Lys Ala Val Leu Arg
1400 1405 1410

Gly Ile Thr Thr Arg Val Leu Lys Gly Ser Tyr Met Asn Phe Ser
1415 1420 1425

Arg Phe Asn Gln Thr Thr Ala Thr Cys Arg Gly Arg Ala Asn Leu
1430 1435 1440

Arg Met Ser Gly Trp Gly Pro Pro
1445 1450

<210> 4
<211> 1484
<212> PRT
<213> Tribolium castaneum

<400> 4
Met Ser Asn Pro Ser Ser Val Pro Cys Leu Leu Ala Ser Arg Gly Thr
1 5 10 15

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Val Leu Leu Arg Gly Ser Gly Cys Ala Arg Gln Gly Val Arg Lys Ser
            20                  25                  30

Ser Ser Ala Ala Ile Gln Arg Ala Leu Asn Val Asn Val Lys Lys Phe
        35                  40                  45

Lys Gln Ala Arg Val Asn Gly Gly Ser Asn Tyr Asp Ser Leu Ile Leu
    50                  55                  60

Leu Cys Tyr Asp Phe Ala Ala Gly Arg Asn Ala Asp Gly Glu Pro Ala
65                  70                  75                  80

Gln Asn Pro Cys Pro Tyr Cys Ala Arg Ser Phe Thr Thr Ala Asn Gly
                85                  90                  95

Arg Gly Leu His Ile Arg Arg Ala His Pro Asp Glu Ala Asn Asn Ala
            100                 105                 110

Ile Asp Ile Glu Arg Ile His Ala Arg Trp Ser Asp Glu Glu Thr Ala
        115                 120                 125

Met Met Ala Arg Leu Glu Ala Gly Ala Ile Gln Gln Gly Gly Val Arg
    130                 135                 140

Phe Met Asn Gln Phe Leu Val Pro Arg Met Pro Gly Arg Thr Leu Glu
145                 150                 155                 160

Ala Val Lys Gly Lys Arg Arg Asp Ala Thr Tyr Lys Ala Leu Val Gln
                165                 170                 175

Arg Phe Leu Gln Ala Pro Gln Ile Asn Leu Pro Glu Leu Arg Asp Gly
            180                 185                 190

Asp Ala Pro Arg Gln Pro Asp Pro Gln Arg Glu Asn Pro Pro Glu Pro
        195                 200                 205

Pro Ala Phe Asp Gly Ala Ile Arg Gly Ala Val Ala Asp Leu Val Gly
    210                 215                 220
```

```
Gly Val Asp Trp Gln Arg Leu Gly Phe Gln Gly Asp Arg Leu Cys Asp
225                 230                 235                 240

Ile Ala Arg Arg Ala Cys Asp Gly Glu Asp Val Ser Gly Gln Leu Leu
                245                 250                 255

Gly Trp Leu Arg Asp Val Phe Pro Val Lys Arg Val Ser Thr Arg Gly
            260                 265                 270

Asp Gln Ser Asp Leu Asp Val Asp Gly Ala Ser Val Ser Arg Arg Thr
        275                 280                 285

Ala Arg Arg Arg Glu Tyr Ala Arg Val Gln Glu Leu Tyr Arg Lys Asp
    290                 295                 300

Pro Lys Ala Cys Leu Ala Arg Ile Leu Gly Asp Arg Arg Glu Gly Ala
305                 310                 315                 320

Asn Arg Ala Pro Asn Arg Asp Pro Ala Phe Ile Asp Phe Trp Arg Gly
                325                 330                 335

Val Phe Ser Glu Ala Ser Ala Glu Val Glu Gly Trp Ala Glu Glu Val
            340                 345                 350

Ser Asp His Gly Glu Leu Ala Arg Arg Val Trp Asp Pro Ile Ser Val
        355                 360                 365

Glu Glu Val Gly Arg Ser Arg Val Arg Asn Gly Ala Ala Pro Gly Pro
    370                 375                 380

Asp Gly Ile Ala Val Ser Val Trp Asn Lys Leu Pro Pro Glu Ala Ala
385                 390                 395                 400

Ala Leu Leu Phe Asn Val Leu Leu Leu Gly Arg Cys Leu Pro Ala Glu
                405                 410                 415

Leu Thr Arg Thr Arg Thr Val Phe Ile Pro Lys Thr Asp Ala Pro Arg
            420                 425                 430
```

```
Thr Pro Ala Asp Tyr Arg Pro Ile Ser Ile Ala Ser Val Val Ala Arg
        435                 440                 445

His Phe His Arg Val Leu Ser Ala Arg Val Gln Arg Ile Pro Asp Leu
    450                 455                 460

Phe Thr Lys Tyr Gln Arg Gly Phe Leu Ser Gly Val Asp Gly Ile Ala
465                 470                 475                 480

Asp Asn Leu Ser Val Leu Asp Thr Met Leu Thr Met Ser Arg Arg Cys
                485                 490                 495

Cys Lys His Leu His Leu Ala Ala Leu Asp Val Ser Lys Ala Phe Asp
            500                 505                 510

Thr Val Ser His Phe Ala Ile Val Arg Ala Cys Glu Gln Ala Gly Leu
        515                 520                 525

Pro Gln Pro Phe Val Glu Tyr Val Arg Ser Ile Tyr Gly Ser Ala Glu
    530                 535                 540

Thr Val Leu Glu Glu Gly Gly Arg Arg His Phe Val Gln Val Arg Arg
545                 550                 555                 560

Gly Val Arg Gln Gly Asp Pro Leu Ser Pro Leu Leu Phe Asn Leu Val
                565                 570                 575

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

Thr Asp Ala Thr Lys Val Thr Ala Leu Ala Phe Ala Asp Asp Val Val
        595                 600                 605

Leu Cys Ala Thr Thr Ala Lys Gly Leu Gln Thr Asn Leu Asp Val Leu
    610                 615                 620

Glu Ala Glu Leu Arg Leu Ala Gly Leu Leu Leu Asn Pro Asn Lys Cys
625                 630                 635                 640
```

```
Gln Ala Leu Ser Leu Val Ala Ser Gly Arg Asp His Lys Val Lys Leu
                645                 650                 655

Val Thr Lys Pro Thr Phe Arg Val Gly Gln Asn Thr Ile His Gln Val
            660                 665                 670

Asp Ala Ser Ser Ile Trp Lys Tyr Leu Gly Ile Gln Phe Arg Gly Ser
        675                 680                 685

Gly Met Cys Gly Cys Gly Ser Glu Gly Val Ala Ala Gly Leu Lys Arg
    690                 695                 700

Ile Thr Cys Ala Pro Leu Lys Pro Gln Gln Arg Met His Leu Leu Arg
705                 710                 715                 720

Val Phe Phe Leu Pro Lys Phe Tyr His Ala Trp Thr Phe Gly Arg Leu
                725                 730                 735

Asn Ala Gly Val Leu Arg Arg Leu Asp Val Val Val Arg Thr Tyr Val
            740                 745                 750

Arg Thr Trp Leu Arg Phe Pro His Asp Ile Pro Val Gly Tyr Phe His
        755                 760                 765

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

Ile Pro Phe Leu Arg Leu Lys Arg Phe Asp Arg Leu Gly Arg Ser Ala
785                 790                 795                 800

Val Asp Tyr Val Arg Glu Cys Ala Phe Thr Asp Ile Ala Asp Arg Lys
                805                 810                 815

Ile Arg Trp Cys Arg Glu Arg Leu Ser Gly Ile Val Asp Gln Val Ala
            820                 825                 830

Gly Gly Arg Asp Ala Leu Asp Ala Tyr Trp Thr Ala Gln Leu His Gln
        835                 840                 845
```

```
Ser Val Asp Gly Arg Ala Leu Arg Glu Ser Ala Ser Val Ala Ser Ser
    850                 855                 860

Thr Gln Trp Leu Arg Cys Ser Thr Arg Ala Ile Pro Ala Ser Asp Trp
865                 870                 875                 880

Leu His Tyr Thr Ala Val His Ile Gly Ala Leu Pro Ser Arg Val Arg
                885                 890                 895

Thr Ser Arg Gly Arg Arg Gly Gly Gln Asp Val Ser Cys Arg Gly Gly
            900                 905                 910

Cys Leu Leu Asp Glu Thr Pro Ala His Cys Ile Gln Val Cys His Arg
        915                 920                 925

Thr His Gly Gly Arg Val Leu Arg His Asp Ala Ile Ala Lys Arg Ile
    930                 935                 940

Ser Val Asp Leu Met Glu Leu Gly Trp Ile Val Thr Arg Glu Val Ser
945                 950                 955                 960

Phe Arg Thr Thr Ala Gly Val Phe Arg Pro Asp Met Val Ala Val Lys
                965                 970                 975

Glu Gly Val Thr Val Ile Leu Asp Val Gln Ile Val Ser Pro Ala Pro
            980                 985                 990

Thr Leu Asp Glu Ala His Arg Arg  Lys Val Ala Lys Tyr  Arg Asp Arg
        995                 1000                1005

Ala Asp  Leu Ala Arg Tyr Leu  Val Glu Ala Ala Val  Ala Arg Gly
    1010                1015                1020

Arg Ala  Pro Pro Ala Asn Ile  Arg Phe Ala Ser Ala  Thr Ile Ser
    1025                1030                1035

Trp Arg  Gly Val Trp Ser Ala  Glu Ser Val Gly Ser  Leu Arg Glu
    1040                1045                1050
```

```
Leu Gly  Leu Ser Ala Arg His  Phe Asn Arg Tyr Thr  Thr Met Ala
    1055                1060                1065

Leu Cys  Gly Ser Trp Arg Asn  Trp Val Arg Phe Asn  Ala Ser Thr
    1070                1075                1080

Ala Ser  Arg Met Gly Arg Gly  Arg Gly Asp Ala Ser  Pro Arg Arg
    1085                1090                1095

His Glu  Asn Gln His Asp Asn  Asp Ser Leu Ala Asp  Leu Val Arg
    1100                1105                1110

Val Ala  Leu Thr Lys Ser Asp  Arg Gly Val Leu Asn  Asp Ala Val
    1115                1120                1125

Asn Arg  Asn Leu Ala Gln Arg  Ala Glu Ser Leu Arg  Ile Arg Lys
    1130                1135                1140

Arg Gly  Ser Lys Gly Lys Arg  Lys Ser Lys Thr Gly  Arg His Tyr
    1145                1150                1155

Gly Gln  Thr Thr Ser Gly Ser  Gly Gln Arg Ala Ala  Leu Phe Lys
    1160                1165                1170

Lys His  Gln Asp Leu Phe Leu  Lys Asn Arg Arg Gly  Leu Ala Glu
    1175                1180                1185

Thr Ile  Leu Ser Gly Lys Glu  Asp Phe Gly Pro Arg  Pro Glu Pro
    1190                1195                1200

Pro Val  Thr Ser Val Glu Glu  Phe Tyr Gly Gly Ile  Phe Glu Ser
    1205                1210                1215

Pro Ser  Ser Pro Asp Asn Lys  Pro Phe Glu Arg Gln  Ile Pro Val
    1220                1225                1230

Ala Ala  Val Lys Thr Met Ser  Glu Leu Glu Leu Ala  Ile Leu Phe
    1235                1240                1245
```

```
Asn Ile  Ile Leu Phe Arg Asn  Val Gln Pro Ser Ala  Trp Gly Val
    1250                1255                1260

Leu Arg  Thr Thr Leu Val Pro  Ile Thr Ile Ser Ser  Ala Leu Gln
    1265                1270                1275

Arg Leu  Leu His Arg Val Leu  Ala Ala Arg Leu Ser  Lys Leu Ile
    1280                1285                1290

Ser Leu  Ser Ser Ser Gln Arg  Gly Phe Thr Glu Ile  Asp Gly Thr
    1295                1300                1305

Leu Ala  Asn Ala Leu Ile Leu  His Glu Tyr Leu Gln  Tyr Arg Arg
    1310                1315                1320

Gln Thr  Gly Arg Thr Tyr His  Val Val Ser Leu Asp  Val Arg Lys
    1325                1330                1335

Ala Phe  Asp Thr Val Ser His  Cys Ser Val Ser Arg  Ala Leu Gly
    1340                1345                1350

Cys Phe  Gly Ile Pro Ser Val  Ile Arg Glu Tyr Ile  Leu Ala Thr
    1355                1360                1365

Phe Gly  Ala Gln Thr Thr Ile  Lys Cys Gly Ser Val  Thr Thr Arg
    1370                1375                1380

Pro Ile  Arg Met Leu Arg Gly  Val Arg Gln Gly Asp  Pro Leu Ser
    1385                1390                1395

Leu Val  Leu Phe Asn Phe Val  Met Asp Glu Leu Leu  Glu Lys Val
    1400                1405                1410

Asn Glu  Lys Tyr Glu Gly Gly  Ser Leu Gln Ser Gly  Glu Arg Cys
    1415                1420                1425

Ala Ile  Met Ala Phe Ala Asp  Asp Leu Ile Leu Ile  Ala Asp Arg
    1430                1435                1440
```

```
Asp Gln  Asp Val Pro Ala Met  Phe Asp Asp Val Ser  Thr Phe Leu
    1445                1450                1455


Glu Arg  Arg Gly Met Ser Val  Asn Pro Ala Lys Cys  Arg Ala Leu
    1460                1465                1470


Ile Ala  Gly Ala Met His Leu  Ser Ile Trp Gly
    1475                1480


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<212> PRT
<213> Lasius niger

<400> 5
Met Asn Val Gly Glu Asp Val Ala Val Leu Asp Val Gly Arg Pro Asn
1               5                   10                  15


Ser His Val Cys Pro Ile Cys Leu Arg Ser Phe Thr Ser Arg Ile Gly
            20                  25                  30


Leu Gly Leu His Lys Lys Lys Arg His Pro Val Glu Tyr Asn Glu Glu
        35                  40                  45


Ile Cys Ile Ala Arg Val Lys Pro Arg Trp Ser Glu Glu Glu Ile Arg
    50                  55                  60


Ile Leu Ala Met Glu Glu Ala Arg Ala Pro Pro Arg Thr Lys Ser Met
65                  70                  75                  80


Asn Val Tyr Leu Trp Glu Arg Gly Asp Glu Ser Arg Ser Leu Glu Ser
                85                  90                  95


Ile Lys Gly Val Arg Arg Lys Gln Ser Tyr Lys Asp Leu Val Ile Ser
            100                 105                 110


Tyr Lys Asp Gln Leu Leu Ala Glu Lys Val Asp Glu Ser Leu Glu Arg
        115                 120                 125


Gln Cys Ser Val Pro Val Val Pro Ala Glu Thr Pro Leu Pro Gly Ser
```

```
    130                 135                 140

Glu Ala Ala Met Lys Trp Leu Val Ala Arg Val Asp Asp Ile Ile Pro
145                 150                 155                 160

Glu Met Asn Gly Gly Ile Trp Val Arg Ala Ala Val Cys Arg Leu Arg
                165                 170                 175

Glu Gly Cys Leu Pro Asp Ala Ala Leu Asp Asp Trp Trp Arg Asn Val
            180                 185                 190

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

Arg Val Ala Pro Val Leu Ser Lys Arg Arg Ala Arg Arg Val Glu Tyr
    210                 215                 220

Arg Arg Met Gln Gln Leu Trp Lys Val Asn Met Thr Lys Ala Ala His
225                 230                 235                 240

Lys Val Leu Asp Gly Asp Thr Asp Ser Leu Pro His Pro Thr Leu Ala
                245                 250                 255

Glu Gln Leu Asp Phe Trp Arg Pro Val Leu Glu Ala Ser Ser Ala Ser
            260                 265                 270

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

Val Trp Ser Pro Ile Thr Glu Gly Glu Val Ile Asn Ile Arg Leu Pro
    290                 295                 300

Pro Ser Ser Ala Pro Gly Leu Asp Gly Leu Thr Val Asn Arg Trp Phe
305                 310                 315                 320

Ala Glu Val Pro Ala Ile Leu Arg Ala Thr Ile Leu Asn Ile Phe Met
                325                 330                 335

Ala Thr Gly Arg Val Pro Pro Arg Phe Ser Gly Ser Arg Thr Val Leu
```

```
            340                 345                 350

Ile Pro Lys Ser Leu Asp Leu Met Asp Pro Ser Cys Tyr Arg Pro Ile
        355                 360                 365

Ser Val Ser Ser Val Val Leu Arg His Phe His Lys Ile Leu Ala Arg
    370                 375                 380

Arg Leu Ala Ala Phe Asn Leu Leu Asp Thr Arg Gln Arg Ala Phe Ile
385                 390                 395                 400

Ala Ala Asp Gly Cys Ala Glu Asn Ile Ala Met Leu Ser Ala Leu Leu
                405                 410                 415

Phe Asp Ala Arg Ala Asn Leu Arg Gln Leu His Val Leu Thr Leu Asp
            420                 425                 430

Val Arg Lys Ala Phe Asp Thr Val Ser His Asp Ala Ile Arg Tyr Val
        435                 440                 445

Leu Arg Arg Asn Gly Ile Pro Ala Gly Met Val Glu Tyr Leu Ser Thr
    450                 455                 460

Leu Cys Arg Thr Ser Thr Ile Arg Leu Glu Val Gly Gly Ala Phe Ser
465                 470                 475                 480

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

Pro Leu Ile Phe Asn Leu Val Met Asn Glu Ile Leu Ala Val Val Pro
            500                 505                 510

Glu Gln Val Gly Tyr Asn Met Leu Gly His Asn Ile Asn Ala Leu Ala
        515                 520                 525

Phe Ala Asp Asp Leu Val Leu Val Ala Ala Thr Arg Glu Gly Ala Gln
    530                 535                 540

Arg Ser Leu Asp Arg Val Val Ala Ala Leu Ser Asp Phe Gly Leu Glu
```

545 550 555 560

Leu Ala Pro Ala Lys Cys Ala Ala Phe Ser Leu Val Pro Ser Gly Lys
565 570 575

Leu Lys Lys Met Lys Val Leu Ser Asp Pro Gln Phe Ala Ala Gly Gly
580 585 590

Cys Ala Val Pro Gln Leu Gly Val Leu Gln Thr Met Arg Tyr Leu Gly
595 600 605

Val Trp Phe Ala Asp Ala Gly Pro Val Asp Arg Glu Val Glu Leu Leu
610 615 620

Pro Leu Leu Asp Arg Ile Thr Arg Ala Pro Leu Lys Pro Gln Gln Arg
625 630 635 640

Leu Lys Ile Leu Lys Thr Phe Leu Ile Pro Arg Phe Ile His Ile Leu
645 650 655

Val Leu Gly Arg Thr Ser Tyr Gly Leu Leu Arg Lys Leu Asp Arg Gln
660 665 670

Ile Arg Ala Ala Val Arg Arg Trp Leu Arg Leu Pro Glu Asp Ile Pro
675 680 685

Lys Ala Phe Phe His Ser Pro Ile Ala Ser Gly Gly Leu Gly Ile Leu
690 695 700

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

Leu Asp Lys Ser Gln Tyr Asp Ala Ala Arg Met Val Gly Ser Ser Ala
725 730 735

Trp Ala Val Arg Lys Arg Arg Trp Cys Gly Leu Ala Lys Arg Val Glu
740 745 750

Glu Asn Trp Pro Ala Glu Phe Tyr Gly Met Val Asp Gly Phe Glu Leu

```
        755                 760                 765

Arg Glu Ala Gly Asn Val Thr Ala Ser Thr Asn Trp Leu Asp Asp Pro
    770                 775                 780

Met Ile Arg Val Pro Ser Ser Glu Trp Leu Glu Tyr Val Lys Val Trp
785                 790                 795                 800

Ile Asn Ala Leu Pro Thr Arg Ile Arg Thr Thr Arg Gly Ser Arg Arg
                805                 810                 815

Leu Arg Glu Asp Val Ala Cys Arg Gly Gly Cys Gly Val Gln Glu Thr
            820                 825                 830

Ala Ala His Val Ile Gln Gln Cys Phe Arg Thr His Gly Gly Arg Ile
        835                 840                 845

Met Arg His Asp Ala Val Ala Ser Thr Leu Ala Gly Glu Leu Gln Arg
    850                 855                 860

Gly Gly Tyr Lys Val Arg Arg Glu His Val Phe Arg Thr Pro Val Gly
865                 870                 875                 880

Val Arg Lys Pro Asp Ile Leu Ala Ser Lys Gly Glu Arg Gly Tyr Val
                885                 890                 895

Leu Asp Val Gln Ile Ile Ser Gly Ala Arg Pro Leu Thr Glu Gly His
            900                 905                 910

Lys Arg Lys Arg Asn Tyr Tyr Ala Gly Asn Ala Glu Leu Leu Ala Lys
        915                 920                 925

Ala Arg Glu Ser Ala Thr Thr Leu Thr Ser Leu Gly Val Ser Lys Ala
    930                 935                 940

Val Leu Arg Gly Ile Thr Thr Arg Val Leu Lys Gly Ser Phe Met Asn
945                 950                 955                 960

Phe Ala Arg Gly Pro Ala Leu Thr Arg Gln Ala Ser Val Thr Ser Ala
```

```
                965                 970                 975

Glu Ala Ser Ser Ala His Ile Cys Asp Phe Pro Gly Cys Gly Arg Thr
            980                 985                 990

Phe Ser Thr Lys Thr Gly Arg Gly  Val His Gln Arg Arg  Ala His Pro
        995                 1000                1005

Asp Trp  Phe Asp Gly Gln Gln  Thr Thr Ala Met Val  Lys Ala Arg
    1010                1015                1020

Trp Ser  Glu Glu Glu Thr Leu  Leu Leu Ala Arg Lys  Glu Val Glu
    1025                1030                1035

Leu Val  Arg Gln Gly Glu Arg  Phe Ile Asn Gln Ala  Leu Phe Glu
    1040                1045                1050

Val Phe  Pro Glu Arg Ser Leu  Glu Ser Ile Lys Ser  Lys Arg Lys
    1055                1060                1065

Gln Pro  Ala Tyr Arg Asp Ala  Val Gly Thr Ile Met  Asp Ser Ile
    1070                1075                1080

Ala Arg  Glu Asp Asn Ala Gly  Val Pro Leu Asn Val  Pro Val Pro
    1085                1090                1095

Asp Ser  Ala Asn Leu Lys Arg  Asn Ile Glu Glu His  Leu Ser Ala
    1100                1105                1110

Leu Pro  Ala Pro Ser Ser Ser  Ala Phe Met Ser Ala  Arg Leu Ala
    1115                1120                1125

Gly Ile  Cys Asp Ser Leu Thr  Arg Lys Ser Gln Val  Ala Val Val
    1130                1135                1140

Glu Glu  Leu Ser Leu Tyr Leu  Arg Ser Val Phe Pro  Ile Lys Pro
    1145                1150                1155

Arg Gly  Ala Arg Pro Ser Gly  Asn Val Val Thr Asp  Ala Pro Ser
```

```
    1160                1165                1170

Lys Arg  Gln Glu Arg Arg Ala  Glu Tyr Ala Arg Ala  Gln Asp Leu
    1175                1180                1185

Trp Arg  Lys Asn Arg Cys Lys  Cys Leu Arg Met Leu  Leu Asp Asp
    1190                1195                1200

Ile Thr  Gly Val Asn Val Pro  Pro Lys Glu Thr Met  Val Pro Phe
    1205                1210                1215

Trp Glu  Thr Ile Met Thr Gly  Asn Phe Pro Thr Ser  Pro Gly Cys
    1220                1225                1230

Asp Val  Leu Ala Pro Ala Thr  Asn Asp Leu Trp Leu  Pro Ile Thr
    1235                1240                1245

Ala Leu  Glu Ile Arg Arg Ala  Leu Pro Ala Gly Thr  Thr Ser Ala
    1250                1255                1260

Gly Pro  Asp Gly Leu Thr Ala  Arg Phe Leu Arg Arg  Val Pro Met
    1265                1270                1275

Glu Ile  Leu Glu Arg Ile Leu  Asn Val Ile Leu Trp  Cys Glu Lys
    1280                1285                1290

Ala Pro  Thr His Leu Met Glu  Ser Ala Thr Thr Leu  Ile Pro Lys
    1295                1300                1305

Lys Ser  Asn Ala His Thr Pro  Ser Asp Phe Arg Pro  Ile Thr Val
    1310                1315                1320

Ser Ser  Val Leu Leu Arg Thr  Leu His Lys Val Leu  Ala Thr Arg
    1325                1330                1335

Met Ala  Arg Leu Val Gln Ile  Asp Gln Arg Gln Arg  Ala Phe Arg
    1340                1345                1350

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

```
    1355                1360                1365

Leu Arg  Tyr His His Arg His  His Lys Pro Leu Phe  Met Ala Ser
    1370                1375                1380

Leu Asp  Ile Ala Lys Ala Phe  Asp Ser Val Ser His  Lys Thr Ile
    1385                1390                1395

Glu Glu  Thr Leu Ala Ile Met  Gly Ile Pro Ser Pro  Met Arg Ala
    1400                1405                1410

Tyr Ile  Met Asp Val Tyr Gln  Arg Ser Ser Thr Val  Leu Cys Cys
    1415                1420                1425

Gly Ser  Trp Thr Ser Arg Lys  Ile Gln Pro Thr Cys  Gly Val Lys
    1430                1435                1440

Gln Gly  Asp Pro Met Ser Pro  Ile Ile Phe Asn Met  Ile Met Asp
    1445                1450                1455

Arg Met  Leu Lys Gln Leu Pro  Gly Asp Ile Gly Thr  Arg Ile Gly
    1460                1465                1470

Gly Ser  Thr Ile Asn Ala Ala  Ala Phe Ala Asp Asp  Met Leu Leu
    1475                1480                1485

Phe Ala  Ser Thr Pro Leu Gly  Leu Gln Lys Leu Leu  Asp Lys Ser
    1490                1495                1500

Thr Asp  Phe Leu Arg Lys Cys  Gly Leu Gln Val Asn  Thr Ser Lys
    1505                1510                1515

Tyr Met  Thr Ile Ser Leu Arg  Asn Val Pro Arg Glu  Lys Lys Thr
    1520                1525                1530

Val Val  Asp Arg Glu Thr Val  Phe Leu Cys Gln Asp  Lys Val Leu
    1535                1540                1545

Pro Ala  Leu Lys Arg Thr Asp  Glu Trp Asn Tyr Leu  Gly Ile Pro
```

```
    1550                1555                1560

Phe Thr  Pro Lys Gly Arg Met  Lys Leu Asn Ile Ala  Gln Lys Leu
    1565                1570                1575

Gln Ser  Ser Leu Asp Lys Leu  Thr Lys Thr Pro Leu  Lys Pro Gln
    1580                1585                1590

Gln Arg  Leu Phe Gly Leu Arg  Val Met Val Ile Pro  Gly Leu Phe
    1595                1600                1605

His Gln  Ala Glu Leu Gly Asn  Ile Asn Ile Ser Val  Leu Arg Lys
    1610                1615                1620

Cys Asp  Arg Leu Val Arg Cys  Arg Val Arg Gln Trp  Leu Ser Leu
    1625                1630                1635

Pro Ser  Asp Val Pro Asn Ala  Tyr Ile His Ala Asn  Val Lys Asp
    1640                1645                1650

Gly Gly  Leu Gly Ile Thr Ala  Leu Arg Trp Thr His  Thr Gly Arg
    1655                1660                1665

Ile Lys  Arg His Asp Ala Ile  Val Ser Phe Val Ser  Arg Leu Leu
    1670                1675                1680

Glu Val  Gln Gly Tyr Asp Val  Ser Val Glu Pro Arg  Ile Lys Ser
    1685                1690                1695

Asp His  Gly Leu Lys Lys Pro  Asp Ile Val Ala Lys  Leu Gly Val
    1700                1705                1710

Thr Ala  Ile Val Leu Asp Ala  Gln Val Val Asn Asp  Gln Ile Ser
    1715                1720                1725

Leu Asp  Glu Ala His Gln Arg  Lys Ile Asp Tyr Tyr  Gln Asp Ile
    1730                1735                1740

Glu Gly  Asn Val Lys Glu Thr  Phe Arg Val Gln Asn  Val Ile Tyr
```

1745 1750 1755

Ser Ser Ile Thr Leu Ser Trp Arg Gly Leu Trp Ser Gln Lys Ser
1760 1765 1770

Val Asn Ser Leu Thr Asp Leu Gly Ile Ile Lys Lys Lys His Ile
1775 1780 1785

Lys Ile Ile Ser Thr Arg Ala Ile Ile Gly Gly Leu Thr Ser Phe
1790 1795 1800

His Ile Phe Asn Lys Ala Thr Tyr Val Gln Gly Arg Ala Gly
1805 1810 1815

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<212> PRT
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Met Ser Asn Tyr Asn Glu Thr Asn Thr Ser Gly Gly Asp Asn Pro Arg
1 5 10 15

Met Ala Thr Gln Thr Thr Gly Ser Leu Ser Ser Gly Pro Ile Asn Gln
20 25 30

His Thr Cys Glu Leu Cys Cys Arg Thr Phe Gly Thr Arg Ala Gly Leu
35 40 45

Gly Gln His Val Arg Lys Thr His Pro Ile Glu Ser Asn Gln Ser Ile
50 55 60

Asn Val Glu Arg Lys Lys Arg Arg Trp Ser Pro Glu Glu Ile Arg Arg
65 70 75 80

Met Ala Asn Met Glu Ala Gln Ala Thr Ile Asn Asn Ile Lys His Leu
85 90 95

Thr Gln Tyr Leu Ala Thr Tyr Leu Pro Gln Arg Thr Leu Asn Ala Ile
100 105 110

```
Lys Gly Arg Arg Arg Asp Ala Glu Tyr Lys Glu Leu Val Thr Gly Ile
        115                 120                 125

Ile Ala Asn Leu Arg Ser Asn Ser Ser Thr Gln Gln Thr Asn Gln Val
    130                 135                 140

Cys Asn Glu Ser Glu Met Ser Gln Arg Ser Lys Ile Leu Gln Ser Ile
145                 150                 155                 160

Arg Glu Ser Val Arg Asp Leu Arg Ser Arg Arg Asn Lys Tyr Ala Lys
                165                 170                 175

Ala Leu Gln Glu Leu Gly Glu Ala Ala Leu Cys Gly Lys Met Leu Asn
            180                 185                 190

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

Cys Pro Lys Gly Pro Arg Phe Arg Lys Thr Ala Thr His Ser Gly Thr
    210                 215                 220

Asn Lys Gln Gln Arg Gln Gln Arg Tyr Ala Arg Val Gln Lys Leu Tyr
225                 230                 235                 240

Lys Met Asn Arg Lys Val Ala Ala Lys Met Val Leu Glu Glu Thr Asp
                245                 250                 255

Lys Ile Gln Ile Lys Leu Pro Asp His Asp Pro Met Phe Lys Phe Trp
            260                 265                 270

Glu Ser Glu Phe Lys Glu Gly Glu Gly Met Pro Glu Arg Met Pro Lys
        275                 280                 285

Asp Leu Lys Glu Ser Pro Asp Leu Lys Ala Ile Trp Asp Pro Val Thr
    290                 295                 300

Glu Glu Glu Val Arg Lys Ala Lys Val Ala Asn Asn Thr Ala Ala Gly
305                 310                 315                 320
```

```
Pro Asp Gly Ile Gln Pro Lys Ser Trp Asn Arg Ile Ser Leu Lys Tyr
                325                 330                 335

Lys Thr Leu Ile Tyr Asn Leu Leu Leu Tyr Tyr Glu Lys Val Pro His
            340                 345                 350

Lys Leu Lys Val Ser Arg Thr Val Phe Ile Pro Lys Lys Lys Asp Gly
        355                 360                 365

Ser Ser Asp Pro Gly Glu Phe Arg Pro Leu Thr Ile Cys Ser Val Val
    370                 375                 380

Leu Arg Gly Phe Asn Lys Ile Leu Val Gln Arg Leu Val Ser Leu Tyr
385                 390                 395                 400

Lys Tyr Asp Glu Arg Gln Thr Ala Tyr Leu Pro Ile Asp Gly Val Gly
                405                 410                 415

Thr Asn Ile His Val Leu Ala Ala Ile Leu Asn Asp Ser Asn Thr Lys
            420                 425                 430

Leu Ser Glu Leu His Val Ala Leu Leu Asp Ile Thr Lys Ala Phe Asn
        435                 440                 445

Arg Leu His His Thr Ser Ile Ile Lys Ser Leu Val Gly Lys Gly Phe
    450                 455                 460

Pro Tyr Gly Phe Ile Thr Phe Ile Arg Arg Met Tyr Thr Gly Leu Gln
465                 470                 475                 480

Thr Met Met Gln Phe Glu Gly His Cys Lys Met Thr Gln Val Asn Arg
                485                 490                 495

Gly Val Tyr Gln Gly Asp Pro Leu Ser Gly Pro Ile Phe Leu Leu Ala
            500                 505                 510

Ile Glu Lys Gly Leu Gln Ala Leu Asp Lys Glu Val Gly Tyr Asp Ile
        515                 520                 525
```

```
Gly Asp Val Arg Val Asn Ala Gly Ala Tyr Ala Asp Asp Thr Asp Leu
    530                 535                 540

Val Ala Gly Thr Arg Leu Gly Leu Gln Asp Asn Ile Asn Arg Phe Ser
545                 550                 555                 560

Ser Thr Ile Lys Gln Val Gly Leu Glu Val Asn Pro Arg Lys Ser Met
                565                 570                 575

Thr Leu Ser Leu Val Pro Ser Gly Lys Glu Lys Lys Met Lys Val Glu
            580                 585                 590

Thr Gly Lys Pro Phe Arg Ala Asn Asp Val Pro Leu Lys Glu Leu Ser
        595                 600                 605

Ile Asn Asp Phe Trp Arg Tyr Leu Gly Ile Ser Tyr Thr Asn Glu Gly
    610                 615                 620

Pro Glu Arg Leu Ser Leu Thr Ile Glu Gln Asp Leu Glu Arg Leu Thr
625                 630                 635                 640

Lys Ala Pro Leu Lys Pro Gln Gln Arg Ile His Met Leu Asn Ala Tyr
                645                 650                 655

Val Ile Pro Lys Tyr Gln Asp Lys Leu Val Leu Ser Lys Thr Thr Ala
            660                 665                 670

Lys Gly Leu Lys Arg Thr Asp Arg Gln Ile Arg Gln Tyr Val Arg Arg
        675                 680                 685

Trp Leu Lys Leu Pro His Asp Val Pro Ile Ala Tyr Leu His Ala Pro
    690                 695                 700

Val Lys Ser Gly Gly Leu Asn Ile Pro Cys Leu Gln Tyr Trp Ile Pro
705                 710                 715                 720

Leu Leu Arg Val Asn Arg Val Asn Lys Ile Thr Glu Ser Gln Arg Ser
                725                 730                 735
```

```
Val Leu Ala Ala Val Gly Lys Thr Ala Leu Leu Thr Ser Thr Val Tyr
            740                 745                 750

Lys Cys Asn Gln Ser Leu Ala Thr Leu Gly Gly Asn Pro Thr Met Leu
        755                 760                 765

Ala Tyr Arg Thr Tyr Trp Glu Lys Glu Leu Tyr Ala Lys Val Asp Gly
    770                 775                 780

Lys Asp Leu Gln Asn Ala Arg Asp Asp Lys Ala Ser Thr Arg Trp Asn
785                 790                 795                 800

Gly Met Leu His Ser Asp Ile Ser Gly Glu Asp Tyr Leu Asn Tyr His
                805                 810                 815

Lys Leu Arg Thr Asn Ser Val Pro Thr Lys Val Arg Thr Ala Arg Gly
            820                 825                 830

Arg Pro Gln Lys Glu Thr Ser Cys Arg Gly Gly Cys Lys Ser Thr Glu
        835                 840                 845

Thr Leu Gln His Val Val Gln Gln Cys His Arg Thr His Gly Gly Arg
    850                 855                 860

Thr Leu Arg His Asp Arg Ile Val Gly Leu Leu Gln His Glu Leu Arg
865                 870                 875                 880

Arg Asp Tyr Asn Val Leu Ala Lys Gln Glu Leu Lys Thr Gly Ile Gly
                885                 890                 895

Leu Arg Lys Pro Asp Leu Val Leu Ile Lys Asp Asp Thr Ala His Ile
            900                 905                 910

Val Asp Val Gln Val Ala Arg Cys Ser Lys Leu Asn Glu Ser His Val
        915                 920                 925

Arg Lys Arg Ser Lys Tyr Asp Lys Lys Glu Ile Glu Val Glu Val Lys
    930                 935                 940
```

```
Ser Arg Tyr Arg Val Ser Lys Val Met Tyr Glu Ala Cys Thr Ile Ser
945                 950                 955                 960


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


Gly Val Ser Glu Tyr Cys Leu Phe Lys Ile Val Thr Ser Thr Leu Arg
            980                 985                 990


Gly Thr Trp Leu Cys Trp Lys Arg  Phe Asn Met Ile Thr  Ser Val Arg
        995                 1000                1005


Ser
```

<210> 7
<211> 1041
<212> PRT
<213> Eyprepocnemis plorans

<400> 7

```
Met Val Gly Pro Thr Thr Arg Ser Lys Lys Gly Thr Gly Pro Pro Thr
1               5                   10                  15


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


Gly Arg Ala Leu Leu Pro Ala Ser Cys Pro Leu Cys Gln Arg Ser Phe
        35                  40                  45


Thr Thr Val Asn Gly Leu Gly Gln His Arg Arg Arg Ala His Pro Glu
    50                  55                  60


Val Val Asn Ala Glu Ile Gln Thr Asp Arg Lys Lys Ala Arg Trp Ser
65                  70                  75                  80


Lys Glu Glu Leu Met Arg Leu Ala His Ala Glu Ala Arg Leu Val Ile
                85                  90                  95


Glu Gly Cys Arg Phe Leu Asn Gln Glu Leu Leu Lys Ser Phe Pro Asp
```

```
            100                 105                 110

Arg Thr Leu Asp Ser Ile Lys Gly Gln Arg Lys Gly Lys Ala Tyr Arg
        115                 120                 125

Glu Ser Val Ala Ser Phe Val Ser Gln Leu Arg Ser Ser Val Ala Ser
    130                 135                 140

Ala Gly Pro Ser Gly Ala Ser Pro Val Ala Glu Glu Pro Leu Pro Gly
145                 150                 155                 160

Ser Pro Ser Val Ser Gln Asp Asp Glu Val Asp Ala Ala Ile Trp Ser
                165                 170                 175

Ala Leu Ala Asp Leu Pro Ser Ser Gly Ser Arg Phe Lys Leu Val Asp
            180                 185                 190

Asp Ile Val Ala Leu Gly Pro Asn Thr Ser Arg Asp Ile Val Arg Ser
        195                 200                 205

Met Leu Pro Ser Ala Leu Asp Ala Val Gly Ser Lys Glu Pro Ala Ala
    210                 215                 220

His Pro Pro Leu Pro Phe Gly Ala Arg Arg Pro Pro Asp Lys Lys Arg
225                 230                 235                 240

Ala Arg Arg Arg Trp Glu Tyr Ala Ala Val Gln Arg Ala Phe Arg Lys
                245                 250                 255

Asn Ala Ala Arg Cys Val Asn Gly Leu Leu Asp Gly Thr Leu Leu His
            260                 265                 270

Gln Pro Pro Ser Ile Pro Gly Leu Val Glu Phe Trp Lys Asp Leu Phe
        275                 280                 285

Thr Ala Pro Cys Ala Ser Ser Arg Pro Arg Ser Lys Glu Gly Leu Ser
    290                 295                 300

Pro Met Leu Leu Ala Ser Ser Gln Pro Val Ser Phe Arg Asp Leu Trp
```

305 310 315 320

Ala Pro Ile Thr Ser Glu Glu Ala Ala Ala Ala Leu Pro Pro Arg Asn
325 330 335

Ser Ala Ala Gly Pro Asp Ala Leu Thr Pro Ala Gln Leu Arg Arg Leu
340 345 350

Pro His Pro Val Phe Leu Lys Ile Leu Asn Leu Phe Leu Leu Ala Arg
355 360 365

Ser Leu Pro Ser Arg Leu Leu Arg Ala Arg Thr Thr Leu Leu Pro Lys
370 375 380

Lys Thr Ser Pro Ala Ser Pro Ala Asp Phe Arg Pro Ile Thr Val Cys
385 390 395 400

Ser Val Leu Ala Arg Ala Phe His Lys Val Leu Ala Gly Arg Leu Met
405 410 415

Arg Tyr Cys Val Leu Asp Gly Arg Gln Arg Ala Phe Ile Pro Gln Asp
420 425 430

Gly Met Leu His Asn Ser Phe Leu Leu Asp Leu Ala Met Ala His Ser
435 440 445

Arg Arg Thr Ala Cys Ser Leu Tyr Val Ala Ser Leu Asp Val Ser Lys
450 455 460

Ala Phe Asp Ser Leu Asp His Gly Ala Leu Ser Pro Val Leu Arg Ala
465 470 475 480

His Gly Leu Pro Val Glu Phe Val Glu Tyr Val Arg Gly Cys Tyr Gln
485 490 495

Ala Ser Thr Thr Val Ile Cys Gly Gly Gly Ser Ser Ser Asp Leu Val
500 505 510

Arg Pro Ser Lys Gly Val Arg Gln Gly Asp Pro Leu Ser Pro Ile Leu

```
        515                 520                 525

Phe Asn Leu Ser Ile Asp Leu Leu Leu Ser Arg Leu Pro Gly Tyr Ile
    530                 535                 540

Gly Ala Arg Ile Phe Ser Arg Arg Val Asn Ala Ala Ala Phe Ala Asp
545                 550                 555                 560

Asp Ile Leu Leu Phe Ala Glu Thr Lys Gly Gly Leu Gln Glu Leu Leu
                565                 570                 575

Ser Thr Ala Thr Ser Ala Leu Gly Asp Leu Gly Leu Glu Val Asn Pro
            580                 585                 590

Phe Lys Cys Phe Ser Leu Ala Leu Val Ala Ser Gly Arg Glu Lys Lys
        595                 600                 605

Val Lys Val Asp Asn Ser Val Ile Phe Arg Ala Gly Asn Lys Asn Ile
    610                 615                 620

Pro Ala Leu Ala Met Gly Asp Thr Phe Arg Tyr Leu Gly Leu Gln Phe
625                 630                 635                 640

Ser Thr Ser Gly Leu Ser Gln Phe His Pro Arg Gln Glu Val Gln Glu
                645                 650                 655

Gln Leu Asp Ile Ile Lys Arg Ala Pro Leu Lys Pro Gln Gln Arg Leu
            660                 665                 670

Phe Ala Leu Arg Ser Val Ile Leu Pro Gly Thr Tyr His Gly Leu Ala
        675                 680                 685

Leu Gly Arg Thr Arg Leu Gly Ala Leu Lys Ser Leu Asp Val Cys Val
    690                 695                 700

Arg Ala Ala Val Arg Ala Trp Leu Arg Leu Pro Asp Asp Thr Pro Ile
705                 710                 715                 720

Gly Tyr Phe His Ala Pro Val Ile Tyr Gly Gly Leu Gly Ile Pro Ala
```

```
                725                 730                 735

Thr Arg Trp Leu Gly Pro Leu Leu Arg Arg Arg Arg Leu Ala Ser Met
            740                 745                 750

Glu Gly Leu Gly Val Ile Val Asp Glu Pro Ser Gln Asp Ile Leu Lys
        755                 760                 765

Arg Glu Ile Cys Arg Leu Asp Asn Tyr Leu Lys Trp Asp Gly Asp Val
    770                 775                 780

Ile Lys Thr Ser Tyr Gln Leu Gly Arg Phe Trp Ala Leu Arg Leu His
785                 790                 795                 800

Ser Ser Val Asp Gly Ala Ala Leu Arg Arg Ser Ala Gln Thr Pro Gly
                805                 810                 815

Gln His Ser Trp Val Ser Asn Thr Arg Leu Met Leu Ser Gly Arg Asp
            820                 825                 830

Phe Leu Ala Cys Val Arg Ala Arg Ile Ser Ala Leu Pro Ser Arg Ala
        835                 840                 845

Arg Leu Leu Arg Gly Arg Glu Gly Asp Thr Arg Cys Arg Ala Gly Cys
    850                 855                 860

Asn Ala Ser Glu Thr Asn Asn His Val Ile Gln His Cys Trp Arg Ser
865                 870                 875                 880

His Glu Ala Arg Val Glu Arg His Asp Ala Val Ala Leu Tyr Met Val
                885                 890                 895

Arg Gly Leu Arg Arg Arg Gly Tyr Asp Val His Arg Glu Leu His Leu
            900                 905                 910

Arg Thr Ser Gln Gly Leu Lys Lys Pro Asp Ile Val Ala Val Ser Gly
        915                 920                 925

Thr Thr Ala Phe Val Ile Asp Ala Gln Val Ile Gly Asp His Leu Asp
```

930 935 940

Ala Asp Arg Cys His Arg Glu Lys Val Glu Val Tyr Asp Gln Gln Pro
945 950 955 960

Val His Thr Glu Ile Lys Arg Met Phe Pro Glu Val Gln Met Ile Thr
965 970 975

Thr Thr Ser Ala Thr Leu Asn Trp Arg Gly Val Trp Ser Pro Ala Ser
980 985 990

Ala Lys Ala Leu Ile Gly Ile Gly Phe Asn Ser Asn His Leu Ser Thr
995 1000 1005

Met Ala Thr Arg Ala Leu Leu Gly Ser Ile Met Ala Ala Arg Arg
1010 1015 1020

Phe Asp Ser Met Thr Ala Pro Arg Arg Arg Met Met Pro Arg Thr
1025 1030 1035

Gly Val Gly
1040

<210> 8
<211> 965
<212> PRT
<213> Nuttalliella namaqua

<400> 8
Gln Thr Ile Arg Gly Leu Gly Gln His Ile Arg Ile Lys His Pro Thr
1 5 10 15

Val Ser Asn Ala Lys Ile Ser Val Ala Thr Ser Lys Val Arg Trp Thr
20 25 30

Asp Glu Glu Ile His Leu Leu Ala Lys Glu Glu Ala Arg Leu Ile Lys
35 40 45

Leu Gly Lys Lys Tyr Leu Asn Gln Glu Leu Gln Ser Tyr Met Pro His
50 55 60

```
Arg Ser Leu Glu Ala Ile Lys Gly Gln Arg Lys Ser Glu Ile Tyr Lys
65                  70                  75                  80

Glu Arg Val Lys His Leu Val Glu Thr Lys Leu Leu Glu Val Glu Pro
                85                  90                  95

Thr Met Ser Glu Val Leu Glu Pro Thr Glu Ser Gln Lys Lys Asp Ser
            100                 105                 110

Phe Gln Lys Glu Ile Glu Lys Ile Ile Thr Asn Thr Pro Pro Arg Lys
        115                 120                 125

Phe Gln Gly Glu Arg Leu Trp Glu Ile Ala Arg Lys Ala Ile Arg Gly
    130                 135                 140

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

Val Ala Thr Lys Pro His Pro Gln Ala Lys Gly Lys Ser Tyr Thr Thr
                165                 170                 175

Ala Pro Pro Ser Ser Arg Arg Lys Arg Arg Arg Arg Leu Tyr Gly Arg
            180                 185                 190

Met Gln Glu Met Met Arg Arg Lys Pro Ala Asp Cys Ala Lys Ile Val
        195                 200                 205

Leu Asp Gly Glu Arg Val Ala Ser Lys Ile Asn Ser Glu Glu Phe Phe
    210                 215                 220

Asp Tyr Trp Glu Lys Leu Thr Thr Lys Glu Pro Ser Asn Trp Pro Leu
225                 230                 235                 240

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

Val Thr Leu Arg Glu Ile Lys Glu Asn Leu Pro Ser Pro His Ser Ala
            260                 265                 270
```

```
Pro Gly Pro Asp Gly Cys Ser Ala Arg Leu Leu Arg Ala Val Pro Pro
        275                 280                 285

Leu Thr Leu Gln Leu Val Leu Asp Leu Leu Leu Phe Val Arg Arg Pro
    290                 295                 300

Leu Ala Ser Leu Lys Gly Ala Arg Thr Ile Phe Ile Ala Lys Lys Asp
305                 310                 315                 320

Ala Ala Ser His Pro Lys Asp Phe Arg Pro Ile Ser Ile Ser Pro Ile
                325                 330                 335

Leu Leu Arg Phe Leu His Arg Ile Leu Ala Arg Arg Leu Asn Arg Met
            340                 345                 350

Val Pro Ile Asp Lys Val Gln Arg Gly Phe Gln Pro Arg Asp Gly Cys
        355                 360                 365

Ala Glu Cys Ala Ile Leu Leu Thr Met Ala Ile Lys Glu Ser Arg Ser
    370                 375                 380

Lys Leu Lys Ser Leu Tyr Leu Ala Ser Val Asp Ile Ser Lys Ala Phe
385                 390                 395                 400

Asp Ser Val Thr Phe Glu Ala Leu Asp Ser Ala Leu Lys Arg Val Gly
                405                 410                 415

Leu Ser Glu Gly Phe Ile Gly Tyr Ile Arg Asp Leu Tyr Thr Ser Gly
            420                 425                 430

Asn Thr Leu Phe Gln Phe Asp Asn Gln Cys Arg Thr Val Val Pro Thr
        435                 440                 445

Asn Gly Val Arg Gln Gly Asp Pro Leu Ser Pro Phe Leu Phe Asn Ile
    450                 455                 460

Val Leu Asp Glu Phe Phe Ser Thr Met Glu Gln Glu Ile Val Phe Asp
465                 470                 475                 480
```

```
Lys Asn Gly Leu Asn Leu Ser Ala Leu Ala Tyr Ala Asp Asp Leu Val
                485                 490                 495

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

Tyr Ser Phe Phe Lys Lys Lys Gly Leu Glu Ile Asn Val Glu Lys Ser
        515                 520                 525

Phe Thr Leu Ser Leu Gln Ala Ala Gly Lys Glu Lys Lys Ile Lys Val
    530                 535                 540

Arg Glu Asp Met Arg Phe Asn Val Ala Gly Met Val Leu Pro Ala Leu
545                 550                 555                 560

Asp Ile Asn Ser Val Phe Gly Tyr Leu Gly Val Ser Phe Ser Pro Leu
                565                 570                 575

Gly Arg Pro Ser Glu Thr Trp Glu Glu Leu Lys Asp Tyr Leu Asp Arg
            580                 585                 590

Ile Ser Ser Ala Pro Leu Lys Pro Gln Gln Arg Leu Tyr Ile Leu Arg
        595                 600                 605

Gly Phe Leu Val Pro Arg Leu Ile Tyr Arg Leu Val Leu Gly Arg Trp
    610                 615                 620

Thr Ala Gly Thr Leu Leu Lys Leu Asp Arg Gln Ile Arg Ala Ala Ile
625                 630                 635                 640

Arg Arg Trp Ile Gly Leu Pro His Asp Cys Pro Leu Gly Tyr Phe His
                645                 650                 655

Ala Lys Ile Gly Ser Gly Gly Leu Gly Ile Pro Ser Met Arg Thr Met
            660                 665                 670

Ile Pro Glu Leu Leu Leu Arg Arg Leu Thr Lys Leu Glu Met Asn Glu
        675                 680                 685
```

```
Thr Met Gly Thr Lys Glu Ile Pro Lys Cys Glu Ser Tyr Trp Tyr Tyr
    690                 695                 700

Val Lys Lys Met Glu Asp Leu Thr Lys Tyr Asp Gly His Lys Leu Asp
705                 710                 715                 720

Thr Lys Tyr Ala Cys Gln Arg Tyr Trp Ala Gln Lys Leu Tyr Lys Ser
                725                 730                 735

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

His Trp Ile Leu Asp His Thr Arg Trp Leu Pro Gly Tyr Glu Tyr Cys
        755                 760                 765

Lys Met Val Lys Phe Lys Val Asn Ala Met Pro Val Leu Thr Arg Thr
    770                 775                 780

Ser Arg Gly Leu Asp Arg Pro Arg Asn Cys Arg Gly Gly Cys Asp Gln
785                 790                 795                 800

Gln Glu Ser Leu Lys His Val Val Gln His Cys His Arg Thr His Gly
                805                 810                 815

Ala Arg Ile Lys Arg His Asp Asn Ile Val Asp Phe Ile Gly Lys Arg
            820                 825                 830

Leu Ala Ala Lys Gly Tyr Gly Val Leu Lys Glu Pro Arg Val Lys Thr
        835                 840                 845

Ser Thr Gly Ile Leu Lys Pro Asp Leu Val Val Thr Gly Asp Asp Arg
    850                 855                 860

Val Leu Ile Ile Asp Ala Gln Val Val Gly Ser Gly Gln Tyr Leu Thr
865                 870                 875                 880

Glu Asp His Leu Arg Lys Val Lys Lys Tyr Asn Ile Asp Glu Val Lys
                885                 890                 895
```

```
Asp Tyr Phe Lys Glu Pro Arg Lys Cys Val Ala Val Thr Ser Val Thr
            900                 905                 910

Val Ser Phe Arg Gly Val Trp Cys Ala Asn Ser Ala Lys Glu Leu Ile
        915                 920                 925

Glu Leu Gly Leu Thr Lys Asn Asp Ile Lys Val Val Ser Ala Ile Cys
    930                 935                 940

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

Val Leu Lys His Arg
                965
```

<210> 9
<211> 1031
<212> PRT
<213> Triops cancriformis

<400> 9

```
Met Ser Gln Lys Arg Arg Pro Glu Lys Ala Val Pro Asp Glu Gly Ala
1               5                   10                  15

Thr Ala His Asp Val Ala Gln Pro Asp Lys Ser Lys Cys Ser Val Cys
            20                  25                  30

Gly Glu Thr Phe Lys Gly Pro Ala Ser Val Thr Met His Met Val Lys
        35                  40                  45

Lys His Pro Val Glu Phe Asn Glu Leu Lys Met Ala Lys Lys Pro Val
    50                  55                  60

Pro Lys Lys Val Arg Trp Ser Glu Glu Glu Ile Phe Gln Leu Ala Arg
65                  70                  75                  80

Thr Glu Ala Glu Leu Thr Leu Gln Gly Val Arg Phe Ile Asn Val Glu
                85                  90                  95

Leu Gln Lys Ile Phe Pro Ala Arg Glu Ile Glu Gly Ile Lys Gly Gln
```

100 105 110

Arg Lys Leu Ala Lys Tyr Lys Glu Leu Val Lys Asp Gln Leu Asp Glu
115 120 125

Ile Gly Arg Ala Pro Asn Pro Pro Glu Gln Glu Ile Gly Glu Asp Val
130 135 140

Pro Ser Pro Phe Lys Ala Trp Leu Glu Leu Leu Leu Ala Leu Pro Lys
145 150 155 160

Thr Pro Asn Asp Phe Leu Glu His Lys Leu Asp Asn Ile Ile Val Gln
165 170 175

Ala Leu Lys Glu Asp Val Asn Ser Asp Gln Val Phe Asn Asp Leu Asn
180 185 190

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

Pro Gly Glu Ile Ile His Gly Asp Pro Ser Gly Ser Ala Lys Thr Ser
210 215 220

Val Thr Lys Ala Pro Lys Pro Ala Thr Val Ser Ser Ser Arg Lys Lys
225 230 235 240

Arg Arg Asp Ala Glu Phe Ala Arg Ile Gln Arg Leu Tyr Arg Lys Asn
245 250 255

Arg Thr Ser Cys Ile Asn Thr Ile Leu Asp Gly Asn Thr Arg Glu His
260 265 270

Glu Ala Pro Lys Asn Met Glu Gly Phe Trp Arg Glu Ile Phe Glu Arg
275 280 285

Glu Ser Pro Asp Asp Pro Asp Asp Pro Asp Ile Phe Leu Glu Glu Glu
290 295 300

Ala Ser Asp Ile Trp Lys Tyr Ile Ser Phe Tyr Glu Met Cys Asn Leu

305 310 315 320

Tyr Pro Pro Pro Ser Thr Ala Pro Gly Pro Asp Gly Phe Ser Ser Lys
325 330 335

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

Leu Leu His Leu Arg Asp Leu Pro Gln Ile Leu Lys Ser His Arg Thr
355 360 365

Val Leu Ile Pro Lys Thr Asp Leu Pro Thr Lys Pro Gly Asp Phe Arg
370 375 380

Pro Ile Thr Ile Ser Asn Ile Leu Val Arg His Leu Asn Lys Ile Leu
385 390 395 400

Ala Asn Arg Val Ser His Leu Ile Pro Ile Asn Glu Arg Gln Lys Ala
405 410 415

Phe Leu Pro Ile Asp Gly Cys Ala Glu Asn Ile Phe Thr Leu Asp Phe
420 425 430

Ile Leu His His Ala Arg Thr Lys Ile Lys Ser Leu Ser Met Ala Ile
435 440 445

Leu Asp Ile Ser Lys Ala Phe Asp Ser Val Ser His His Ser Ile Phe
450 455 460

Arg Ala Leu Arg Glu Ala Arg Cys Pro Ile Gly Phe Ile Lys Phe Ile
465 470 475 480

Glu Asn Cys Tyr Gly Gly Cys Phe Thr Lys Leu Phe Cys Gly Gly Val
485 490 495

Lys Tyr Pro Ser Glu Val Ser Met Asn Arg Gly Val Lys Gln Gly Asp
500 505 510

Pro Leu Ser Pro Val Leu Phe Asn Leu Val Ile Asp Gly Leu Ile Arg

```
        515                 520                 525

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

Ser Cys Ile Ala Tyr Ala Asp Asp Leu Ile Leu Ile Ala Thr Thr Arg
545                 550                 555                 560

Ala Gly Leu Lys Thr Leu Leu Asp Leu Thr Asn Ser Tyr Leu Ala Lys
                565                 570                 575

Arg Gly Leu Ser Leu Asn Pro Asp Lys Cys Ser Ala Leu Ser Ile Val
            580                 585                 590

Ala Ser Gly Lys Gln Lys Leu Val Tyr Ile Ala Ser Ser Glu His Phe
        595                 600                 605

Asp Leu Ala Gly Gln Lys Met Arg Asn Leu Asn Val Gly Asp Ser Trp
    610                 615                 620

Arg Tyr Leu Gly Ile Gln Phe Ser His Leu Gly Arg Ala Glu Lys Val
625                 630                 635                 640

Thr Pro Asp Leu Thr Cys Leu Ile Asn Arg Leu Gln Lys Ala Pro Leu
                645                 650                 655

Lys Leu Gln Gln Lys Leu Tyr Ala Leu Arg Ile Tyr Leu Ile Pro Arg
            660                 665                 670

Leu Ile His Gly Leu Thr Leu Ser Lys Thr Asn Leu Gly Glu Leu Lys
        675                 680                 685

Thr Leu Asp Lys Leu Ile Arg Lys Tyr Ile Arg Ala Trp Leu His Leu
    690                 695                 700

Pro Asp Asp Thr Pro Met Gly Tyr Phe Tyr Thr Pro Leu Lys Ala Gly
705                 710                 715                 720

Gly Leu Gly Leu Pro Ser Leu Arg Leu Val Ile Leu Asn Asn Arg Leu
```

```
                725                 730                 735

Glu Arg Ile Leu Arg Met Lys Ala Ser Gln Asp Ile Ile Val Arg Thr
            740                 745                 750

Ile Ala Glu Ser Glu Thr Leu Gly Val Glu Ile Arg Lys Leu His Asp
        755                 760                 765

Leu Leu Ser Ile Asp Gly Thr Ile Leu Asp Thr Ser Val Lys Ile His
    770                 775                 780

Ser Phe Trp Ala Glu Arg Leu Tyr Ser Ser Tyr Asp Gly Lys Cys Leu
785                 790                 795                 800

Cys Asn Ser Ala Asn Phe Pro Pro Gly Asn Lys Trp Ile Gly Glu Asp
                805                 810                 815

Ser Leu Asn Gln Arg Ser His Ile Phe Ala Asp Cys Leu Lys Leu Arg
            820                 825                 830

Ile Asn Ala Leu Pro Thr Arg Ser Arg Thr Ala Arg Gly Arg Pro Leu
        835                 840                 845

Lys Asp Lys Pro Cys Arg Ala Gly Cys Arg Asn Ser Asp Gly Val Lys
    850                 855                 860

Val Ile Glu Thr Leu Asn His Ile Thr Gln Val Cys Glu Arg Thr His
865                 870                 875                 880

Gly Ala Arg Val Lys Arg His Asp Arg Leu Val Asp Phe Ala Val Lys
                885                 890                 895

Gly Leu Gln Arg Pro His Arg Val Val Leu Lys Glu Pro His Tyr Lys
            900                 905                 910

Thr Val Asn Gly Val Arg Lys Pro Asp Ile Val Ile Lys Ile Pro Asp
        915                 920                 925

His Thr Tyr Ile Cys Asp Phe Gln Val Val Ser Asp Thr Ser Cys Leu
```

930 935 940

Glu Leu Glu Phe Arg Lys Lys Ala Leu Lys Tyr Ala Glu Asp Lys Gly
945 950 955 960

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

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

Ala Leu Arg Lys Leu Gly Met Pro Pro Arg Ser Ile Met Thr Leu Gln
995 1000 1005

Lys Ile Cys Met Glu Gly Ser Leu Glu Ile Trp Arg Ile Phe Asn
1010 1015 1020

Gln Thr Thr Ala Met Ala Arg Asn
1025 1030

<210> 10
<211> 1104
<212> PRT
<213> Ciona intestinalis

<400> 10
Met Gly Glu Trp Pro Trp Val Ser Trp Ser Leu Thr Val Leu Val Glu
1 5 10 15

Lys Trp Arg Pro Phe Thr Ile Leu Gln Pro Tyr Pro Met Pro Gly Gln
20 25 30

Leu Arg Val Asp Val Tyr Leu Pro Arg Lys Thr Ser Tyr Leu Met Asp
35 40 45

Lys Asn Ile Tyr Glu Asn Thr Thr Ser Pro Gly Gly Gly Pro Leu Cys
50 55 60

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

```
Ala Pro Ser Thr Asp Thr Ala Ser Asn Thr Leu Gly Glu Asn Val Asp
                85                  90                  95

Ala Ser Ala Thr Thr Ser Ser Ala Asn Pro Leu Ser Gln Glu Pro Gly
            100                 105                 110

Trp Cys Glu Ser Cys Ser Lys Leu Phe Lys Ser Gln Arg Gly Leu Arg
        115                 120                 125

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

Pro Leu Pro Arg Ser Lys Ala Arg Trp Ser Asp Glu Glu Met Val Ile
145                 150                 155                 160

Phe Ala Arg Glu Glu Ile Ala Asn Arg Lys Ile Arg Phe Ile Asn Gln
                165                 170                 175

His Leu His Lys Val Phe Pro His Arg Thr Leu Glu Ser Ile Lys Gly
            180                 185                 190

Leu Arg Gly Lys Asn Val Arg Tyr Ala Arg Ile Met Ala Asp Leu Glu
        195                 200                 205

Ala Glu Met Thr Ser Gln Pro Glu Ala Ala Thr Ser Leu Cys Thr Glu
    210                 215                 220

Thr Ser Glu Asn Leu Ala Ser Ser Asn Val Leu Pro Gln Thr Arg Gly
225                 230                 235                 240

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

Leu Gly Pro Leu Ser Gln Phe Glu Pro Gly Lys Pro Ser Ser Ser Thr
            260                 265                 270

Lys Glu Ala Ile Asn Thr Glu Tyr Asn Asp Trp Ile Ser Lys Trp Leu
        275                 280                 285
```

```
Pro Ser Gly Ala Ala His Arg Glu Arg Arg Ala Asn Pro Pro Ser Thr
    290                 295                 300

Lys Leu Asn Ala Arg Ala Thr Arg Arg Leu Gln Tyr Ser Arg Ile Gln
305                 310                 315                 320

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

Gly Ala Trp Lys Val Gln Ser Gly Glu Leu Asn Leu Lys Glu Val Gln
            340                 345                 350

Pro Phe Trp Glu Lys Met Phe Arg Lys Glu Ser Ala Lys Asp Arg Arg
        355                 360                 365

Lys Pro Lys Pro Thr Gly Glu Val Leu Trp Gly Leu Met Glu Pro Leu
    370                 375                 380

Thr Ile Ala Glu Val Gly Ser Thr Leu Lys Ser Thr Thr Pro Ser Ala
385                 390                 395                 400

Pro Gly Pro Asp Lys Leu Thr Leu Asp Gly Val Lys Arg Ile Pro Ile
                405                 410                 415

Ala Glu Leu Val Ser His Tyr Asn Leu Trp Leu Tyr Ala Gly Tyr Gln
            420                 425                 430

Pro Glu Gly Leu Arg Glu Gly Ile Thr Thr Leu Ile Pro Lys Ile Lys
        435                 440                 445

Gly Thr Arg Asp Pro Ala Lys Leu Arg Pro Ile Thr Val Ser Ser Phe
    450                 455                 460

Ile Cys Arg Ile Phe His Arg Cys Leu Ala Gln Arg Met Glu Thr Ser
465                 470                 475                 480

Leu Pro Leu Gly Glu Arg Gln Lys Ala Phe Arg Lys Val Asp Gly Ile
                485                 490                 495
```

```
Cys His Asn Ile Trp Ser Leu Arg Ser Leu Ile His Asn Ser Lys Asp
            500                 505                 510

Asn Leu Lys Glu Leu Asn Ile Thr Phe Leu Asp Val Arg Lys Ala Phe
        515                 520                 525

Asp Ser Ile Ser His Lys Ser Leu Gly Ile Ala Ala Ala Arg Leu Gly
    530                 535                 540

Leu Pro Pro Pro Leu Ile Thr Tyr Ile Ser Asn Leu Tyr Pro Asn Cys
545                 550                 555                 560

Ser Thr Lys Leu Lys Val Asn Gly Lys Ile Ser Lys Pro Ile Glu Val
                565                 570                 575

Arg Arg Gly Val Arg Gln Gly Asp Pro Leu Ser Pro Leu Leu Phe Asn
            580                 585                 590

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

Gln Ile Gly Glu Gln Arg Ile Asn His Leu Ala Phe Ala Asp Asp Ile
    610                 615                 620

Ile Leu Val Ser Ser Thr Lys Ile Gly Met Val Ser Ser Ile Asn Thr
625                 630                 635                 640

Leu Ser Arg His Leu Ala Lys Ser Gly Leu Glu Ile Ser Ala Gly Lys
                645                 650                 655

Glu Gly Lys Ser Ala Ser Met Ala Ile Val Val Asp Gly Lys Lys Lys
            660                 665                 670

Met Trp Thr Val Asp Pro Leu Pro Arg Phe Lys Val Asn Ser Gln Lys
        675                 680                 685

Ile Pro Ala Leu Ser Ile Thr Gln Gln Tyr Lys Tyr Leu Gly Ile Asn
    690                 695                 700
```

```
Ile Asp Ala Gln Gly Ala Arg Asn Asp Ala Ala Arg Ile Leu Thr Glu
705                 710                 715                 720


Gly Leu Ala Glu Leu Ser Arg Ala Pro Leu Lys Pro Gln Gln Arg Leu
                725                 730                 735


Tyr Leu Leu Arg Val His Leu Leu Pro Lys Leu Gln His Gly Leu Val
            740                 745                 750


Leu Ser Ser Cys Ala Lys Arg Ala Leu Thr Tyr Leu Asp Lys Ser Val
        755                 760                 765


Arg Ser Ala Ile Arg Arg Trp Leu Thr Leu Pro Lys Asp Thr Pro Thr
    770                 775                 780


Ala Phe Tyr His Ala Lys Ala Cys Asp Gly Gly Leu Gly Ile Thr Arg
785                 790                 795                 800


Leu Glu His Thr Ile Pro Ile Leu Lys Arg Asn Arg Met Met Lys Leu
                805                 810                 815


Thr Leu Ser Glu Asp Pro Val Ile Met Glu Leu Val Lys Leu Thr Tyr
            820                 825                 830


Phe Thr Asn Leu Leu His Lys Tyr Ser Asn Val Lys Leu Leu Asn Ser
        835                 840                 845


Trp Pro Val Thr Asp Lys Asp Ser Leu Ala Arg Ala Glu Ala Ser Met
    850                 855                 860


Leu His Thr Ser Val Asp Gly Arg Gly Leu Ser Asn Cys Ser Asp Val
865                 870                 875                 880


Pro Arg Gln Ser Asp Trp Val Thr Asn Gly Ala Ser Leu Leu Ser Gly
                885                 890                 895


Arg Asp Phe Ile Gly Ala Ile Lys Val Arg Gly Asn Leu Leu Pro Thr
            900                 905                 910
```

```
Lys Val Ser Ala Ala Arg Gly Arg Gln Arg Glu Ile Thr Cys Asp Cys
        915                 920                 925

Cys Arg Arg Pro Glu Ser Leu Gly His Ile Leu Gln Thr Cys Pro Arg
    930                 935                 940

Thr Trp Gly Pro Arg Ile Ser Arg His Asp Ser Leu Leu Lys Arg Val
945                 950                 955                 960

Arg Asn Gln Ala Cys Leu Lys Asn Trp Thr Pro Ile Ile Glu Pro Ser
                965                 970                 975

Ile Pro Thr Asn Ile Gly Leu Arg Arg Pro Asp Leu Val Leu Ala Lys
            980                 985                 990

Gly Asn Ile Ala Phe Leu Val Asp  Ala Thr Val Val Ala  Asp Asn Ala
        995                 1000                1005

Asn Met  Gln Leu Gln His Glu  Ala Lys Val Glu Lys  Tyr Asn Asn
    1010                1015                1020

Ser Asp  Ile Lys Glu Trp Ile  Lys Val His Cys Pro  Gly Val Asp
    1025                1030                1035

Glu Val  Arg Val Thr Ser Leu  Thr Ala Asn Trp Arg  Gly Cys Leu
    1040                1045                1050

Tyr Gly  Gly Ser Ala Ser Phe  Leu Thr Glu Asp Leu  Gly Leu Pro
    1055                1060                1065

Lys Ala  Glu Leu Ser Leu Leu  Ser Ala Lys Ile Asn  Glu Lys Gly
    1070                1075                1080

Tyr Tyr  Leu Trp Cys Ala His  Tyr Arg Gly Thr Ala  Arg Leu Trp
    1085                1090                1095

Asn Arg  Pro Leu Arg Ser
    1100
```

<210> 11
<211> 1046
<212> PRT
<213> Drosophila mercatorum

<400> 11
Phe Glu Arg Arg Thr Gly Pro Val Gly Tyr Leu Pro Ser Gly Ile Glu
1 5 10 15

Lys Leu Met Val Gln Met Phe Asn Asn Glu Pro Arg Ile Ala Glu Asn
20 25 30

Asn Ser Val Glu Tyr Thr Pro Thr Val Thr Arg Leu Gly Asp His Gln
35 40 45

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

Cys Glu Arg Ser Phe Arg Thr Lys Ile Gly Leu Gly Val His Met Arg
65 70 75 80

His Arg His Lys Asp Glu Leu Asp Thr Ala Arg Arg Arg Val Asp Val
85 90 95

Lys Ala Arg Trp Asn Glu Glu Glu Leu Ser Met Met Ala Arg Lys Glu
100 105 110

Leu Glu Leu Thr Ala Asn Gly Glu Arg Phe Ile Asn Lys Lys Leu Ala
115 120 125

Glu Ile Phe Thr Asn Arg Ser Val Asp Ala Ile Lys Lys Cys Arg Gln
130 135 140

Arg Asp Asn Tyr Lys Ala Lys Ile Glu Gln Leu Gln Gly Gln Ala Ala
145 150 155 160

Leu Ile Ser Glu Ala Asn Glu Pro Pro Thr Thr Gln Arg Arg Pro Ser
165 170 175

Leu Ser Glu Leu Glu Val Thr Pro Ser Ser Ser His Ser Val Pro Ile

```
            180                 185                 190

Ala Pro Pro Pro Ile His Ser Asp Asp Ile Leu Leu Gln Glu Leu Gln
        195                 200                 205

Gly Met Ser Pro Val Ala Val Arg Arg Ser Trp Arg Val Glu Val Leu
    210                 215                 220

Gln Ser Ile Ile Asp Arg Ala His Ile Ser Gly Lys Glu Ala Thr Leu
225                 230                 235                 240

Gln Cys Leu Ser Asn Tyr Leu Leu Glu Ile Phe Pro Asn Arg Asn Asp
                245                 250                 255

Arg Pro Ser Ser Ala Thr Val Pro Ala Arg Arg Pro Arg Asn Arg Arg
            260                 265                 270

Ile Ser Arg Arg Gln Gln Tyr Ala Arg Cys Ile Lys Ser Leu Leu Asp
        275                 280                 285

Gly Thr Asp Glu Ser Ala Leu Pro Asn Gln Ser Ile Met Glu Pro Tyr
    290                 295                 300

Trp Arg Gln Val Met Thr Gln Pro Ser Pro Ser Leu Cys Ser Asn Thr
305                 310                 315                 320

Val Pro Arg Lys Gly Asn Met Gln Glu Gly Val Trp Ser Pro Ile Thr
                325                 330                 335

Ser Arg Asp Leu Gln Val His Lys Val Pro Leu Thr Ser Ser Pro Gly
            340                 345                 350

Pro Asp Gly Ile Thr Ser Gln Thr Ala Arg Ser Ile Pro Ile Gly Ile
        355                 360                 365

Met Leu Arg Ile Val Asn Leu Ile Leu Trp Cys Gly Asp Leu Pro Val
    370                 375                 380

Pro Phe Arg Met Ala Arg Thr Ile Phe Ile Pro Lys Thr Val Arg Ala
```

```
385                 390                 395                 400

Asn Arg Pro Gln Asp Phe Arg Pro Ile Ser Val Pro Ser Ile Val Val
                405                 410                 415

Arg Gln Leu Asn Ala Ile Leu Ala Ser Arg Leu Thr Ala Ala Val Ser
            420                 425                 430

Trp Asp Pro Arg Gln Arg Gly Phe Leu Pro Thr Asp Gly Cys Ala Asp
        435                 440                 445

Asn Ala Thr Ile Val Asp Leu Val Leu Arg Asp His His Lys Arg Tyr
    450                 455                 460

Ala Ser Cys Tyr Ile Ala Thr Leu Asp Val Ser Lys Ala Phe Asp Ser
465                 470                 475                 480

Val Ala His Asp Ala Val Phe Asn Thr Val Thr Ala Tyr Gly Ala Pro
                485                 490                 495

Lys Ser Phe Val Asp Tyr Val Arg Arg Trp Tyr Ser Gly Gly Gly Thr
            500                 505                 510

Tyr Phe Asn Gly Gly Asp Trp Arg Ser Glu Glu Phe Val Pro Ala Arg
        515                 520                 525

Gly Val Lys Gln Gly Asp Pro Leu Ser Pro Val Leu Phe Asn Leu Ile
    530                 535                 540

Ile Asp Arg Leu Leu Arg Ser Leu Pro Lys Asp Ile Gly Val His Val
545                 550                 555                 560

Gly Asn Ala Lys Val Asn Ala Cys Ala Phe Ala Asp Asp Leu Met Leu
                565                 570                 575

Phe Ala Ser Thr Pro Lys Gly Leu Gln Glu Leu Leu Asn Thr Thr Val
            580                 585                 590

Lys Phe Leu Ser Ser Val Gly Leu Thr Leu Asn Ala Asp Lys Cys Phe
```

595 600 605

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

Gln Arg Thr Phe Cys Ile Gly Arg Ala Arg Val Gln Leu Lys Arg Ser
625 630 635 640

Glu Glu Trp Lys Tyr Leu Gly Ile His Phe Thr Ala Asp Gly Arg Ala
645 650 655

Arg Tyr Asn Pro Ser Glu Asp Ile Gly Pro Lys Leu Glu Arg Leu Met
660 665 670

Gln Ser Pro Leu Lys Pro Gln Gln Lys Leu Phe Ala Leu Arg Thr Val
675 680 685

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

Gly Val Leu Arg Lys Cys Asp Lys Leu Val Arg Ser Phe Ala Arg Lys
705 710 715 720

Leu Leu Gly Leu Pro Leu Asp Val Ser Val Ala Phe Tyr His Ala Pro
725 730 735

His Ser Cys Gly Gly Leu Gly Ile Pro Ser Val Arg Trp Ile Ala Pro
740 745 750

Met Leu Arg Thr Lys Arg Leu Ala Gly Ile Asn Trp Pro His Leu Glu
755 760 765

Gln Ser Glu Val Ala Ser Ala Phe Leu Ser Glu Glu Leu Arg Arg Ala
770 775 780

Arg Asp Arg Ala Lys Ala Gly Val Asn Glu Leu Leu Ser Gln Pro Lys
785 790 795 800

Ile Asp Thr Tyr Trp Ala Asp Arg Leu Tyr Thr Ser Val Asp Gly Asn

```
                805                 810                 815

Gly Leu Arg Glu Ala Arg Arg Tyr Ala Pro Gln His Gly Trp Val Ser
            820                 825                 830

Gln Pro Thr Arg Leu Met Ser Gly Lys Ala Tyr Arg Thr Gly Ile Gln
        835                 840                 845

Leu Arg Ile Asn Ala Leu Pro Thr Arg Ser Arg Thr Thr Arg Gly Arg
    850                 855                 860

His Glu Met Asn Arg Gln Cys Arg Ala Gly Cys Asp Ala Pro Ser His
865                 870                 875                 880

Asn His Val Leu Gln Arg Cys His Arg Thr His Gly Ser Arg Val Ser
                885                 890                 895

Arg His Asn Gly Val Val Ser Tyr Leu Lys Lys Gly Leu Glu Thr Arg
            900                 905                 910

Gly Tyr Thr Val Tyr Ser Glu Gln Ser Leu His Gly Gln Asn Arg Val
        915                 920                 925

Tyr Lys Pro Asp Ile Val Ala Phe Arg His Asp Ser Thr Ile Val Val
    930                 935                 940

Asp Ala Gln Val Val Thr Asp Gly Leu Asp Leu Asp Arg Ala His Gln
945                 950                 955                 960

Ser Lys Val Glu Ile Tyr Asn Arg Gln Asp Leu Leu Thr Thr Leu Arg
                965                 970                 975

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

Asn Trp Arg Gly Ile Trp Ser Phe  Gln Ser Ile Thr Arg  Leu Arg Thr
        995                 1000                1005

Leu Gly  Ile Leu Thr Ala Gly  Asp Ser Asn Val Ile  Ser Ser Arg
```

1010 1015 1020

Val Val Ser Gly Arg Val Tyr Ser Phe Lys Thr Phe Met Phe His
1025 1030 1035

Ala Gly Phe His Arg Gly Met Ala
1040 1045

<210> 12
<211> 1033
<212> PRT
<213> Forficula auricularia

<400> 12
Leu Gly Pro Arg Ser Ile Asn Gln Pro Arg Ile Arg Thr Asp Ser Pro
1 5 10 15

Asn Ile Val Arg Pro Ser Gly Ser Thr Thr Thr Met Gln Arg Cys Thr
20 25 30

Thr Ser Asp Leu Thr Phe Ser Gln Cys Arg Phe Pro His Cys Lys Phe
35 40 45

Arg Arg Pro Ser Leu Thr Gly Val Arg Val His Glu Gln Arg Ser His
50 55 60

Lys Ala Phe Phe Asp Arg Leu Gln Ala Glu Val Ile Arg Asn Gln Thr
65 70 75 80

Ser Lys Lys Lys Pro Arg Trp Thr Glu Glu Glu Lys Asn Leu Leu Ala
85 90 95

Leu Ala Gln Ala Asn Leu Ile Ile Glu Glu Glu Thr Asn Ile Ile Asp
100 105 110

Asp Leu Val Ser Lys Phe Thr Tyr Arg Thr Lys Asp Ala Leu Lys Ser
115 120 125

Gln Ile Arg Lys Pro Glu His Lys Thr Arg Val Ser Glu Phe Thr Leu
130 135 140

```
Ala Ile Gln Ala His Ile Asp Asn Ile Met Leu Pro Ala Pro Val Pro
145                 150                 155                 160

Ile Ala Thr Asp Pro Leu Gln Val Ser Cys Asn Phe Lys Asp Arg Ala
                165                 170                 175

Lys Asp Tyr Ile Asp Thr Leu Glu Pro Ile Thr Ser Thr Lys Phe Tyr
            180                 185                 190

Leu Asp Glu Leu Glu Ala Leu Cys Asp Asn Ile Cys Ile Trp Pro Thr
        195                 200                 205

Arg Leu Leu Ile Thr Thr Val Glu Ser Tyr Ile Arg Lys Leu Phe Lys
    210                 215                 220

Thr Thr Ser Thr Leu Lys Pro Ala Gln Lys Leu His Asn Pro Ser Asn
225                 230                 235                 240

Arg Asn Leu Pro Lys Arg Gln Leu Arg Arg Met Glu Tyr Gly Lys Thr
                245                 250                 255

Gln Lys Leu Trp Lys Lys Asn Pro Cys Arg Ala Ile Lys Thr Ile Ile
            260                 265                 270

Asp Asp Lys Asp Cys Lys Ser Pro Pro Glu Arg Glu Ala Met Thr Gln
        275                 280                 285

Tyr Trp Lys Thr Thr Phe Ser Ser Lys Lys Arg Thr Cys Pro Gln Tyr
    290                 295                 300

Glu Pro Arg Glu Ser Thr Lys Thr Gln Leu Trp Glu Pro Val Thr Ile
305                 310                 315                 320

Glu Glu Leu His Cys Cys His Leu Glu Met Thr Thr Ser Pro Gly Pro
                325                 330                 335

Asp Gly Ile Thr Val Arg Gln Leu Tyr Leu Val Pro Glu Gln Leu Leu
            340                 345                 350
```

```
Val Arg Ile Leu Asn Leu Leu Met Ala Cys Gly Lys Met Pro Asp Ser
        355                 360                 365

Phe Leu Glu Ser Lys Thr Thr Leu Ile Pro Lys Lys Pro Asn Ser Thr
    370                 375                 380

Glu Pro Gly Asp Phe Arg Pro Ile Thr Val Gln Ser Val Leu Val Arg
385                 390                 395                 400

Gln Leu Asn Lys Ile Leu Ala Ala Arg Val Ala Gln His Ile Pro Leu
                405                 410                 415

Asp Glu Arg Gln Arg Gly Phe Arg Pro Val Asp Gly Val Ala His Asn
            420                 425                 430

Ile Phe Glu Leu Asp Met Ile Leu Arg Cys His Arg Ser Glu Phe Arg
        435                 440                 445

Asp Leu Arg Leu Ala Ser Leu Asp Ile Ala Lys Ala Phe Asp Ser Ile
    450                 455                 460

Thr His Asn Thr Ile Glu Asp Thr Met Glu Val Arg Gly Phe Pro Lys
465                 470                 475                 480

Pro Met Ile Asn Tyr Ile Met Ala Cys Tyr Arg Arg Ser Lys Thr Arg
                485                 490                 495

Phe Thr Phe Asn Gly Trp Ile Ser Asp Thr Val Lys Pro Thr Cys Gly
            500                 505                 510

Val Lys Gln Gly Asp Pro Leu Ser Pro Ile Leu Phe Asn Leu Val Met
        515                 520                 525

Asp Arg Met Ile Arg Lys Leu Pro Lys Glu Val Gly Val Asn Val Gly
    530                 535                 540

Ser Lys His Tyr Asn Gly Leu Thr Phe Ala Asp Asp Leu Leu Leu Phe
545                 550                 555                 560
```

```
Ala Thr Thr Pro Glu Gly Leu Gln Ser Ser Ile Asp Ile Val His Leu
                565                 570                 575

Phe Leu Leu Glu Cys Gly Leu Leu Ile Asn Lys Gln Lys Ser Phe Val
            580                 585                 590

Leu Thr Val Lys Ala Tyr Pro Lys Leu Lys Lys Thr Ala Val Ile Val
        595                 600                 605

Thr Glu Lys Tyr Met Leu Asp Arg His Ile Leu Pro Ala Ile Asp Arg
    610                 615                 620

Glu Lys Leu Phe His Tyr Leu Gly Val Pro Phe Thr Ala Glu Gly Arg
625                 630                 635                 640

Cys Arg Asp Asp Thr Ile Ala His Leu Lys Arg Lys Ile Asp Val Leu
                645                 650                 655

Thr Lys Ala Pro Leu Lys Pro Gln Gln Arg Leu Phe Ala Leu Arg Val
            660                 665                 670

Val Ile Leu Pro Ser Cys Tyr His Ile Leu Thr Leu Gly Gly Ser Asn
        675                 680                 685

Leu Ser Leu Leu Lys Lys Ile Asp Leu Met Val Arg Ala Ala Gly Arg
    690                 695                 700

Lys Trp Cys Cys Leu Pro Lys Asp Thr Pro Asn Ala Tyr Phe His Ala
705                 710                 715                 720

Ser Ser Arg Asp Gly Gly Leu Gly Leu Pro Ser Met Arg Trp Leu Ile
                725                 730                 735

Pro Leu His Arg Tyr Leu Arg Leu Leu Arg Tyr Glu Gly Arg Asn Pro
            740                 745                 750

Glu Asp Thr Asn Val Tyr Leu Thr Thr Glu Ile Asn Arg Ala Lys Ile
        755                 760                 765
```

```
Arg Leu Ser Asp Asn Gly Ser Asn Ile Asp Cys Gln Ala Lys Leu Trp
    770                 775                 780

Gln Phe Trp Ala Asp Arg Leu Tyr Lys Ser Val Asp Gly Ser Ala Leu
785                 790                 795                 800

Ile Glu Ser Ser Lys Val Pro Gln Gln His Arg Trp Ala Thr Gly Gly
                805                 810                 815

Ser Arg Phe Leu Thr Gly Arg Asp Phe Ile Asn Ser Ile Lys Leu Arg
            820                 825                 830

Ile Asn Thr Leu Pro Thr Leu Ser Arg Thr Leu Arg Gly Arg Glu Gly
        835                 840                 845

Asn Arg Met Cys Arg Gly Gly Cys Tyr Asn Val Glu Thr Leu His His
    850                 855                 860

Val Leu Gln Val Cys His Arg Thr Asn Gly Thr Arg Val Lys Arg His
865                 870                 875                 880

Asn Ala Ile Arg Gln Tyr Ile Ala Arg Gly Ala Ala Val Lys Phe Asp
                885                 890                 895

Thr Val Glu Arg Glu Pro Arg Ile Lys Ser Ala Ser Gly Ala Val Asn
            900                 905                 910

Ile Pro Asp Leu Val Ala Cys Asn Ser Asp Glu Val Val Val Ile Asp
        915                 920                 925

Thr Gln Ile Val Trp Asp Gln Ala Asn Leu Asp Glu Ala His Gln Ala
    930                 935                 940

Lys Ala Glu Lys Tyr Ala His Leu Ser Asp Ile Leu Lys His Lys Tyr
945                 950                 955                 960

Ser Arg Asp Arg Val Lys Phe Thr Ser Val Thr Leu Ser Phe Arg Gly
                965                 970                 975
```

Leu Trp Ser Lys Gln Ser Leu Lys Glu Leu Thr Asp Leu Gly Ile Val
980 985 990

Asn Ser Lys Asp Ile Gln Ile Ile Ser Thr Arg Ala Ile Ile Gly Gly
995 1000 1005

Ile Ala Ser Phe Arg Met Phe Asn Ser Thr Thr Ser Val Asn Ser
1010 1015 1020

Val Asn Ser Phe Leu Glu Ile Ala Leu Gly
1025 1030

<210> 13
<211> 998
<212> PRT
<213> Ciona intestinalis

<220>
<221> MOD_RES
<222> (62)..(62)
<223> Any amino acid

<400> 13
Met Pro Gly Cys Gln Ser Val Val Gly Ser Glu Cys Ser Gln Cys Gly
1 5 10 15

Arg Val Phe Lys Thr Ala Arg Gly Leu Ser Val His Arg Arg Ser Lys
20 25 30

His Pro Glu Ala Tyr His Arg Glu His Ile Ala Ala Pro Arg Val Lys
35 40 45

Ala Arg Trp Ser Glu Glu Glu Met Ile Leu Met Ala Gln Xaa Glu Val
50 55 60

Gln Ala Pro Ala Gly Thr Arg Phe Ile Asn Gln Tyr Leu His Ala Leu
65 70 75 80

Phe Pro Ser Arg Ser Leu Asp Ala Ile Lys Gly Ala Arg Gly Lys Ser
85 90 95

```
Ala Ala Tyr Lys Lys Ile Ile Leu Glu Gln Arg Leu Ala Ala Leu Val
            100                 105                 110

Pro Val Ser Pro Pro Asn Gln Ile Ser Gly Ala Glu Ser Pro Ser Gln
        115                 120                 125

Pro Ser Asn Thr Ser Gln Glu Val Arg Gln Asp Pro Glu Glu Arg Ser
    130                 135                 140

Leu Arg Leu Arg Asp Ala Ile Asp Leu Gly His Leu Arg Thr Asp Phe
145                 150                 155                 160

Asp Met Thr Ala Val Asn Pro Gly His Pro Asp Pro Val Ile Arg Glu
                165                 170                 175

Glu Ile Asp Arg Glu Phe Leu Arg Trp Leu Glu Pro Asn Arg Arg Arg
            180                 185                 190

Arg Gly Tyr Ala Lys Ala Thr Arg Ile Ala Leu Asn Ala Pro Gly Lys
        195                 200                 205

Val Arg Arg Arg Ala Glu Tyr Ala Ala Met Gln Arg Gln Trp Lys Thr
    210                 215                 220

Lys Arg Gly Leu Cys Ala Arg Glu Ala Leu Glu Gly Thr Trp Lys Ile
225                 230                 235                 240

Pro Ala Arg Thr Val Ser Leu Ser Asp Gln Glu Ala Phe Trp Arg Pro
                245                 250                 255

Leu Met Glu Ser Gln Ser Lys Asn Asp Leu Arg Glu Pro Ala Lys Val
            260                 265                 270

Gly Glu Thr Leu Trp Gly Leu Leu Asp Pro Ile Thr Pro Asp Glu Val
        275                 280                 285

Arg Gln Ile Leu Gly Ser Met Ser Ser Lys Ala Pro Gly Pro Asp Gly
    290                 295                 300
```

```
His Arg Leu Ser Asp Leu Arg Ser Ile Pro Ile Asp Gln Ile Cys Ser
305                 310                 315                 320

His Phe Asn Leu Trp Leu Leu Ala Gly Tyr Gln Pro Lys Ala Leu Arg
                325                 330                 335

Met Gly Glu Ser Cys Leu Ile Pro Lys Val Lys Asp Ala Ser Arg Pro
            340                 345                 350

Gln Gln Phe Arg Pro Ile Thr Leu Gly Ser Tyr Val Gly Arg Cys Leu
        355                 360                 365

His Lys Cys Leu Ala Ser Arg Phe Glu Arg Asp Leu Pro Ile Ser Ile
    370                 375                 380

Arg Gln Lys Ala Phe Arg Cys Met Asp Gly Val Ala Glu Asn Val Met
385                 390                 395                 400

Ile Leu Arg Ser Val Leu Asp Asp His Lys Lys Arg Leu Ala Glu Leu
                405                 410                 415

Asn Leu Val Phe Leu Asp Val Ser Lys Ala Phe Asp Ser Val Ser His
            420                 425                 430

Arg Ser Ile Leu His Ala Val Lys Arg Leu Gly Val Pro Pro Pro Leu
        435                 440                 445

Leu Lys Tyr Val Glu Glu Leu Tyr Ala Asp Ser Glu Thr Phe Leu Arg
    450                 455                 460

Gly Ser Gly Glu Leu Ser Pro Ser Ile Lys Val Arg Arg Gly Val Lys
465                 470                 475                 480

Gln Gly Glu Pro Leu Ser Pro His Leu Phe Asn Ala Val Ile Asp Trp
                485                 490                 495

Ala Leu Ser Ser Leu Asp Gln Ser Phe Gly Val Thr Val Gly Glu Ala
            500                 505                 510
```

```
Arg Val Asn His Leu Ala Phe Ala Asp Asp Ile Val Leu Leu Ser Ser
        515                 520                 525

Ser Gln Pro Gly Leu Gln Arg Leu Ile Asp Gln Leu Thr Thr His Leu
    530                 535                 540

Gly Glu Ser Gly Leu Arg Val Asn Ser Thr Lys Ser Ala Ser Ile Arg
545                 550                 555                 560

Ile Ala Val Asp Gly Lys Asn Lys Arg Trp Val Val Asp Pro Arg Asp
                565                 570                 575

Ser Val His Val Gly Gly Val Arg Ile Pro Ala Val Ala Val Ser Gly
            580                 585                 590

Ser Tyr Arg Tyr Leu Gly Val Asn Ile Ser Ala Ala Gly Met Arg Val
        595                 600                 605

Asp Ala Ala Asp Ser Leu Ala Ser Lys Leu Ala Asn Leu Ser Arg Ala
    610                 615                 620

Pro Leu Lys Pro Gln Gln Arg Leu Tyr Ile Leu Cys Thr His Leu Leu
625                 630                 635                 640

Pro Ser Ile Tyr His Gln Leu Val Leu Ser Ser Thr Ser Lys Lys Phe
                645                 650                 655

Leu Lys Tyr Leu Asp Arg Cys Val Arg Val Ala Val Arg Arg Trp Leu
            660                 665                 670

Arg Leu Pro Lys Asp Thr Pro Lys Ala Tyr Phe His Ala Lys Cys Asn
        675                 680                 685

Asp Gly Gly Leu Gly Val Pro Glu Leu Gln Arg Val Ile Pro Leu Gln
    690                 695                 700

Lys Ala Gly Arg Trp Leu Lys Met Thr Arg Ser Gln Asp Pro Val Val
705                 710                 715                 720
```

```
Gln Ala Ala Val Gly Leu Glu Tyr Phe Gln Lys Leu Leu Glu Arg Trp
               725                 730                 735

Ser Thr Pro Glu Leu Tyr Gln Trp Gly Gly Gly Gly Ile Thr Thr Ser
            740                 745                 750

Gly His Leu Ala Val Ala Gln Ala Arg Ser Leu Tyr Ser Ser Val Asn
        755                 760                 765

Gly Arg Gly Leu Arg Gln Ser Gly Leu Val Ser Thr Gln Phe Asp Trp
    770                 775                 780

Val Arg Ser Gly Cys Ser Leu Leu Ser Gly Arg Asn Phe Ile Gly Ala
785                 790                 795                 800

Met Gln Leu Arg Gly Asn Leu Leu Ala Thr Lys Leu Arg Ala Ser Arg
               805                 810                 815

Gly Arg Pro Arg Val Asp Ile Ser Cys Asp Cys Cys Arg Thr Pro Glu
            820                 825                 830

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

Arg Ile Gly Arg His Asp Asn Val Ala Lys Leu Val Ala Arg Glu Ser
    850                 855                 860

Ala Lys Arg His Trp Lys Val Ile Arg Glu Pro Ala Ile Pro Thr Pro
865                 870                 875                 880

Ala Gly Ile Arg Arg Pro Asp Leu Val Phe Ser Lys Gly Asp Thr Ala
               885                 890                 895

Ile Val Val Asp Val Thr Ile Val Pro Asp Asn Ala Glu Leu Ser Asp
            900                 905                 910

Ala His Ser Ser Lys Val Ser Tyr Tyr Asp Asn Gly Ala Ile Arg Gly
        915                 920                 925
```

Trp Val Ala Leu Asn Thr Gly Ala Ser His Ile Thr Phe Ser Ser Val
930 935 940

Asn Asn Asn Trp Ser Asp Cys Met Ala Glu Glu Ser Lys Arg Met Leu
945 950 955 960

Lys Leu Gly Leu Gly Leu Pro Asn Ser Ile Arg Gly Thr Ile Ser Ala
965 970 975

Val Val Leu Glu Lys Gly Phe His Met Tyr Leu Cys Phe Lys Arg Gly
980 985 990

Thr Phe Arg Ala Ser Tyr
995

<210> 14
<211> 1054
<212> PRT
<213> Bacillus rossius

<220>
<221> MOD_RES
<222> (178)..(178)
<223> Any amino acid

<220>
<221> MOD_RES
<222> (308)..(308)
<223> Any amino acid

<400> 14
Met Leu Ala Ser Ser Phe Lys Lys Lys Pro Arg Met Val Ser Ser Ser
1 5 10 15

Lys Ser Gly Ser Ser Cys Asn Asp Ala Pro Thr Gly Val Val Val Pro
20 25 30

Ala Ser Lys Glu Ser Val Glu Ser Pro Ser Leu Asp Lys Lys Val Gly
35 40 45

Tyr Gly Cys Glu Phe Pro Gly Cys Pro Arg Val Phe Thr Thr Lys Thr
50 55 60

```
Gly Arg Gly Val His His Arg Lys Ala His Glu Asp Trp Tyr Asp Ala
65                  70                  75                  80

Arg Gln Lys Leu Asp Tyr Val Lys Ala Arg Trp Thr Arg Glu Glu Ser
                85                  90                  95

Ala Leu Met Ala Arg Glu Glu Ala Lys Ala Gly Thr Gln Ser Ala Lys
            100                 105                 110

Lys Met Asn Gln Val Leu Gln Leu Val Leu Pro Asp Arg Thr Leu Glu
        115                 120                 125

Ser Ile Lys Ser His Arg Arg Ser Ala Gln Tyr Lys Glu Leu Val Leu
    130                 135                 140

Gln Ala Met Gly Ala Leu Ser Asp Ser Gly Lys Cys Ala Gly Pro Ser
145                 150                 155                 160

Gln Leu Ala Asn Ala Glu Leu Ser Thr Pro Leu Ser Ser Ala Val Leu
                165                 170                 175

Gly Xaa Gly Glu Pro Gly Gly Gly Gly Ser Gly Glu His Gly Ser Gly
            180                 185                 190

Asp Val Pro Gly Ser Ser Arg Gly Glu His Leu Ser Ala Leu Leu Asp
        195                 200                 205

Gly Leu Gln Pro Gly Pro Val Val Asp Arg Leu Arg Leu Ile Val Arg
    210                 215                 220

Ser Val Asp Asp Trp Ser Arg Ala Arg Leu His Gln Glu Ile Gly Trp
225                 230                 235                 240

Phe Leu Arg Asp Leu Phe Trp Lys Pro Leu Thr Pro Asn Leu Ala Arg
                245                 250                 255

Val Ser Leu Pro Ser Lys Asp Lys Val Ser Arg Arg Arg Leu Arg Arg
            260                 265                 270
```

```
Ala Asp Tyr Gly Arg Val Gln Arg Ala Trp Lys Arg Asn Arg Asn Thr
        275                 280                 285

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

Glu Glu Leu Xaa Val Pro Tyr Trp Glu Ser Val Leu Arg Ser Gly Ser
305                 310                 315                 320

Ser Cys Thr Pro Gly Gln Arg Gly Arg Thr Ala Glu Arg Thr Glu Leu
                325                 330                 335

Trp Asp Pro Val Ser Ser Lys Glu Val Glu Gln Ala Leu Pro Pro Leu
            340                 345                 350

Gly Thr Ala Pro Gly Pro Asp Ser Phe Thr Pro Lys Asp Phe Arg Ala
        355                 360                 365

Val Pro Ser Ala Val Trp Ala Cys Ile Phe Asn Ile Phe Met Leu Cys
    370                 375                 380

Gly Arg Leu Pro Asp Tyr Leu Leu Glu Ser Arg Thr Thr Leu Ile Pro
385                 390                 395                 400

Lys Arg Asp Gly Ala Cys Asn Pro Glu Asp Phe Arg Pro Ile Thr Val
                405                 410                 415

Ser Ser Val Val Val Arg Cys Phe His Lys Val Ile Ala Asn Arg Met
            420                 425                 430

Ser Arg His Ile Gln Leu Asp Pro Arg Gln Lys Ala Phe Arg Ser Leu
        435                 440                 445

Asp Gly Cys Ser Glu Gly Val Phe Leu Leu Asp Phe Ile Leu Gly His
    450                 455                 460

Ala Arg Arg Asn His Arg Pro Val His Leu Ala Ser Leu Asp Val Ala
465                 470                 475                 480
```

```
Lys Ala Phe Asp Ser Val Ser His Ala Ala Ile Leu Asp Val Leu Arg
                485                 490                 495

Ser Phe Gly Val Pro Asp Gln Met Val Glu Tyr Ile Ala Ser Val Tyr
            500                 505                 510

Ala Gly Ser Arg Thr Arg Leu Gln Gly Asp Gly Trp Gln Ser His Ala
        515                 520                 525

Ile His Pro Thr Cys Gly Val Lys Gln Gly Asp Pro Leu Ser Pro Met
    530                 535                 540

Ile Phe Asn Met Val Ile Asp Arg Leu Phe Thr Leu Phe Pro Arg Asp
545                 550                 555                 560

Thr Gly Val Ser Val Gly Asp Thr Val Leu Asn Gly Met Gly Tyr Ala
                565                 570                 575

Asp Asp Leu Val Leu Phe Ala Thr Thr Pro Val Gly Leu Gln Gln Leu
            580                 585                 590

Leu Asp Ile Thr Ala Glu Tyr Leu Ser Gln Cys Gly Leu Arg Val Asn
        595                 600                 605

Ala Ala Lys Cys Phe Ser Val Ser Leu Ala Ile Val Pro His Glu Lys
    610                 615                 620

Lys Val Val Val Ala Thr Lys His Arg Phe Lys Cys Leu Gly Gln Pro
625                 630                 635                 640

Ile Pro Ala Leu Lys Arg Ser Asp Gln Trp Lys Tyr Leu Gly Val Pro
                645                 650                 655

Phe Ser Pro Glu Gly Arg Leu Lys Ile Asp Pro Leu Gly Arg Leu Lys
            660                 665                 670

Asp Glu Leu Glu Lys Leu Arg Arg Ala Pro Leu Lys Pro Gln Gln Arg
        675                 680                 685
```

```
Leu Tyr Ala Leu Arg Thr Val Val Val Pro Gly Leu Tyr His Leu Leu
    690                 695                 700

Val Leu Gly Gly Thr Thr Ile Ser Ser Leu Asn Arg Leu Asp Ile Ala
705                 710                 715                 720

Val Arg Ser Thr Val Arg Lys Trp Leu Ser Leu Pro His Asp Val Pro
                725                 730                 735

Asn Ala Tyr Ile His Ala Asp Ala Arg Asp Gly Gly Leu Ser Ile Pro
            740                 745                 750

Ser Tyr Arg Trp Thr Val Pro Arg Leu Arg Phe His Arg Leu Lys Ala
        755                 760                 765

Leu Ser Val Leu Cys Asp Gly Gly Gly Pro Asp Glu Met Val Ala Cys
    770                 775                 780

Val Gly Asp Glu Ile Lys Arg Ala Ser Ala Arg Leu Gln Asp His Gly
785                 790                 795                 800

Met Asn Ile Asn Thr Arg Asn Thr Tyr Arg Val Arg Phe Ala Arg Leu
                805                 810                 815

Leu His Thr Ser Asn Asp Gly Ala Pro Leu Lys Gly Ser Lys Lys Val
            820                 825                 830

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

Arg Asp Tyr Ile Ala Cys Asn Trp Val Arg Ile Asn Ser Ile Pro Leu
    850                 855                 860

Arg Lys Arg Thr Ala Arg Gly Arg Val Arg Asp Thr Arg Cys Arg Ala
865                 870                 875                 880

Gly Cys Asp Ser Thr Glu Thr Leu His His Val Leu Gln Gln Cys His
                885                 890                 895
```

```
Arg Thr His Asp Met Arg Ile Lys Arg His Asn Ala Cys Val Lys Tyr
            900                 905                 910

Leu Leu Asp Arg Gln Arg Ser Arg Gly Lys Thr Val Phe Trp Glu Pro
        915                 920                 925

His Phe His Thr Ala Gly Gly Leu Leu Lys Pro Asp Ser Val Ile Leu
    930                 935                 940

His Asp Ala Ser Thr Ala Val Val Val Asp Ala Leu Val Ala Gly Glu
945                 950                 955                 960

Arg Ser Asp Leu Asp Arg Glu His Asp Arg Lys Val Ser Lys Tyr Glu
                965                 970                 975

Pro Leu Val Asp Leu Val Lys Asp Arg Tyr Ser Val Asp Lys Val Ile
            980                 985                 990

Phe Ser Ser Leu Ile Ile Ser Ala  Arg Gly Val Trp Gly  Gly Arg Ser
        995                 1000                1005

Phe Arg  His Leu Ser Lys Leu  Arg Leu Leu Asp Ile  Ser Asp Ala
    1010                1015                1020

Lys Val  Leu Ser Thr Arg Val  Leu Leu Gly Gly Met  Gly Ala Val
    1025                1030                1035

Arg Val  Phe Asn Arg Arg Thr  Ala Val Ser Gly Arg  Val Asn Gly
    1040                1045                1050

Trp
```

<210> 15
<211> 1020
<212> PRT
<213> Lepidurus couesii

<220>
<221> MOD_RES
<222> (757)..(757)
<223> Any amino acid

<400> 15

```
Met Ser Gly Lys Ser Ser Lys Pro Arg Thr Val Ser Ser Gly Ser Ser
1               5                  10                  15


Ser Gln Glu Thr Pro Pro Ser Gly Ser Asn Ala Cys Asp Ile Cys Gly
            20                  25                  30


Lys Cys Phe Met Lys Pro Val Gly Leu Ser Leu His Met Ser Lys Val
        35                  40                  45


His Pro Thr Gln Tyr His Ala Arg Leu Glu Lys Asn Gln Pro Lys Ala
    50                  55                  60


Lys Lys Phe Arg Trp Thr Asp Glu Asp Leu Tyr Phe Leu Ala Lys Lys
65                  70                  75                  80


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


Leu Ala Glu Phe Phe Pro Glu Lys Ser Val Asp Gln Ile Lys Gly Gln
            100                 105                 110


Arg Arg Ser Glu Thr Tyr Lys Gln Gln Val Val Ser Ile His Ser Glu
        115                 120                 125


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


Pro Ala Lys Glu Val Ser Ala Trp Leu Asp Phe Leu Leu Ala Leu Pro
145                 150                 155                 160


Lys Thr Lys Asn Lys Phe Ser Glu Asp Lys Leu Asp Gln Leu Ile Arg
                165                 170                 175


Thr Ala Gln Glu Gly Thr Pro Val Leu Asn Asp Leu Asp Leu Tyr Leu
            180                 185                 190
```

```
Arg Glu Val Leu Val Gln Pro Thr Arg Gln Gly Glu Arg Gln Ala Lys
        195                 200                 205

Pro Leu Pro Pro Pro Lys Ser Ser Arg Glu Lys Arg Asp Arg Glu Tyr
    210                 215                 220

Ala Arg Val Gln Asn Phe Tyr Arg Lys Asn Lys Thr Ala Cys Val Asn
225                 230                 235                 240

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

Asp Glu Phe Trp Lys Ala Ile Phe Glu Ser Gln Ser Pro Pro Asp Ala
            260                 265                 270

Glu Pro Val Ser Tyr Val Val Asp Glu Glu Pro Lys Asn Ile Trp Ser
        275                 280                 285

Trp Ile Ser Phe Phe Glu Met Asn Arg Asn Tyr Pro Asp Thr Ser Thr
    290                 295                 300

Ser Pro Gly Pro Asp Gly Val Thr Ala Arg Met Leu Arg Ser Ile Pro
305                 310                 315                 320

Ala Arg Val Leu Asn Lys Leu Leu Asn Leu Leu Leu Phe Ile Glu Asp
                325                 330                 335

Leu Pro Ala Val Phe Lys Cys His Arg Thr Val Leu Ile Pro Lys Val
            340                 345                 350

Asp Asn Pro Ala Leu Pro Gly Glu Phe Arg Pro Ile Thr Ile Ser Ser
        355                 360                 365

Ile Ile Val Arg Gln Leu Asn Lys Ile Ile Ala Ala Arg Val Ser Glu
    370                 375                 380

Gly Val Pro Ile Asn Pro Arg Gln Lys Ala Phe Arg Gln Ile Asp Gly
385                 390                 395                 400
```

```
Cys Ala Glu Asn Val Phe Leu Leu Asp Phe Ile Leu Arg Asp Ala Lys
                405                 410                 415

Thr Lys Ile Lys Ser Leu Ser Leu Ala Thr Val Asp Ile Lys Lys Ala
            420                 425                 430

Phe Asp Ser Val Ser His His Ser Ile Phe Arg Ala Ile Arg Gly Ala
        435                 440                 445

Arg Cys Pro Glu Asn Leu Val Asn Tyr Ile Gln Asn Ser Tyr Ser Gly
    450                 455                 460

Cys Thr Thr Gln Ile Ser Val Gly Gly Ser Ile Ser Thr Thr Lys Ile
465                 470                 475                 480

Leu Met Asn Arg Gly Val Lys Gln Gly Asp Pro Leu Ser Pro Val Leu
                485                 490                 495

Phe Asn Leu Val Ile Asn Glu Ile Ile Arg Lys Leu Pro Ala Ser Ile
            500                 505                 510

Gly Tyr Pro Ile Asn Ser Glu Leu Ser Ile Asn Cys Ile Ala Tyr Ala
        515                 520                 525

Asp Asp Leu Ile Leu Val Ala Asn Thr Arg Glu Gly Leu Lys Leu Leu
    530                 535                 540

Leu Asn Leu Leu Asn Glu Glu Leu Pro Lys Arg Gly Leu Glu Leu Asn
545                 550                 555                 560

Ala Ser Lys Cys Phe Gly Leu Ser Leu Thr Ala Leu Gly Lys Leu Lys
                565                 570                 575

Lys Thr His Leu Cys Thr Ser Asp Gln Leu Asp Leu His Gly Thr Leu
            580                 585                 590

Ile Lys Asn Leu Thr Ala Glu Glu Ser Trp Val Tyr Leu Gly Val Pro
        595                 600                 605
```

```
Phe Ser His Ile Gly Arg Ser Lys Ser Phe Ser Pro Asp Leu Glu Ala
    610                 615                 620

Leu Leu Asn Lys Leu Gln Lys Ser Pro Leu Lys Leu Gln Gln Lys Leu
625                 630                 635                 640

Phe Ala Leu Arg Val Tyr Leu Ile Pro Arg Leu Leu His Gly Leu Val
                645                 650                 655

Leu Ser Arg Val Ala Ile Gly Glu Leu Lys Ile Met Asp Lys Leu Ile
            660                 665                 670

Leu Lys His Leu Arg Val Trp Leu Arg Leu Pro Lys Asp Thr Pro Leu
        675                 680                 685

Gly Phe Phe Tyr Ser Pro Val Lys Leu Gly Gly Leu Gly Ile Lys Asn
    690                 695                 700

Leu Arg Thr Asn Val Leu Lys Cys Arg Lys Gln Arg Ile Glu Arg Met
705                 710                 715                 720

Leu Val Ser Pro Asp Asp Val Val Arg Leu Val Ala Glu Ser Glu Ile
                725                 730                 735

Phe Leu Lys Glu Thr Asp Lys Leu Lys Asp Leu Leu Thr Ile Asn Gly
            740                 745                 750

Met Cys Leu Asp Xaa Arg Asn Val Pro Arg Thr Gly Lys Asn Asn Lys
        755                 760                 765

Phe Trp Ser Glu Arg Leu Tyr Thr Ser Phe Asp Gly Lys Thr Leu Ala
    770                 775                 780

Tyr Ser Glu Tyr Phe Thr Gln Gly Gly Gly Trp Ile Arg Glu Asp Lys
785                 790                 795                 800

Ile Leu Gln Pro Ala His Val Phe Ala Glu Cys Ile Lys Leu Arg Ile
                805                 810                 815
```

```
Asn Ala Leu Pro Thr Lys Ser Arg Val Ala His Gly Arg Pro Thr Lys
            820                 825                 830

Asp Arg Ser Cys Arg Ala Gly Cys Leu Asp Val Gln Lys Val Pro Ala
        835                 840                 845

Ile Glu Thr Ile Asn His Ile Ala Gln Val Cys Pro Arg Thr His Gly
    850                 855                 860

Ala Arg Ile Lys Arg His Asp Arg Leu Val Gln Phe Leu Ser Leu Asn
865                 870                 875                 880

Leu Arg Lys Asn Pro Lys Arg Asn Val Leu Val Glu Tyr Asn Phe Arg
                885                 890                 895

Thr Val Ala Gly Ile Arg Lys Pro Asp Ile Ile Val Ile Glu Asp Thr
            900                 905                 910

Arg Ala Ala Ile Leu Asp Val Gln Val Val Gly Asp Ser Ser Asn Leu
        915                 920                 925

Glu Met Glu Tyr Leu Glu Lys Ser Arg Lys Tyr Ser Asn Asp Ala Thr
    930                 935                 940

Leu Ser Met Arg Ile Asn Ala Leu Gln Lys Leu Tyr Pro Thr Val Thr
945                 950                 955                 960

Ser Leu Thr Phe His Ala Val Thr Phe Asn Asn Arg Gly Leu Ile Ala
                965                 970                 975

Lys Ser Thr Val Ala Ala Leu Arg Met Leu Gly Val Pro Pro Arg Cys
            980                 985                 990

Ile Met Ile Leu Cys Val Ile Ser  Leu Glu Lys Thr Leu  Glu Val Trp
        995                 1000                1005

Arg Met  Phe Asn Gln Ser Thr  Ala Ser Ala Arg Lys
    1010                1015                1020
```

<210> 16
<211> 1045
<212> PRT
<213> Lasius niger

<400> 16
Met Gly Gly Ser Pro Pro Ala Ser Phe Arg Arg Arg Pro Gly Lys Glu
1 5 10 15

Gly Ile Pro Ala Pro Pro Gly Pro Trp Gly Cys Gln Pro Leu Gly Leu
20 25 30

Val Leu Val Gly Pro Lys Asn Arg Asn Gln Ala Ser Asp Asn Ser Gly
35 40 45

Gly Pro Ser Gly Pro Ser Ala Pro Ala Asn Pro Pro Ser Gln Val Asp
50 55 60

Asp Ala Asp Phe Arg Cys Glu Phe Pro Gly Cys Asn Arg Thr Phe Pro
65 70 75 80

Thr Asn Arg Gly Arg Gly Val His His Gln Arg Ala His Lys Asp Trp
85 90 95

Phe Asp Ala Arg Leu Gln Pro Ala Val Asp Lys Val Arg Trp Thr Ala
100 105 110

Glu Glu Thr Ala Met Leu Ala Arg Lys Glu Ala Glu Leu Thr Val Glu
115 120 125

Ser Asn Pro Arg Phe Ile Asn Gln Glu Leu Leu Gln Tyr Phe Pro Gln
130 135 140

Arg Thr Leu Glu Ala Ile Lys Gly Lys Arg Arg Asn Gln Glu Tyr Arg
145 150 155 160

Glu Leu Val Glu Glu Phe Val Glu Glu Phe Arg Asn Pro Asp Val Ile
165 170 175

```
Thr Ile Glu Asp Asp Glu Glu Asp Glu Glu Asp Gln Arg Asp Ile Phe
            180                 185                 190

Leu Asp Tyr Leu Glu Ser Leu Thr Arg Pro Gln Gly Arg Glu Phe Gln
        195                 200                 205

Ala Thr Arg Leu His Asn Ile Ala Met Glu Ala Arg Thr Ser Gly Lys
    210                 215                 220

Asp Ala Thr Leu Gln Lys Ile Ala Leu Tyr Leu Arg Glu Val Phe Pro
225                 230                 235                 240

Ala Pro Pro Pro Arg Arg Glu Arg Arg Arg Lys Lys Thr Pro Asn Pro
                245                 250                 255

Ala Pro Met Arg Lys Arg Glu Ala Arg Arg Cys Glu Tyr Gly Ala Ala
            260                 265                 270

Gln Ser Leu Trp Lys Arg Asp Arg Arg His Cys Ile Thr Asn Ile Leu
        275                 280                 285

Asn Glu Met Gly Pro Val Asn Gln Pro Pro Arg Glu Thr Met Glu Pro
    290                 295                 300

Tyr Trp Thr Arg Met Met Thr Thr Asp Gly Arg Thr Ser Pro Pro Ser
305                 310                 315                 320

Asp Lys Val Pro Ile Lys Glu Asp Ile Trp Thr Pro Ile Thr Gly Asn
                325                 330                 335

Asp Ile Lys Arg Ser Arg Ile Pro Arg Ala Ser Ala Pro Gly Pro Asp
            340                 345                 350

Gly Ile Ser Ala Arg Leu Tyr Arg Ser Ile Pro Thr Thr Val Ile Ile
        355                 360                 365

Arg Leu Phe Asn Leu Leu Leu Trp Cys Glu Arg Leu Pro Glu Asp Leu
    370                 375                 380
```

```
Leu Leu Ser Arg Thr Ile Phe Leu Pro Lys Lys Thr Asn Ala Ser Glu
385                 390                 395                 400

Pro Gly Asp Phe Arg Pro Ile Thr Ile Pro Pro Val Leu Val Arg Gly
                405                 410                 415

Leu His Lys Ile Leu Ala Lys Arg Leu Glu Thr Ala Leu Asp Ile Asp
            420                 425                 430

Pro Arg Gln Arg Ala Phe Arg Ser Met Asp Gly Cys Ala Asp Asn Thr
        435                 440                 445

Leu Leu Leu Asp Thr Leu Leu Arg Tyr His Arg Lys Gln Tyr Lys Ser
    450                 455                 460

Leu Tyr Met Ala Ser Ile Asp Val Ser Lys Ala Phe Asp Ala Val Thr
465                 470                 475                 480

His Pro Thr Ile Glu Ser Thr Leu Ile Ser Leu Gly Val Pro Pro Pro
                485                 490                 495

Met Ile Arg Tyr Leu Gly Gln Val Tyr Ala Asn Ser Arg Thr Arg Ile
            500                 505                 510

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

Arg Gln Gly Asp Pro Leu Ser Pro Ile Leu Phe Asn Ala Val Thr His
    530                 535                 540

Arg Leu Leu Gln Arg Leu Pro Arg Glu Val Gly Ala Arg Leu Gly Asn
545                 550                 555                 560

Ile Pro Ile Asn Ala Ala Ala Tyr Ala Asp Asp Leu Leu Leu Phe Ala
                565                 570                 575

Ser Thr Ser Met Gly Leu Gln Gln Met Ile Asp Thr Met Thr Asp Tyr
            580                 585                 590
```

```
Leu Ala Glu Cys Gly Met Thr Ile Asn Val Glu Lys Ser Met Thr Val
        595                 600                 605

Ala Ile Arg Ala Ala Pro His Leu Lys Lys Thr Ala Val Asp Ala Ser
    610                 615                 620

Leu Ser Phe Ser Cys Gly Gly Arg Gln Leu Pro Ser Leu Lys Arg Thr
625                 630                 635                 640

Asn Lys Trp Arg Tyr Leu Gly Val Val Phe Thr Pro Glu Gly Arg Ala
                645                 650                 655

Gln Cys Arg Pro Ala Glu Val Val Ala Pro Leu Leu Gly Ala Leu Thr
            660                 665                 670

Lys Ala Pro Leu Lys Pro Gln Gln Arg Leu Tyr Ala Leu Arg Thr Val
        675                 680                 685

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

Gly Thr Leu Asn Lys Thr Asp Arg Leu Val Arg Gly Ala Leu Arg Lys
705                 710                 715                 720

Trp Leu Ala Leu Pro His Asp Thr Pro Asn Ala Tyr Phe His Thr Ser
                725                 730                 735

Val Arg Asp Gly Gly Leu Gly Ile Pro Ala Ile Arg Trp Thr Ala Pro
            740                 745                 750

Val Gln Arg Arg Gly Arg Leu Leu Gly Val Met Lys Ala Leu Gly Gln
        755                 760                 765

Gln Gly Leu Asp Arg Phe Ile Gln Asp Glu Leu Asn Thr Cys Lys Lys
    770                 775                 780

Arg Leu Thr Asp His Gly Val Leu Leu Gly Thr Pro Glu Met Val Ala
785                 790                 795                 800
```

```
Lys Arg Trp Ala Gln Gln Leu Tyr Gly Ser Ile Asp Gly Ala Gly Leu
                805                 810                 815

Lys Asp Ser Ala Lys Thr Pro His Gln His Gln Trp Ile Ala Asp Gly
            820                 825                 830

Ser Lys Phe Leu Thr Gly Lys Asp Phe Ile Asn Cys Asn Arg Ala Arg
        835                 840                 845

Ile Gly Ala Leu Pro Thr Arg Ser Arg Thr Thr Arg Gly Arg Pro Gln
    850                 855                 860

Asp Arg Arg Cys Arg Gly Gly Cys Leu Ala Gln Glu Thr Leu Asn His
865                 870                 875                 880

Val Leu Gln His Cys His Arg Thr His Gly Gln Arg Ile Lys Arg His
                885                 890                 895

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

Glu Val His Gln Glu Pro His Tyr Lys Thr Glu Leu Gly Leu Arg Lys
        915                 920                 925

Pro Asp Leu Val Ala Val Leu Gly Gln Thr Ala Ile Ile Ile Asp Ala
    930                 935                 940

Gln Val Val Ser Glu Gln Thr Asn Leu Asp Asp Ala His Thr Arg Lys
945                 950                 955                 960

Val Ala Tyr Tyr Asn Glu Pro Ala Thr Ile Arg Ala Ile Lys Ala Glu
                965                 970                 975

His Gly Val Arg Thr Val Lys Val Thr Ser Ala Thr Leu Ser Trp Lys
            980                 985                 990

Gly Val Trp Ser Pro Arg Ser Ala  Glu Glu Leu Arg Lys  Leu Gly Phe
        995                 1000                1005
```

Ile Arg Ala Gly Asp Ala Lys Val Val Ala Thr Arg Val Leu Ile
    1010   1015   1020

Gly Asn Ile Ala Ala Phe Arg Thr Phe Asn Ala Thr Thr Ser Val
    1025   1030   1035

Glu His Arg Ala Gly Ile Gly
    1040   1045

<210> 17
<211> 1016
<212> PRT
<213> Lepidurus couesii

<400> 17
Met Ser Glu Glu Ser Arg Pro Lys Gln Thr Ala Ser Lys Arg Gly Ala
1   5   10   15

Ala Val Glu Lys Thr Met Met Ser Gly Thr Tyr Val Cys Thr Leu Cys
            20   25   30

Gly Arg Ser Phe Glu Lys Ser Val Gly Leu Ser Leu His Thr Asn Arg
        35   40   45

Met His Pro Glu Ala Tyr Asn Lys Leu Lys Glu Ala Lys Lys Pro Val
    50   55   60

Leu Lys Lys Ala Arg Trp Ser Glu Glu Glu Val Phe Leu Leu Ala Gln
65   70   75   80

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

Glu Leu His Lys Ile Phe Pro Glu Arg Glu Leu Glu Gly Ile Lys Gly
            100   105   110

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

Glu Ile Arg Glu Ser Lys Ala Asn Asp Ser Ser Ser Ser Ser Ser Ser
    130   135   140

```
Ser Ser Ser Cys Asp Ser Ala Ser Leu Gly Ile Ser Asn Trp Leu Glu
145                 150                 155                 160

Phe Leu Leu Ala Leu Pro Lys Thr Ser Asn Gln Phe Gln Glu Gly Arg
                165                 170                 175

Leu Asp Arg Leu Ile Ser Asp Ala Leu Arg Gly Val Asp Val Leu Glu
            180                 185                 190

Asn Leu Asp Ala Tyr Leu Leu Glu Val Phe Ala Lys Pro Met Ala Gln
        195                 200                 205

Asn Pro Cys Pro Lys Pro Pro Pro Pro Ala Lys Asn Ser Arg Glu Arg
    210                 215                 220

Arg Asp Arg Glu Tyr Ser Arg Val Gln Asn Phe Tyr Lys Lys Asn Arg
225                 230                 235                 240

Ser Ala Cys Ile Asn Ser Ile Leu Asp Gly Asn Thr Arg Ser Gln Asn
                245                 250                 255

Val Ile Pro Gly Leu Thr Lys Phe Trp Thr Glu Thr Phe Glu Lys Asn
            260                 265                 270

Ser Pro Pro Asp Asp Glu Ala Pro Asp Gln Phe Val Ala Asp Glu Pro
        275                 280                 285

Arg Asp Met Tyr Lys Trp Ile Thr Phe Tyr Glu Met Ser Gln Asp Tyr
    290                 295                 300

Leu Asp Ser Ser Thr Ala Pro Gly Val Asp Gly Phe Ser Ala Lys Gln
305                 310                 315                 320

Leu Arg Ser Met Ser Pro Arg Val Leu Asn Lys Ile Leu Asn Leu Leu
                325                 330                 335

Leu Leu Ser Glu Asn Leu Pro Asn Ser Phe Lys Met His Lys Thr Val
            340                 345                 350
```

```
Leu Ile Pro Lys Ile Asp Asp Pro Lys Ser Pro Gly Asp Phe Arg Pro
        355                 360                 365

Ile Thr Ile Ser Pro Val Leu Ala Arg Leu Leu Asn Lys Ile Leu Ala
    370                 375                 380

Ala Arg Leu Ser Lys Leu Val Pro Ile Ser Gln Arg Gln Lys Ala Phe
385                 390                 395                 400

Leu Pro Val Asp Gly Cys Gly Glu Asn Ile Phe Leu Leu Asp Tyr Ile
                405                 410                 415

Leu Arg Ser Ser Lys Lys Ser Ser Lys Ser Val Ala Met Ala Val Leu
            420                 425                 430

Asp Val Lys Lys Ala Phe Asp Ser Val Ser His His Ser Ile Leu Arg
        435                 440                 445

Ala Leu Asn Glu Ala Lys Cys Pro Ile Asn Phe Ile Asn Phe Val Arg
    450                 455                 460

Asn Ser Tyr Asp Gly Cys Thr Thr Lys Leu Thr Cys Gly Gly Thr Ser
465                 470                 475                 480

Phe Pro Asp Ser Val Arg Met Asn Arg Gly Val Lys Gln Gly Asp Pro
                485                 490                 495

Leu Ser Pro Val Leu Phe Asn Leu Ile Ile Asp Ser Ala Ile Arg Lys
            500                 505                 510

Leu Pro Asp Ser Ile Gly Tyr Val Ile Arg Asp Gly Leu Lys Ile Asn
        515                 520                 525

Cys Leu Ala Tyr Ala Asp Asp Leu Ile Leu Val Ala Ser Ser Arg Ala
    530                 535                 540

Gly Leu Lys Thr Leu Leu Asn Ile Val Ala Glu His Leu Ser Leu Arg
545                 550                 555                 560
```

```
Gly Leu Asp Leu Asn Ala Ala Lys Cys His Gly Leu Ser Ile Ile Ala
                565                 570                 575

Ser Gly Lys Ala Lys Thr Thr Tyr Val Ser Ala Ala Asp Ser Leu Asp
            580                 585                 590

Leu Asp Gly Gln Pro Ile Lys Asn Leu Gly Val Leu Asp Thr Trp Thr
        595                 600                 605

Tyr Leu Gly Ile Pro Phe Ser His Leu Gly Arg Ala Glu Lys Val Ser
    610                 615                 620

Pro Asp Leu Thr Asn Leu Leu Asn Lys Leu Gln Lys Ala Pro Leu Lys
625                 630                 635                 640

Leu Gln Gln Lys Leu Tyr Ala Val Arg Asn Phe Val Ile Pro Arg Ala
                645                 650                 655

Leu His Gly Leu Ile Leu Ser Lys Thr Asn Leu Lys Glu Leu Asn Thr
            660                 665                 670

Leu Asp Arg Ala Ile Arg Val Phe Leu Arg Thr Leu Leu Tyr Leu Pro
        675                 680                 685

Lys Asp Thr Pro Leu Gly Phe Phe His Ser Pro Ile Lys Ser Gly Gly
    690                 695                 700

Leu Gly Ile Thr Cys Phe Arg Thr Ser Val Leu Lys Cys Arg Leu Gln
705                 710                 715                 720

Arg Ile Ala Arg Met Arg Ser Ser Cys Asp Gly Val Ile Gln Ala Val
                725                 730                 735

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

Ile Arg Ile Asn Gly Asn Val Leu Asp Thr Thr Glu Ser Ile Lys Arg
        755                 760                 765
```

```
Tyr Trp Ala Gln Arg Leu His Ser Ser Val Asp Gly Lys Thr Leu Ala
    770                 775                 780

Tyr Met Asp Tyr Phe Pro Gln Gly Asn Leu Trp Met Ser Glu Asp Lys
785                 790                 795                 800

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

Asn Ala Ile Pro Thr Arg Val Arg Val Ser Arg Gly Arg Pro Asn Lys
            820                 825                 830

Glu Met Cys Cys Arg Ala Lys Cys Phe Asp Ser Gln Arg Met Pro Ala
        835                 840                 845

Phe Glu Ser Leu Asn His Ile Thr Gln Val Cys Pro Arg Thr His Gly
    850                 855                 860

Ser Arg Ile Gln Arg His Asp Lys Ile Ala Lys Phe Leu Phe Lys Asn
865                 870                 875                 880

Leu Asn Asn Cys Pro Ser Arg Ser Val Leu Tyr Glu Pro His Phe Val
                885                 890                 895

Thr Val Asp Gly Leu Arg Lys Pro Asp Ile Ile Ile Tyr Asp Asp Ser
            900                 905                 910

His Met Val Val Leu Asp Val Gln Val Val Ser Asp Ser Ala Asn Leu
        915                 920                 925

Glu Lys Glu Phe Glu Cys Lys Ala Lys Lys Tyr Ala Asn Asp Val Ala
    930                 935                 940

Leu Arg Ser Ala Met Leu Ile Lys Tyr Pro Phe Ile Lys Ser Phe Ser
945                 950                 955                 960

Phe Val Ala Ala Thr Tyr Asn Asn Arg Gly Leu Ile Ala Lys Ser Ser
                965                 970                 975
```

Val Gln Val Leu Arg Gln Leu Gly Leu Ser Pro Arg Ser Ile Met Val
980 985 990

Ser Ile Leu Ile Cys Leu Glu Gly Thr Leu Glu Thr Trp Arg Ile Phe
995 1000 1005

Asn Gln Ser Thr Met Asn Ala His
1010 1015

<210> 18
<211> 1151
<212> PRT
<213> Anurida maritima

<400> 18
Val Gly Val Gln Gly Glu Val Thr Ser Leu Arg Leu Leu Cys Gln Gln
1 5 10 15

Asp Ser Glu Val Tyr Ala Thr Thr Met Asn Arg Lys Asn Asn Tyr Thr
20 25 30

Arg Gly Asn Arg Phe Ser Ser Gly Ser Pro Gly Asn Phe Val Val Val
35 40 45

Arg Asp Pro Ala Gln Asp Leu Pro Phe Lys Cys Ala Phe Cys Glu Arg
50 55 60

Thr Phe Thr Thr Ser Asn Gly Lys Gly Leu His Glu Leu Arg Ser His
65 70 75 80

Pro Lys Glu Tyr Asn Met Arg Val Pro Val Ala Lys Lys Arg Ala Arg
85 90 95

Trp Ser Glu Glu Glu Leu Ser Gln Leu Ala Glu Ala Glu His Asp Leu
100 105 110

Lys Ser Lys Lys Gln Tyr Ala Ser Glu Leu Asp Leu Ser Arg Asp Leu
115 120 125

```
Glu Gly Cys Met Val Gly Arg Ser Leu Glu Ser Ile Arg Gly Gln Arg
    130                 135                 140

Lys Leu Pro Arg Tyr Val Glu Ile Phe Asn Arg Leu Ser Asn Ser Arg
145                 150                 155                 160

Ala Ser Ile Pro Glu Ile Gly Glu Gly Asp Glu Glu Ala Asn Ser Val
                165                 170                 175

Gly Ser Asp Glu Val Phe His Ala Ser Gly His Gly Thr Gly Ile Thr
            180                 185                 190

Glu Ala Leu Glu Val Leu Val Ser Lys Arg Pro Gly Glu Ala Phe Arg
        195                 200                 205

Glu Glu Val Leu Asn Gly Ile Val Arg Ala Lys Leu Glu Gly Ser Glu
    210                 215                 220

Val Phe Val Arg Leu Glu Gln Tyr Leu Ser Arg Met Phe Val Gly Gln
225                 230                 235                 240

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

Leu Thr Cys Ser Gly Ser Asn Lys Lys Glu Gln Arg Ser Asp Leu Phe
            260                 265                 270

Ser Arg Phe Pro Glu Lys Gly Pro Ser Val Ser Val Ser Ala Pro Ser
        275                 280                 285

Val Ser Asp Met Gly Arg Lys Arg Arg Lys Ala Leu Ser Arg Asn Glu
    290                 295                 300

Ala Thr Gln Val Arg Glu Glu Phe Val Glu Phe Ala Arg Asn Val Asp
305                 310                 315                 320

Pro Ile Pro Arg Arg Lys Cys Ala Arg Val Asn Glu Gly Leu Gln Gly
                325                 330                 335
```

```
Asn Gln Arg Leu Pro Lys Glu Lys Pro Met Thr Ala Arg Ala Lys Met
            340                 345                 350

Arg His Leu Arg Leu Leu Arg Tyr Arg Arg Leu Gln Glu Leu Tyr Lys
        355                 360                 365

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

Ser Lys Pro Gly Arg Asn Pro Glu Ala Val Lys Tyr Trp Ala Glu Thr
385                 390                 395                 400

Met Gly Lys Glu Ser Thr Gly Ile Asp Val Ser Val Met Thr Gly Arg
                405                 410                 415

Pro Arg Tyr Arg Asp Asn Val Trp Ser Pro Ile Tyr Pro Gly Glu Val
            420                 425                 430

Ser Ala Ala Val Lys Leu Met Asp Ser Ser Gly Ala Thr Gly Pro Asp
        435                 440                 445

Gly Phe Ser Val Arg Ser Leu Lys Cys Thr Pro Ser Arg Val Leu Ala
    450                 455                 460

Lys Val Phe Asn Leu Phe Leu Leu Glu Glu Lys Leu Pro Ala Phe Leu
465                 470                 475                 480

Met Thr Ser Arg Thr Val Leu Val Pro Lys Val Lys Glu Pro Lys Ala
                485                 490                 495

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

Phe His Lys Ile Leu Ala Arg Arg Leu Thr Leu Ala Ser Gly Leu Asp
        515                 520                 525

Ser Arg Gln Arg Gly Phe Val Pro Val Asp Gly Cys Ala Glu Asn Leu
    530                 535                 540
```

```
Val Val Leu Glu Ser Ala Ile Arg Ser Ala Lys Asn Tyr Lys Arg Ser
545                 550                 555                 560


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


His Glu Ala Ile Phe Glu Ala Leu Ser Lys Ser Gly Ala Pro Asp Ser
            580                 585                 590


Phe Val Thr Tyr Val Arg Asn Cys Tyr Asp Gly Phe Ala Ser Val Val
        595                 600                 605


Lys Leu Gly Arg Asp Thr Ala Gln Thr Thr Val Arg Gln Gly Val Leu
    610                 615                 620


Gln Gly Asp Pro Leu Ser Pro Ile Leu Phe Asn Leu Val Ile Asp Gln
625                 630                 635                 640


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


Thr Lys Leu Asn Ser Met Ala Phe Ala Asp Asp Leu Ile Leu Leu Ser
            660                 665                 670


Ser Ser Glu Ala Gly Met Arg Arg Met Leu Gly Val Leu Ala Gly Val
        675                 680                 685


Ser Ser Lys Phe Gly Leu Ile Phe His Pro Gly Lys Cys Lys Tyr Leu
    690                 695                 700


Ala Met Ile Trp Ala Gly Lys Gln Lys Lys Met Lys Ile Ala Thr Asp
705                 710                 715                 720


Leu Ser Phe Glu Ile Gly Gly Gly Phe Met Thr Pro Val Gly Val Thr
                725                 730                 735


Glu Thr Trp Lys Tyr Leu Gly Ala Tyr Leu Gly Gln Ile Gly Ile Gln
            740                 745                 750
```

```
Pro Ala Arg Leu Ser Leu Gln Thr Phe Leu Glu Arg Ile Ala Lys Ser
        755                 760                 765

Pro Leu Lys Pro Gln Gln Lys Leu Tyr Leu Ile Arg Val His Leu Leu
    770                 775                 780

Pro Lys Leu Ile Tyr Pro Leu Val Met Ala Pro Ile Arg Ala Ser Met
785                 790                 795                 800

Leu Asn Lys Leu Asp Arg Met Val Arg Val Ala Leu Thr Gly Lys Asp
                805                 810                 815

Gly Ile Leu His Leu Pro Gln Ser Val Pro Ser Ala Phe Phe Tyr Ala
            820                 825                 830

Pro Ile Gly Glu Gly Gly Leu Gly Leu Met Glu Leu Arg Thr Ser Ile
        835                 840                 845

Pro Ala Met Val Lys Ala Arg Phe Glu Arg Met Met Asn Ser Thr Cys
    850                 855                 860

His His Val Arg Ala Ala Ala Lys Gly Ala Ala Asn Ser Asn Arg Ile
865                 870                 875                 880

Ala Leu Ala Asn Arg Phe Leu Arg Lys Thr Ala Asp Gly Ile Pro Val
                885                 890                 895

Thr Ser Ala Lys Leu Val Lys Glu Tyr Gln Ala Ala Lys Leu His Gly
            900                 905                 910

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

His Ser Trp Thr Cys Asp Gly Arg Met Val Met Thr Gly Gln Ala Phe
    930                 935                 940

Cys Glu Ala Leu Lys Ile Arg Ile Asn Ala Leu Pro Cys Leu Ser Arg
945                 950                 955                 960
```

```
Tyr Asn Arg Gly Thr Glu Lys Pro Arg Glu Cys Arg Ala Gly Cys Lys
               965                 970                 975

Thr Thr Glu Ser Leu Asn His Val Leu Gln Val Cys Pro Arg Thr His
            980                 985                 990

Asp Met Arg Val Ala Arg His Asp  Lys Leu Val Asn Arg  Leu Gly Gly
        995                 1000                1005

Tyr Leu  Ser Gln Lys Gly Phe  Glu Ile His Thr Glu  Pro Arg Ile
    1010                1015                1020

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

Gly Glu  Lys Gly Val Val Leu  Asp Ala Gln Ile Gly  Gly Ala Ala
    1040                1045                1050

Asn Leu  Asn Ala Ala His Asp  Ala Lys Met Cys Tyr  Tyr Ser Ser
    1055                1060                1065

Ser Pro  Glu Ile Lys Glu Trp  Val Thr Gly Lys Gly  Ala Pro Asp
    1070                1075                1080

Val Ser  Tyr Gly Ala Cys Ile  Val Ser Pro Gln Gly  Ile Met Ser
    1085                1090                1095

Glu Glu  Ser Trp Lys Thr Leu  Arg Gly Leu Gly Phe  Ser Lys Gly
    1100                1105                1110

Met Leu  Asn Ser Leu Val Val  Thr Val Met Glu Gln  Ser Thr Tyr
    1115                1120                1125

Val Trp  His Val Phe Asn Arg  Ser Thr Ala Ser Tyr  Gly Trp Lys
    1130                1135                1140

Arg Arg  Arg Lys Arg Lys Trp  Asp
    1145                1150
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<210> 19
<211> 956
<212> PRT
<213> Lepidurus apus lubbocki

<220>
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<222> (418)..(418)
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<223> Any amino acid

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

Ala Val Glu Lys Thr Met Met Ser Gly Thr Tyr Val Cys Thr Leu Cys
            20 25 30

Gly Arg Arg Phe Glu Lys Ser Val Gly Leu Thr Leu His Thr Asn Arg
        35 40 45

```
Met His Pro Glu Ala Tyr Asn Lys Leu Lys Glu Ala Lys Lys Pro Val
    50                  55                  60

Leu Lys Lys Ala Arg Trp Ser Glu Glu Glu Val Phe Leu Leu Ala Gln
65                  70                  75                  80

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

Glu Leu His Lys Ile Phe Pro Glu Arg Glu Leu Glu Gly Ile Lys Gly
            100                 105                 110

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

Glu Ile Arg Glu Ser Lys Ala Asn Asp Ser Ser Ser Ser Val Ser Ser
    130                 135                 140

Ser Ser Ser Val Asp Ser Ala Ser Met Gly Ile Ser Asn Trp Leu Glu
145                 150                 155                 160

Phe Leu Leu Ala Leu Pro Lys Thr Ser Asn Gln Phe Gln Glu Gly Arg
                165                 170                 175

Leu Asp Arg Leu Ile Thr Asp Ala Leu Gln Gly Asp Asp Val Leu Leu
            180                 185                 190

Asn Leu Asp Ala Tyr Leu Leu Glu Val Phe Ala Lys Pro Met Ala Pro
        195                 200                 205

Asn Pro Cys Pro Lys Pro Leu Pro Pro Val Lys Asn Ser Arg Glu Lys
    210                 215                 220

Arg Asp Arg Glu Tyr Ser Arg Val Gln Asn Phe Tyr Lys Lys Asn Arg
225                 230                 235                 240

Ser Ala Cys Ile Asn Ser Ile Leu Asp Gly Asn Thr Arg Ser Gln Asn
                245                 250                 255
```

```
Val Ile Pro Asp Leu Met Lys Phe Trp Thr Glu Thr Phe Glu Lys Val
            260                 265                 270

Ser Pro Ala Asp Asp Lys Ala Pro Asp Gln Phe Val Val Asp Glu Pro
        275                 280                 285

Arg Asp Met Tyr Lys Trp Ile Thr Phe Tyr Glu Met Ser Gln Asn Tyr
    290                 295                 300

Leu Asp Pro Ser Thr Ala Pro Gly Val Asp Gly Phe Ser Ala Lys Gln
305                 310                 315                 320

Leu Arg Ser Met Thr Pro Arg Val Leu Asn Lys Ile Leu Asn Leu Leu
                325                 330                 335

Leu Leu Cys Glu Asn Leu Pro Asn Ser Phe Lys Met His Lys Thr Val
            340                 345                 350

Leu Ile Pro Lys Ile Val Asp Pro Lys Ser Pro Gly Asp Phe Arg Pro
        355                 360                 365

Ile Thr Ile Ser Pro Val Leu Ala Arg His Leu Asn Lys Ile Leu Ala
    370                 375                 380

Ala Arg Leu Ser Lys Leu Val Pro Ile Ser Gln Arg Gln Lys Ala Phe
385                 390                 395                 400

Leu Pro Val Asx Gly Cys Gly Glu Asn Ile Phe Leu Leu Asp Tyr Ile
                405                 410                 415

Leu Xaa Asn Ser Lys Lys Lys Ser Lys Ser Val Val Met Ala Val Leu
            420                 425                 430

Asp Val Lys Xaa Ala Phe Asp Ser Val Ser His His Ser Ile Leu Arg
        435                 440                 445

Ala Leu Asn Glu Ala Lys Cys Pro Val Asn Leu Xaa Asn Phe Val Arg
    450                 455                 460
```

```
Asn Ser Tyr Asp Gly Cys Thr Thr Lys Leu Thr Cys Gly Gly Thr Ser
465                 470                 475                 480

Ser Pro Asp Ser Val Arg Met Asn Arg Gly Val Lys Gln Xaa Xaa Pro
                485                 490                 495

Leu Ser Pro Val Leu Phe Asn Leu Ile Ile Asp Ser Ala Ile Arg Lys
            500                 505                 510

Leu Pro Asp Ser Ile Xaa Tyr Leu Ile Arg Asp Gly Leu Lys Ile Asn
        515                 520                 525

Cys Leu Ala Tyr Ala Asp Asp Leu Ile Leu Val Ala Ser Thr Arg Ala
    530                 535                 540

Gly Leu Lys Thr Leu Leu Asn Ile Val Ala Glu His Leu Ser Leu Arg
545                 550                 555                 560

Gly Leu Asp Leu Asn Ala Ala Lys Cys His Gly Leu Ser Ile Ile Ala
                565                 570                 575

Ser Gly Lys Ala Lys Thr Thr Tyr Val Xaa Ala Leu Glu Ser Leu Asp
            580                 585                 590

Leu Asp Gly Gln Pro Ile Lys Asn Leu Arg Val Leu Asp Thr Trp Thr
        595                 600                 605

Tyr Leu Gly Ile Pro Phe Ser His Leu Gly Arg Ala Xaa Lys Phe Ser
    610                 615                 620

Pro Asp Leu Ser Asn Leu Leu Asn Lys Leu Gln Lys Ala Pro Leu Lys
625                 630                 635                 640

Ile Gln Gln Lys Leu Tyr Ala Val Arg Asn Phe Ile Ile Pro Arg Ala
                645                 650                 655

Leu His Gly Leu Ile Leu Ser Arg Thr Asn Leu Lys Glu Leu Asn Thr
            660                 665                 670
```

```
Leu Asp Arg Ala Ile Arg Val Phe Ile Arg Thr Leu Leu His Leu Pro
        675                 680                 685

Lys Asp Thr Pro Leu Gly Phe Phe Xaa Ala Pro Ile Lys Thr Gly Gly
    690                 695                 700

Leu Gly Ile Thr Cys Phe Arg Thr Thr Val Leu Lys Cys Arg Leu Gln
705                 710                 715                 720

Arg Ile Ala Arg Met Arg Asn Cys Ser Asp Glu Val Leu Glu Ala Xaa
                725                 730                 735

Ala Glu Ser Asp Thr Phe Asp Asp Xaa Tyr Ala Lys Leu Arg Asp Leu
            740                 745                 750

Ile Arg Ile Xaa Gly Asn Val Xaa Asp Thr Thr Glu Asn Ile Lys Lys
        755                 760                 765

Tyr Trp Ala Gln Arg Leu His Ser Ser Val Asp Gly Lys Thr Leu Ala
    770                 775                 780

Tyr Met Asp Tyr Phe Xaa Gln Gly Asn Leu Trp Met Ser Glu Asp Lys
785                 790                 795                 800

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

Asn Ala Ile Pro Thr Arg Val Arg Val Ser Arg Gly Arg Pro Asn Lys
            820                 825                 830

Glu Met Ser Cys Arg Ala Lys Cys Leu Asp Ala Gln Arg Ile Pro Ala
        835                 840                 845

Phe Glu Ser Leu Asn His Ile Thr Gln Val Cys Pro Arg Thr His Gly
    850                 855                 860

Ser Arg Xaa Gln Arg His Asp Arg Xaa Ala Lys Phe Leu Phe Lys Asn
865                 870                 875                 880
```

Leu Asn Asn Cys Xaa Ser Arg Lys Ile Leu Tyr Glu Pro His Phe Met
885 890 895

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

His Leu Val Val Leu Asp Val Gln Val Val Ser Glu Ser Ala Asn Leu
915 920 925

Glu Lys Glu Phe Thr Cys Lys Ala Glu Lys Tyr Ala Asn Asp Val Ala
930 935 940

Leu Arg Ser Ala Ile Leu Leu Lys Ile Xaa Ile Tyr
945 950 955

<210> 20
<211> 779
<212> PRT
<213> Ciona intestinalis

<400> 20
Lys Phe Lys Gln Ser Lys Val Lys His Asn Gln Lys Glu Asn Lys Ser
1 5 10 15

Lys Arg Gln Ile Arg Arg Ala Gln Tyr Ala Arg Thr Gln Ile Asn Tyr
20 25 30

Lys Arg Asn Arg Gln Gln Ala Ile Asn Ser Ile Leu Ser Lys Gln Trp
35 40 45

Arg Glu Leu Asp Asp Arg Gly Pro Pro Leu Glu His Val Leu Pro Phe
50 55 60

Trp Gln Lys Leu Leu Glu Lys Ser Ser Glu His Asp Thr Arg Gln Pro
65 70 75 80

Glu Pro Val Ser Gly Pro Ile Trp Glu Leu Val Glu Pro Ile Val Ala
85 90 95

Glu Glu Val Arg Leu Val Arg Lys Ser Met Pro Thr Ser Ala Pro Gly
100 105 110

```
Pro Asp Gly Ile Arg His Lys Asp Phe Met Ala Val Gln Pro Gln Ile
        115                 120                 125

Leu Ala Asp Asn Phe Asn Leu Trp Leu Leu Thr Gly Tyr Gln Pro Lys
    130                 135                 140

Ser Cys Arg Leu Gly Arg Thr Ile Leu Ile Pro Lys Glu Pro Gly Thr
145                 150                 155                 160

Arg Asp Pro Ala Lys His Arg Pro Ile Thr Ile Asn Ser Leu Leu Ile
                165                 170                 175

Arg Cys Phe His Lys Ile Leu Ser Asn Arg Ile Met Lys Leu Ile Pro
            180                 185                 190

Leu Ser Pro Gln Gln Lys Ala Phe Arg Pro Gly Asp Gly Ile Ala Glu
        195                 200                 205

His Ile Trp Asn Leu Arg His Ile Leu Asn Gln His Lys Leu Glu Lys
    210                 215                 220

Lys Glu Leu Asn Leu Ala Phe Leu Asp Val Arg Lys Ala Phe Asp Ser
225                 230                 235                 240

Val Asn His Ser Thr Leu Leu Leu Ala Ala Gly Arg Leu Gly Val Pro
                245                 250                 255

Pro Pro Leu Leu Lys Tyr Ile Glu Asn Leu Tyr Glu Gly Ser Ser Thr
            260                 265                 270

Thr Ile Ile Ala Asn Gly Glu Arg Ser Pro Arg Ile Arg Val Arg Arg
        275                 280                 285

Gly Ile Lys Gln Gly Asp Pro Leu Ser Ile Pro Leu Phe Leu Gly Val
    290                 295                 300

Met Asp Trp Ala Met Ser Asn Leu Asn Pro Asn Val Gly Ser Ser Ile
305                 310                 315                 320
```

```
Gly Gly Lys Ser Ile Asn Cys Met Ala Phe Ala Asp Asp Leu Val Leu
                325                 330                 335

Ile Ser Arg Thr Gln Ile Gly Leu Gln Thr Asn Leu Asp Thr Ile Ser
            340                 345                 350

Tyr Asn Leu Asn Gln Ser Gly Met Thr Leu Asn Ser Glu Lys Cys Ala
        355                 360                 365

Thr Leu Arg Leu Ala Val Asp Gly Lys Ser Lys Lys Trp Trp Ile Asp
    370                 375                 380

His Arg Pro Phe Leu Arg Val Glu Gly Ala Lys Cys Gly Ala Met Asp
385                 390                 395                 400

Ile Glu Gly Thr Tyr Lys Tyr Leu Gly Val Arg Val Gly Ala Gly Asp
                405                 410                 415

Thr Arg Ala Glu Cys Lys Glu Lys Leu Met Ser Asp Leu Lys Glu Thr
            420                 425                 430

Thr Glu Ala Pro Leu Lys Pro Gln Gln Arg Ile Phe Ile Leu Arg Asn
        435                 440                 445

Tyr Ile Leu Pro Arg Ser Leu His Ile Leu Thr Phe Thr Asn Thr Thr
    450                 455                 460

Ala Arg Leu Leu Lys Gln Leu Asp Ser Ala Ile Arg Ile His Val Arg
465                 470                 475                 480

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

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

Pro Leu Leu Arg Ile Arg Arg Met Ala Lys Tyr Asn Thr Ser Glu Asp
        515                 520                 525
```

```
Pro Thr Thr Val Ala Leu Arg Ser Cys His Thr Phe Thr Ser Ala Ala
    530                 535                 540

Val Lys Trp Ala Met Pro Pro Lys Ile Ser Asn Val Val Ile Ser Asp
545                 550                 555                 560

Lys Arg Lys Glu Arg Asp Phe His Arg Ser Glu Leu Ala Thr Ser Ile
                565                 570                 575

Asp Gly Ser Gly Leu Ser Cys Ala Asn Thr Thr Pro Arg Ala His Gln
            580                 585                 590

Trp Val Val Asn Gly Thr Gly Leu Leu Ser Gly Lys Asn Tyr Ile Gly
        595                 600                 605

Ala Ile Asn Ala Arg Gly Asn Leu Leu His Thr Ala Ser Arg Ala Ala
    610                 615                 620

Arg Gly Arg Pro Gln Arg Thr Thr Asp Cys Asp Ser Cys His Arg Val
625                 630                 635                 640

Glu Thr Leu Ser His Ile Leu Gln Ser Cys Pro Arg Thr His Gly Pro
                645                 650                 655

Arg Ile Arg Arg His Asp Lys Val Thr Lys Val Ile Ala Glu Ala Ala
            660                 665                 670

Gly Lys Lys Gly Trp Lys Thr Ile Ala Glu Pro Arg Ile Pro Thr Pro
        675                 680                 685

Glu Gly Ile Arg Lys Pro Asp Leu Ile Leu Tyr Gln His Gly Arg Ala
    690                 695                 700

Ile Val Met Asp Thr Thr Ile Val Ser Asp Ser Ala Asp Leu Ser Met
705                 710                 715                 720

Ser His Gln His Lys Val Ile Tyr Tyr Gln Asn Glu Cys Ile Arg Ser
                725                 730                 735
```

Trp Val Gln Glu Ala Thr Gly Ala Thr Glu Val Thr Trp Ser Ser Phe
740 745 750

Ser Ala Asn Trp Arg Gly Cys Ile Ala Asp Glu Ser Arg Asp Leu Leu
755 760 765

Leu His Asp Ser Thr Ser Gln Lys Thr Ala Ala
770 775

<210> 21
<211> 1257
<212> PRT
<213> Schistosoma japonicum

<400> 21
Met Ser Ala Met Leu Asn Ile Thr Thr Glu Cys His Pro Val Ser Thr
1 5 10 15

Gly Val Asn Ala Asp Pro Ser Phe Ser Tyr Ser Ser Thr Cys Leu Cys
20 25 30

Cys Phe Ser Ser Phe Ala Ser Asn Ser Leu Leu Leu Asp His Ala Thr
35 40 45

Ala Ser His Ser Ala Asn Ile Val Ser Pro Pro Ser Glu Ser Gly Ser
50 55 60

Phe Gln Leu Val Cys Met Leu Cys Ser Ser His Tyr Leu Ser Ser Arg
65 70 75 80

Gly Phe Thr Gln His Leu Arg His Val His Pro Asp Ala Tyr Asn Ser
85 90 95

Leu Lys Cys Leu Arg Leu Asn Ala Ser Pro Leu Thr His Arg Ser Trp
100 105 110

Ser Ser Glu Glu Asp Val Cys Leu Leu Ser Arg Ala Asp Glu Leu Ser
115 120 125

```
Ala Ser Cys Arg Leu Lys Val Asp Leu Tyr Asn Arg Leu His Thr Val
    130                 135                 140

Phe Pro Ser Arg Ser Pro Glu Ala Ile Lys Lys Arg Leu Arg Phe Leu
145                 150                 155                 160

Ser Ser Ser Ser Glu Ser Ser Ser Ser Ala Pro Ser Pro Ser Asp Ile
                165                 170                 175

Ser Ser Ala Ala Ser Ser Val Ser Ser Leu Pro Val Asp Leu Asp Ala
            180                 185                 190

Pro Thr Arg Ser Leu Ile Pro Thr Arg Arg Pro Ala Arg Ser His Ser
        195                 200                 205

Ser Ser Ile Leu Ser Phe Phe Thr Arg Thr Pro Arg Asp Val Ser Ser
    210                 215                 220

Ser Ala Ser Pro Val Val Leu His Ser Ser Pro Ser Thr Thr Ile Val
225                 230                 235                 240

Ile Asn Asn Ala Ser Val Arg Leu His Leu Asp Ser Pro Val Ser Ser
                245                 250                 255

His Ala Leu Glu Ser Ser Cys Met Ser Ser Leu Ala Thr Asn Pro Leu
            260                 265                 270

His Ile Ile Asp Asn Gln His Leu Ala Ala Ser Pro Pro Leu Ser Gly
        275                 280                 285

Val His Cys Pro Ser Val Pro Ser Ser Ala Pro Ala Ala Ala His Val
    290                 295                 300

Asp Gln Ser Phe Asp Asn Pro Ala Leu Gly Ser Thr Pro Val Asp Ser
305                 310                 315                 320

Cys Pro Pro Val Thr Ser Leu Thr Leu Leu Pro Ala Gln Leu Ser Asp
                325                 330                 335
```

```
Val Ala Val Asn Leu Met Thr Ser Cys Pro Glu Leu Ile Lys Pro Ala
            340                 345                 350

Ser Pro Ser Pro Pro Leu Met Asp Asp Asn Leu Leu Gln Leu Ile Leu
        355                 360                 365

Pro Ser Asp Ser Pro Asn Met Ser Pro His Ile Val Pro Pro Pro Asp
    370                 375                 380

Val Val Val Ala Pro Met Cys Thr Asp Ser Thr Arg Glu Leu Ile Ser
385                 390                 395                 400

Ala Ala Leu Arg Leu Ile Thr Gln Asn Ser Pro Leu Met His Ala Pro
                405                 410                 415

Thr Leu Arg Glu Phe Leu Gln Ala Ala Leu Val Asn Met Pro Asp Met
            420                 425                 430

Ile Glu Ile Gln Leu Phe Leu Asn Ser His Ala Glu Leu Gln Phe Pro
        435                 440                 445

Thr Lys Trp Arg Pro Ser Lys Pro Arg Leu Pro Pro Thr Tyr Arg Ala
    450                 455                 460

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

Thr Leu Tyr Asn Arg Cys Arg Arg Asp Ala Ala Asn Thr Val Leu Asp
                485                 490                 495

Gly Arg Trp Arg Ser Pro His Thr Ser Ser Pro Phe Ser Ile Pro Glu
            500                 505                 510

Phe Glu Thr Phe Trp Lys Thr Ile Phe Thr Thr Pro Ser Thr Pro Asp
        515                 520                 525

Asn Arg Pro Val Val Pro Val Leu Pro Thr Cys Pro Ala Leu Leu Asp
    530                 535                 540
```

```
Pro Ile Thr Pro Asp Glu Ile Thr Trp Ala Leu Lys Asp Met Arg Asn
545                 550                 555                 560

Ser Ala Pro Gly Val Asp Arg Leu Ser Ala Gln His Phe Leu Asn Phe
                565                 570                 575

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

Phe Leu Pro Thr Asn Leu Ser Ile Ser Arg Val Thr Phe Ile Pro Lys
        595                 600                 605

Gly Ala Ser Pro Gln Gln Pro Asn Asp Phe Arg Pro Ile Ser Ile Ala
    610                 615                 620

Pro Val Ile Thr Arg Cys Leu His Lys Ile Leu Ala Lys Arg Trp Met
625                 630                 635                 640

Pro Leu Phe Pro Ser Ser Lys Leu Gln Phe Ala Phe Leu Gln Arg Asp
                645                 650                 655

Gly Cys Phe Glu Ala Ile Asn Leu Leu His Ser Leu Leu Arg His Ala
            660                 665                 670

His Glu Arg His Ser Gly Cys Ser Ile Ala Leu Leu Asp Ile Ser Arg
        675                 680                 685

Ala Phe Asp Ser Val Ser His His Ser Ile Leu Arg Ala Ala His Arg
    690                 695                 700

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

Gly Ser Thr Ser Leu Phe Asn Thr Val Asp Cys Ala Pro Ser Arg Gly
                725                 730                 735

Val Lys Gln Gly Asp Pro Leu Ser Pro Leu Leu Phe Ile Met Ser Leu
            740                 745                 750
```

```
Asp Glu Ala Leu Glu Ser Ile Glu Thr Val Ser Pro Val Ile Val Asp
        755                 760                 765

Gly Leu Pro Ile Ser Tyr Ile Ala Tyr Ala Asp Asp Leu Val Ile Leu
    770                 775                 780

Ala Pro Asn Ala Asp Leu Leu Gln Lys Lys Leu Asp Lys Leu Ala Ser
785                 790                 795                 800

Leu Leu Gln Arg Ser Gly Leu Ile Ile Asn Thr Ser Lys Ser Met Ser
                805                 810                 815

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

Thr Val Phe Lys Ile Asp Gly Asn Gln Leu Gln Arg Leu Asn Val Ser
        835                 840                 845

Asp His Phe Asp Phe Leu Gly Ile Ser Phe Asp Tyr Lys Gly Arg Ser
    850                 855                 860

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

Gln Ala Pro Leu Lys Pro Gln Gln Arg Met Ser Ile Leu Arg Glu Asn
                885                 890                 895

Leu Glu Pro Arg Leu Leu Tyr Pro Leu Thr Ile Gly Val Val His Lys
            900                 905                 910

Cys Thr Leu Arg Gln Met Asp Cys Leu Ile Arg Ser Ser Val Arg Lys
        915                 920                 925

Trp Leu Arg Leu Pro Ser Asp Thr Pro Thr Ser Phe Phe His Ser Ser
    930                 935                 940

Ile Ser Thr Gly Gly Leu Gly Ile Pro His Leu Ser Ser Ile Ile Pro
945                 950                 955                 960
```

```
Leu His Arg Arg Lys Arg Ala Ala Lys Leu Leu Leu Ser Pro Cys Pro
               965                 970                 975

Ile Ile Arg Trp Val Ser Gln Ser Pro Ser Phe Ser Asn Phe Leu Arg
           980                 985                 990

Ile Cys Asn Leu Pro Ile Asn Val  His Arg Asp Leu Ile  His Ser Phe
        995                 1000                1005

Asp Glu  Ala Arg Cys Ser Trp  Ser Lys Gln Leu His  Ser Thr Cys
    1010                1015                1020

Asp Gly  Arg Gly Leu Ser Met  Ser Ser Arg Asn Thr  Val Ser His
    1025                1030                1035

Leu Trp  Leu Arg Tyr Pro Glu  His Ile Phe Pro Arg  Leu Tyr Ile
    1040                1045                1050

Asn Ala  Ile Lys Leu Arg Gly  Gly Leu Leu Ser Thr  Lys Val Arg
    1055                1060                1065

Arg Ser  Arg Gly Arg Gln Glu  Asn Ala Asp Leu Leu  Cys Arg Gly
    1070                1075                1080

Arg Cys  Gly His His Glu Ser  Ile Gln His Ile Leu  Gln His Cys
    1085                1090                1095

Ser Leu  Thr His Asp Ile Arg  Cys Arg Arg His Asn  Asp Ile Cys
    1100                1105                1110

Arg Leu  Val Ala Ser Arg Leu  Arg Arg Asn Asn Ile  Arg Phe Phe
    1115                1120                1125

Gln Glu  Pro Cys Ile Pro Thr  Pro Val Ser Phe Cys  Lys Pro Asp
    1130                1135                1140

Phe Ile  Ile Ile Arg Asp Ser  Ile Ala Tyr Val Leu  Asp Val Ser
    1145                1150                1155
```

Val Cys Asp Asp Ala Asn Val His Leu Ser Arg Gln Leu Lys Ile
1160 1165 1170

Asn Lys Tyr Gly Cys Ser Thr Val Val Ser Ser Ile Tyr Asn Phe
1175 1180 1185

Leu Asn Ala Thr Gly Leu Arg Ile Ser Ser Val Arg Gln Thr Pro
1190 1195 1200

Leu Ile Ile Thr Tyr Arg Gly Leu Ile Asp Pro Leu Ser Thr Thr
1205 1210 1215

Ser Leu Arg Arg Leu Ser Phe Ser Ser Arg Asp Ile Ser Asp Leu
1220 1225 1230

Cys Val Ala Ser Ile Gln Gly Ser Met Arg Ile Tyr Asn Thr Tyr
1235 1240 1245

Met Arg Gly Thr Ser Pro Gln Asp Pro
1250 1255

<210> 22
<211> 1856
<212> PRT
<213> Opisthorchis viverrini

<220>
<221> MOD_RES
<222> (1577)..(1580)
<223> Any amino acid

<400> 22
Val Leu Val Thr Phe Asp Asn Val Tyr Tyr Glu Ser Ser Gly Ala Ser
1 5 10 15

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

Glu Glu Cys Gly Lys Cys Cys Lys Ser Lys Ala Gly Phe Val Ala His
35 40 45

```
His Arg Val His Asp Asn Glu Ser Val Gly Thr Asn Thr Val Ala Gln
    50                  55                  60

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

Ser Gln His Arg Arg His Ala His Pro Thr Gln His Asn Ala Asp Lys
                85                  90                  95

Leu Gly Arg Val Lys Tyr Ser Gly Thr Arg Trp Ser Gln Gln Glu Ser
            100                 105                 110

Gln Ser Leu Leu Arg Leu Ala Asn Asn Leu Tyr Pro Ser Cys Gly Thr
        115                 120                 125

Gln Thr Glu Leu Phe Thr Arg Leu Glu Gln Tyr Phe Pro Gly Leu Ser
    130                 135                 140

Ala Ile Ser Ile Glu Thr Arg Leu Arg Val Leu Asn Trp Gln Ala Gln
145                 150                 155                 160

Gln Asp Glu Ser Ser Ser Gly Glu Pro Glu Arg Ile Ile Gly Leu Thr
                165                 170                 175

Thr Ala Asp Ser Ser Glu Ala Asp Gly Tyr Asn Val Trp Phe Lys Gln
            180                 185                 190

Thr Val Asp Cys Thr Val Ser Leu Leu Glu Ser His Ala His Arg Ala
        195                 200                 205

Leu Ala Ser Val Asp Leu Leu Ala Phe Ala Arg Gly Leu Gln Ser Gly
    210                 215                 220

Ile Met Thr Pro Glu Gln Val Leu Ser Leu Leu Asp Leu His Ala Phe
225                 230                 235                 240

Arg Thr Phe Pro His Thr Trp Lys Thr Val Ser Arg Arg Arg Arg Gln
                245                 250                 255
```

```
Leu Ala His Arg Ile Pro Val Asn Arg Lys Gln Ile Arg Arg Ala Asn
            260                 265                 270

Phe Ala Ala Ile Gln Thr Leu Phe His Gln Arg Arg Lys Asp Ser Ala
        275                 280                 285

Ser Ala Val Leu Asp Gly Ser Trp Arg Asp Leu Tyr Lys Gly Asn Cys
    290                 295                 300

Gly Leu Pro Thr Asn Ala Glu Arg Pro Trp Lys Gln Val Leu Ser Ala
305                 310                 315                 320

Pro Lys Arg Ala Gly Ser Arg Pro Ser Arg Ile Val Val Pro Ser Asp
                325                 330                 335

Trp Ser Leu Val Glu Pro Ile Thr Gly Glu Glu Val Gly Arg Thr Ile
            340                 345                 350

Arg Leu Met Gly Asn Ser Ser Pro Gly Leu Asp Lys Leu Thr Pro Arg
        355                 360                 365

Thr Leu Arg Arg Phe Asn Ala Asn Val Leu Ala Gly Tyr Phe Asn Leu
    370                 375                 380

Phe Leu Leu Ser Gly Gly Cys Pro Pro His Leu Cys Arg Ala Arg Ile
385                 390                 395                 400

Thr Leu Val Pro Lys Val Pro His Pro Thr Ser Pro Asp Gln Leu Arg
                405                 410                 415

Pro Ile Ser Val Ser Ser Ile Leu Val Arg Cys Phe His Lys Phe Ala
            420                 425                 430

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

Leu Leu Arg His Ser Ser Ala Thr Ala Ser Asn Leu Ser Leu Ala Phe
    450                 455                 460
```

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

Arg Ser Ala Lys Ala Phe Gly Ala Pro Ser Pro Leu Val Arg Tyr Ile
                485                 490                 495

Ala Gln Ser Tyr Glu Asn Ala Val Ala Val Phe Pro Ser Ser Glu Val
            500                 505                 510

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

Phe Ile Met Ala Met Asp Glu Val Leu Gly Leu Ser Met Pro Gln Leu
    530                 535                 540

Gly Tyr Gln Phe His Asp Thr Leu Val Asp Gly Phe Ala Phe Ala Asp
545                 550                 555                 560

Asp Trp Val Val Cys Ala Glu Ser Gln Ala Arg Leu Lys Glu Lys Leu
                565                 570                 575

Glu Ala Ala Ala Val Glu Leu Gly Arg Ala Gly Met Lys Ile Asn Ala
            580                 585                 590

Arg Lys Thr Lys Val Met Val Ile Cys Gly Asp Arg Lys His Arg Ala
        595                 600                 605

Thr Ala Val Ser Val Glu Pro Phe Arg Phe Ala Glu Glu Leu Ile Thr
    610                 615                 620

Pro Leu Gly Pro Thr Asp Thr Val Thr Tyr Leu Gly Ile Pro Phe Thr
625                 630                 635                 640

Ser Lys Gly Lys Gly Val Phe Asn His Arg Gln His Leu Leu Lys Leu
                645                 650                 655

Leu Glu Glu Val Thr Arg Ala Pro Leu Lys Pro His Gln Arg Met Asp
            660                 665                 670
```

```
Ile Thr Arg Asn Tyr Leu Ile Pro Arg Leu Thr Tyr Ser Leu Val Leu
        675                 680                 685

Gly Gln Val His Arg Asn Thr Leu Lys Arg Leu Asp Asn Tyr Ile Arg
    690                 695                 700

Gln Tyr Ile Arg Gly Trp Leu Arg Leu Pro Lys Asp Thr Pro Ile Ser
705                 710                 715                 720

Tyr Ile His Ala Gly Lys Gln His Gly Gly Leu Gly Ile Pro Ser Leu
                725                 730                 735

Ser Ala Thr Ile Pro Met Gln Arg Lys Thr Arg Met Glu Lys Leu Leu
            740                 745                 750

Ser Thr Gln Cys Arg Val Leu Arg Asn Val Val Asn Asp Ser Ala Phe
        755                 760                 765

Gly Lys Ile Val Arg Asp Leu Ser Leu Pro Ile Arg Val His Gly Ala
    770                 775                 780

Cys Val Asn Thr Lys Glu Glu Leu Val Ala Ala Trp Gly Glu Ser Leu
785                 790                 795                 800

His Asn Ser Ala Asp Gly Arg Gly Leu Arg Glu Leu Val Thr Ser Pro
                805                 810                 815

Leu Ser Asn Arg Trp Leu Val Phe Pro Glu Arg Val Phe Pro Arg Ile
            820                 825                 830

Phe Ile Arg Gly Ile Gln Leu Arg Cys Asn Leu Leu Arg Thr Arg Val
        835                 840                 845

Arg Ser Ala Arg His Gly His Gly Gly Gln Thr Ile Leu Cys Arg Gly
    850                 855                 860

Asn Cys Gly Gln Pro Glu Ser Leu Val His Ile Leu Gln Ser Cys Trp
865                 870                 875                 880
```

```
Ile Thr His Asp Ala Arg Cys Ala Arg His Asn Arg Val Ala Arg Glu
               885                 890                 895

Leu Ala Lys Arg Leu Arg Arg Leu Gly Tyr Thr Val Phe Glu Glu Leu
            900                 905                 910

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

Arg Asp Arg Arg Ala Thr Val Ile Asp Val Ser Ile Val Ser Asp Gly
    930                 935                 940

Arg Gly Val Ile Val Trp Asn Glu Lys Lys Gln Lys Tyr Gly Ala Asp
945                 950                 955                 960

Glu His Ser Leu Ala Ile Ile Ser Ala Leu His Ala Ile Gly Cys Asp
               965                 970                 975

Ile Asn Phe Ser Val His Gln Pro Met Ile Ile Ser Tyr Arg Gly Ile
            980                 985                 990

Cys Phe Pro Gln Ser Ala Lys Ala  Val Ile Gly Leu Gly  Leu Leu Arg
        995                 1000                1005

Ser Asp  Val Ser Leu Phe Ser  Pro Ile Phe Pro Arg  Tyr Ser Phe
    1010                1015                1020

Thr Phe  Lys Thr Arg Ile His  Phe Leu Ser Gln Val  Gly Lys Thr
    1025                1030                1035

Thr Leu  Ile Leu Ser Leu Val  Ser Glu Glu Phe Ser  Pro Lys Val
    1040                1045                1050

Pro Ala  Gln Ala Glu Glu Ile  Thr Ile Pro Ala Asp  Val Thr Pro
    1055                1060                1065

Glu Arg  Val Pro Thr Gln Ile  Val Asp Tyr Ser Ser  Arg Thr Gln
    1070                1075                1080
```

```
Ser His  Glu Gln Leu Cys Ala  Glu Ile Arg Arg Ala  Asp Val Ile
    1085                1090                1095

Cys Leu  Val His Ala Leu Asp  Asp Glu Lys Ser Leu  Glu Arg Ile
    1100                1105                1110

Ser Ser  Tyr Trp Leu Pro Leu  Ile Arg His Asn Gly  Ala Asn Pro
    1115                1120                1125

Asp Cys  His Ser Pro Ile Val  Leu Val Gly Asn Lys  Leu Asp Leu
    1130                1135                1140

Leu Asn  Glu Ser Lys Leu Ser  Lys Ala Leu Pro Ile  Met Ser Glu
    1145                1150                1155

Phe Ser  Glu Val Glu Thr Cys  Ile Glu Cys Ser Ala  Lys Thr Leu
    1160                1165                1170

Leu Asn  Leu Ser Glu Thr Phe  Trp Phe Ala Gln Lys  Ala Val Leu
    1175                1180                1185

Tyr Pro  Thr Ala Pro Leu Tyr  Asp Ala Glu Arg Lys  Glu Leu Thr
    1190                1195                1200

Pro Ala  Cys Ile Arg Ala Leu  Thr Arg Val Phe Arg  Ile Cys Asp
    1205                1210                1215

Thr Asp  Asn Asp Gly Tyr Leu  Ser Asp Arg Glu Leu  Glu Ala Phe
    1220                1225                1230

Gln Ser  Arg Cys Phe Ser Val  Pro Leu Thr Thr Gln  Ser Leu Gln
    1235                1240                1245

Asp Val  Lys Gln Leu Val Arg  Gln Ser Cys Pro Gly  Gly Val Thr
    1250                1255                1260

Leu Asn  Gly Ile Thr Gln Lys  Gly Phe Leu Phe Leu  His Leu Ile
    1265                1270                1275
```

```
Phe Val  Gln Lys Gly Arg His  Glu Thr Thr Trp Thr  Val Leu Arg
    1280                1285                1290

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

Phe Pro  Arg Phe Ser Val Pro  Ser Gly Cys Ser Thr  Glu Leu Ser
    1310                1315                1320

Thr Leu  Gly Ile Gln Phe Leu  His Met Leu Phe Asn  Lys Tyr Asp
    1325                1330                1335

Leu Asp  Arg Asp Gly Cys Leu  Ser Pro Ser Glu Leu  Ser Glu Met
    1340                1345                1350

Leu Ala  Ile Phe Pro Glu Asp  Gln Leu Ser His Val  Ser Glu Leu
    1355                1360                1365

Thr Asp  Ser Val Thr Thr Asn  Ser Thr Gly Trp Ile  Thr Cys Gln
    1370                1375                1380

Gly Phe  Leu Ala Tyr Trp Ala  Leu Thr Ala Tyr Leu  Glu Pro Thr
    1385                1390                1395

Arg Val  Leu Glu Tyr Phe Ala  His Leu Gly Phe Thr  Tyr Phe Ala
    1400                1405                1410

Ala Gly  Ser Phe Trp Ser Thr  Val Asn Ser His His  Gln Gln Gln
    1415                1420                1425

Gln His  Pro Lys Asp Pro Tyr  Asp Gly Thr Pro Ser  Thr Pro Leu
    1430                1435                1440

Leu Ile  Gly Ala Leu Pro Leu  Arg Asp Arg Leu Ile  Gly Gln Asn
    1445                1450                1455

Pro Pro  Asn Ser Ser Gly Arg  Ser Asp Ala Gly Gly  Ser Ser Val
    1460                1465                1470
```

```
Pro Met  Ser Arg Asn Thr Arg  Asp Ala Leu Leu Arg  Ser Leu Val
    1475                1480                1485

Ile Thr  Ser Glu Lys Arg Leu  Asp Thr Ile Arg Arg  Ser Thr Gln
    1490                1495                1500

Arg Thr  Val Phe Tyr Cys Arg  Val Tyr Gly Ala Arg  Lys Val Gly
    1505                1510                1515

Lys Thr  Cys Leu Leu Gln Gly  Leu Leu Gly Arg His  Leu Arg Gly
    1520                1525                1530

Thr Gly  Gly Leu Ala Ile Gly  Gly Leu Ser Gly Arg  Ser Ser Gly
    1535                1540                1545

Trp Ala  Ala Ala Thr Gly Ile  Gln Val Tyr Gly Gln  Gln Arg Thr
    1550                1555                1560

Leu Ile  Met His Glu Ile Gly  Ala Ala Gly Gly Glu  Gln Xaa Xaa
    1565                1570                1575

Xaa Xaa  Gly Gly Pro Arg Arg  Ile Gln Val Tyr Gly  Gln Gln Arg
    1580                1585                1590

Thr Leu  Ile Met His Glu Ile  Gly Ala Ala Gly Gly  Glu Gln Met
    1595                1600                1605

Thr Ala  Gly Glu Ala Leu Ser  Ala Asp Val Ala Cys  Leu Val Tyr
    1610                1615                1620

Asp Val  Ser Asp Ser Asp Ser  Phe Arg Tyr Val Ala  Asn Leu Phe
    1625                1630                1635

Leu Asn  Tyr Tyr Arg Gly Thr  Arg Val Pro Cys Leu  Phe Val Glu
    1640                1645                1650

Ser Lys  Ser Asp Gln Pro Arg  Val Val Gln Asn Tyr  Gln Val Asp
    1655                1660                1665
```

```
Pro Ile  Glu Leu Thr Thr Lys  Tyr Asn Leu Asn Pro  Pro Glu Pro
    1670                 1675                 1680

Phe Ser  Ser Met Asn Leu Glu  Gln Cys Leu Asn Ala  Leu Ala Ser
    1685                 1690                 1695

Asn Ser  Thr Arg Asn Val Ala  Ser Ser Leu Gly Asp  Pro Val Ser
    1700                 1705                 1710

Arg Ser  Arg Ser Ala Thr Asn  Leu Phe Pro Asn Pro  Met Pro Ser
    1715                 1720                 1725

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

Glu Thr  His Leu Leu Lys Asp  Ser Ser His Lys Leu  Ser Pro Gly
    1745                 1750                 1755

Ile Gly  Leu Ser Leu Leu Ser  Leu Glu Lys Glu Ser  Val Gln Leu
    1760                 1765                 1770

Asn Pro  Pro Leu Asp Ala Arg  Gly Arg Arg His Ser  Lys Pro Asp
    1775                 1780                 1785

Leu Ala  Tyr Arg Pro Ser Met  Glu Phe Ser Ala Arg  Asp Thr Asn
    1790                 1795                 1800

Phe Leu  Pro Val Tyr Val Thr  Leu Cys Thr Leu Ala  Asn Tyr Pro
    1805                 1810                 1815

His Leu  Arg Gly Leu Gln Leu  Ala Gln Thr Asp Tyr  Ala Trp Lys
    1820                 1825                 1830

Trp Thr  Leu Ala Ala Thr Ile  Leu Ala Gly Phe Gly  Phe Val Ala
    1835                 1840                 1845

Phe Arg  Ile Ala Lys Thr His  Phe
    1850                 1855
```

<210> 23
<211> 493
<212> PRT
<213> Hippodamia convergens

<400> 23

```
Ala Phe Ala Asp Asp Val Ile Leu Cys Gly Thr Thr Ser Trp Gly Leu
1               5                  10                  15

Gln Arg Asn Leu Glu Ile Phe Glu Glu Glu Leu Arg Arg Ser Gly Leu
            20                  25                  30

Ser Leu Asn Pro Gly Lys Ser Lys Cys Val Ser Leu Val Ala Ser Gly
        35                  40                  45

Arg Glu Lys Lys Val Lys Leu Val Met Thr Pro Thr Phe Arg Ala Ser
    50                  55                  60

Gly Ser Trp Leu Ser Gln Val Asp Gly Thr Thr Phe Trp Lys Tyr Leu
65                  70                  75                  80

Gly Leu Gln Phe Arg Gly Cys Gly Met Ala Gly Cys Gly Ser Asp Asp
                85                  90                  95

Val Ala Glu Cys Leu Glu Arg Leu Thr Arg Ala Pro Leu Lys Pro Gln
            100                 105                 110

Gln Arg Met His Leu Leu Arg Val Phe Leu Leu Pro Arg Phe Tyr His
        115                 120                 125

Val Trp Thr Phe Gly Arg Leu Asn Ala Gly Ile Leu Arg Arg Leu Asp
    130                 135                 140

Ile Arg Val Arg Asn Ala Ile Arg Thr Ser Val Arg Leu Pro His Asp
145                 150                 155                 160

Val Pro Val Gly Tyr Phe His Ala Pro Thr Asn Ala Gly Gly Leu Gly
                165                 170                 175

Ile Pro Gln Leu Ser Arg Phe Ile Pro Leu Leu Arg Leu Lys Arg Phe
            180                 185                 190
```

```
Glu Arg Leu Ala His Ser Ser Val Glu Ser Val Arg Glu Cys Ala Arg
        195                 200                 205

Thr Glu Pro Ala Val Ala Lys Val Arg Trp Cys Arg Glu Arg Leu Ala
    210                 215                 220

Asp Val Val Asp Arg Val Ala Asp Gly Thr Gln Ser Leu Arg Glu Phe
225                 230                 235                 240

Trp Thr Arg Glu Leu Tyr Arg Ser Met Asp Gly Arg Ala Leu Arg Glu
                245                 250                 255

Ser Val Arg Glu Thr Pro Ser Thr Gln Trp Leu Arg Cys Cys Thr Arg
            260                 265                 270

Val Ile Pro Ala Arg Asp Trp Leu Asn Tyr Ile Ser Val His Ile Asn
        275                 280                 285

Ala Leu Pro Ser Arg Val Arg Thr Ser Arg Gly Arg Arg Asp Gly Val
    290                 295                 300

Asp Val Thr Cys Arg Gly Gly Cys Leu Thr Ala Glu Thr Pro Ala His
305                 310                 315                 320

Cys Ile Gln Val Cys His Arg Thr His Gly Gly Arg Val Leu Arg His
                325                 330                 335

Asp Ala Ile Ala Lys Ala Leu Ser Val His Leu Thr Gln Arg Gly Trp
            340                 345                 350

Ser Val Arg Arg Glu Val Ser Tyr Gln Thr Val Val Gly Val Arg Arg
        355                 360                 365

Pro Asp Ile Val Leu Leu Ala Gly Arg Glu Ile Ala Val Val Asp Val
    370                 375                 380

Gln Val Val Ala Pro Asn Pro Ser Leu Asp Ser Ala His Arg Lys Lys
385                 390                 395                 400
```

Val Ala Lys Tyr Arg Asp Glu Ala Gln Leu Ala Thr Cys Leu Val Arg
405 410 415

Gly Ala Ser Val Gln Pro Arg Arg Arg Ala Glu Glu Glu Thr Gln Val
420 425 430

Arg Phe Ala Ser Ala Thr Ile Ser Trp Arg Gly Val Trp Ser Ser Glu
435 440 445

Ser Ala Arg Ser Leu Arg Glu Leu Gly Leu Thr Asp Arg Glu Leu Ala
450 455 460

Gln Tyr Ser Thr Tyr Asp Leu Arg Gly Ser Trp Met Asn Trp Val Arg
465 470 475 480

Phe Gly Ala Ser Thr Ser Thr Arg Met Ala Trp Arg Pro
485 490

<210> 24
<211> 510
<212> PRT
<213> Amblyomma americanum

<400> 24
Pro Leu Phe Phe Asn Leu Val Ile Asp Glu Phe Leu Glu Gly Leu Asn
1 5 10 15

His Glu Leu Ala Tyr Arg Cys Gln Gly Leu Gln Val Ser Ala Met Ala
20 25 30

Phe Ala Asp Asp Leu Ile Leu Ala Ala Ser Thr Lys Asp Gly Leu Lys
35 40 45

Glu His Thr Arg Lys Leu Glu Asn Phe Leu Ser Gln Arg Gly Leu Arg
50 55 60

Ala Asn Ala Glu Lys Ser Ser Thr Leu Val Ile Leu Pro Ser Gly Arg
65 70 75 80

```
Gly His Lys Ser Lys Ile Cys Pro Asn Ile Thr Phe Gln Ile His Gly
                85                  90                  95

Lys Asp Met Thr Ser Gln Asn Cys Thr Ser Leu Trp Arg Tyr Leu Gly
            100                 105                 110

Val Thr Phe Ser Ala Thr Gly Arg Ile Gln Gly Pro Ile Arg Phe Glu
        115                 120                 125

Leu Ala Ala Leu Leu Gln Arg Val Ser Ser Ala Pro Leu Lys Pro Gln
    130                 135                 140

Gln Arg Leu Val Val Leu Arg Tyr Tyr Leu Met Pro Arg Leu Thr His
145                 150                 155                 160

Arg Leu Thr Leu Gly Pro Ile Ser Ala Lys Thr Leu Thr Ala Ile Asp
                165                 170                 175

Arg Thr Ile Arg Ser Asn Ile Arg Arg Trp Leu Ala Leu Pro Leu Asp
            180                 185                 190

Val Pro Met Gly Phe Phe Tyr Ala Gln Ile Glu Gln Gly Gly Leu Gly
        195                 200                 205

Ile Asn Cys Leu Arg Thr Thr Ile Pro Ser Leu Arg Leu Arg Arg Phe
    210                 215                 220

Ala Lys Met Thr His Ser Ser Asn Ser Ala Cys Thr Phe Ala Ala Thr
225                 230                 235                 240

Arg Arg Thr Val Thr Asp Ser Ile His Gln Ala Glu Arg Leu Cys Val
                245                 250                 255

Phe Lys Gly Gln Thr Leu Arg Asn Pro Lys Glu Ser Gly Arg Phe Trp
            260                 265                 270

Ser Ser Gln Leu His Ala Ser Ser Asp Gly Arg Ser Leu Gln Gly Cys
        275                 280                 285
```

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

Leu Lys Gly Arg Glu Phe Ile Asp Leu Thr Lys Phe His Thr Gly Ala
305                 310                 315                 320

Met Pro Asn Leu Thr Arg Leu Lys Arg Gly Arg Asp Val Pro Lys Lys
                325                 330                 335

Cys Arg Ala Gly Cys Glu Ser Glu Glu Ser Met Gly His Ile Gln Gln
            340                 345                 350

Arg Cys His Arg Thr His His Thr Arg Ile Glu Arg Arg Asn Asn Leu
        355                 360                 365

Val Lys Tyr Leu Ser Lys Arg Leu His Asp Leu Gly Trp His Val Lys
    370                 375                 380

Val Glu Pro His Tyr Ala Thr Ser Gln Gly Thr Arg Ile Pro Asp Leu
385                 390                 395                 400

Val Ile Lys Arg Asp Ser Gln Ala Leu Ile Leu Asp Val Gln Val Val
                405                 410                 415

Gly Thr Arg Val Gly Leu Thr Gln Ala His Glu Ala Lys Thr Asn Lys
            420                 425                 430

Tyr Lys Ile Pro Glu Leu Leu Met Ser Met Asp Pro Arg Pro Ser Val
        435                 440                 445

Ser Ser Val Thr Thr Ser Tyr Arg Gly Val Trp Ala Thr Gln Ser Val
    450                 455                 460

Gly Ile Leu Thr Asp Ile Gly Leu Gly Ile His Asp Phe Lys Ile Met
465                 470                 475                 480

Thr Ile Arg Cys Leu Gln Gly Gly Leu Arg Ser Phe Arg Thr His Gln
                485                 490                 495
```

Gln Met Thr Ser Val Arg Arg Asp Gly Asn Phe Arg Ala Val
500 505 510

<210> 25
<211> 513
<212> PRT
<213> Ixodes scapularis

<400> 25
Pro Leu Leu Phe Asn Leu Val Val Asp Glu Phe Leu Gln Thr Leu Asp
1 5 10 15

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

Phe Ala Asp Asp Leu Ile Val Phe Ala Ser Thr Pro Glu Gly Leu Gln
35 40 45

Arg Arg Leu Asp Ser Leu His Ser Phe Val Gly Ala Arg Gly Leu Ala
50 55 60

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

Glu Lys Arg Thr Lys Val Val Thr Thr Gly Asn Phe Ser Val Ser Gly
85 90 95

Ile Pro Leu Pro Ala Cys Gly Ile Glu Ala Arg Trp Lys Tyr Leu Gly
100 105 110

Val Glu Phe Ser Pro Asn Gly Arg Asn Val Pro Leu Thr Lys Asp Val
115 120 125

Ala Ser Met Leu Glu Arg Val Ala Lys Ala Pro Leu Lys Pro Gln Gln
130 135 140

Arg Leu Val Ile Leu Arg Phe Tyr Leu Ile Pro Arg Leu Tyr His Arg
145 150 155 160

Leu Val Leu Gly Arg Trp Asn Arg Lys Leu Leu Lys Arg Leu Asp Val
165 170 175

```
Gln Ile Arg Asp Ala Val Arg Lys Trp Met Ala Leu Pro His Asp Thr
            180                 185                 190

Pro Leu Gly Tyr Tyr His Ala Pro Val Ala Glu Gly Gly Leu Gly Val
        195                 200                 205

Gly Ser Phe Ser Thr Ala Ile Pro Trp Met Gln Val Gln Arg Leu Pro
    210                 215                 220

Arg Met Ala Thr Ser Ser Ser Pro Ile Cys Arg Gln Ala Ala Asp Thr
225                 230                 235                 240

Tyr Met Val Lys Thr Ala Leu Asp Arg Ala Lys Lys Ala Cys Val Val
                245                 250                 255

Arg Gly Asn Ile Leu Ser Asp Lys Gln Ser Val Gly Lys His Trp Ser
            260                 265                 270

Ala Leu Leu His Ala Ser Asn Asp Gly His Ala Leu Arg Glu Val Gly
        275                 280                 285

Arg Ser Pro Ala Ala Gln Arg Trp Val Gln Glu Gly Thr Gly Leu Leu
    290                 295                 300

Thr Gly Arg Ala Phe Ile Asp Val Asn Lys Leu Arg Ile Asn Ala Leu
305                 310                 315                 320

Pro Val Arg Thr Arg Thr Lys Arg Gly Arg Asp Thr Asp Lys Asn Cys
                325                 330                 335

Arg Gly Gly Cys Arg Ala Pro Glu Thr Leu Asp His Val Leu Gln Lys
            340                 345                 350

Cys His Arg Thr His Ala Ala Arg Ile Lys Arg His Asp Gly Leu Val
        355                 360                 365

Gln Ile Val Val Asp Arg Leu Arg Lys Lys Gly Trp Thr Val Glu Val
    370                 375                 380
```

```
Glu Lys Arg Phe Asn Gly Pro Gln Thr Leu Ile Pro Asp Ile Val Ala
385                 390                 395                 400


Arg Arg Val Leu Arg Glu Asn Thr Pro Leu Glu Lys Arg Glu Ser Ala
                405                 410                 415


Val Ile Asp Ala Thr Val Ile Thr Cys Gly Tyr Pro Leu Leu Lys Ala
            420                 425                 430


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


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


Asn Phe Arg Gly Val Trp Cys Lys Gln Ser Ala Gln Asp Leu Leu Ser
465                 470                 475                 480


Leu Gly Leu Thr Lys Gln Asp Leu Lys Ile Met Thr Val Arg Cys Leu
                485                 490                 495


Gln Gly Gly Ile His Cys Phe Arg Val His His Gly Met Thr Ser Val
            500                 505                 510


Lys
```

<210> 26
<211> 1005
<212> PRT
<213> Trichinella britovi

<400> 26

```
Met Ala His Trp Tyr Ala Ser Leu Ile Arg Leu Ile Ala Ala Gly Thr
1               5                   10                  15


Phe Ile Gly Glu Arg Pro Ala Asn Ser Glu Asn Ser Gln Met Pro Cys
            20                  25                  30
```

```
His Leu Ile Ser Asp Ala Thr Cys Gly Phe Ser Phe Ala Thr Phe Ser
        35                  40                  45

Gly Leu His Leu His Arg Lys Arg Ala His Pro Asp Val Phe Ala Ala
    50                  55                  60

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

Leu Leu Ala Thr Leu Glu Ala Gly Leu Asp Pro Ala Cys Lys Asn Ile
                85                  90                  95

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

Val Glu Met Ile Lys Gly Gln Arg Arg Lys Glu Gln Tyr Lys Ala Leu
        115                 120                 125

Val Arg Gln Leu Arg Ser Lys Ser Val Thr Gln Gln Cys Val Gly Phe
    130                 135                 140

Ala Gly Ser Met Asp Ser Asn Val Pro Val Asn Asp Thr Thr Ser Ser
145                 150                 155                 160

Val Ala Ser Glu Val Thr Ile Thr Tyr Pro Glu Tyr Gly Ala Val Met
                165                 170                 175

Ser Cys Asp Leu Ile Lys Glu Ala Thr Gly Met Ala Met Val Asp Ile
            180                 185                 190

Asn Glu Leu Gln Ser Asn Ile Arg Lys Val Phe Ser Ser Gly Arg Lys
        195                 200                 205

Leu Pro Val Lys Ser Arg Gly Ala Arg Glu Thr Val Gln Lys Lys Met
    210                 215                 220

Ala Asn Pro Arg Val Ala Lys Tyr Lys Arg Phe Gln Arg Leu Phe Arg
225                 230                 235                 240
```

```
Ser Asn Arg Arg Lys Leu Ala Ser His Ile Phe Asp Lys Ala Ser Leu
                245                 250                 255

Glu Gln Phe Gly Gly Ser Ile Asp Glu Ala Ser Asp His Leu Glu Lys
            260                 265                 270

Phe Leu Ser Arg Pro Arg Leu Glu Ser Asp Ser Tyr Ser Val Ile Asn
        275                 280                 285

Gly Asn Lys Ser Ile Gly Val Ala His Pro Ile Leu Ala Glu Glu Val
    290                 295                 300

Glu Leu Glu Leu Lys Ala Ser Arg Pro Thr Ala Val Gly Pro Asp Gly
305                 310                 315                 320

Ile Ala Leu Glu Asp Ile Lys Lys Leu Asn Ser Tyr Asp Leu Ala Ser
                325                 330                 335

Leu Phe Asn Leu Trp Leu Lys Ala Gly Asp Leu Pro Glu Ser Val Lys
            340                 345                 350

Ala Ser Arg Thr Ile Phe Leu Pro Lys Ser Asp Gly Thr Thr Asp Ile
        355                 360                 365

Ser Asn Cys Arg Pro Ile Thr Ile Ala Ser Ala Leu Tyr Arg Leu Phe
    370                 375                 380

Ser Lys Ile Ile Thr Arg Arg Leu Ala Ala Arg Leu Glu Leu Asn Val
385                 390                 395                 400

Arg Gln Lys Ala Phe Arg Pro Glu Met Asn Gly Val Phe Glu Asn Ser
                405                 410                 415

Ala Ile Leu Tyr Ala Leu Ile Lys Asp Ala Lys Ala Arg Ser Lys Glu
            420                 425                 430

Ile Cys Ile Thr Thr Leu Asp Leu Ala Lys Ala Phe Asp Thr Val Pro
        435                 440                 445
```

```
His Ser Arg Ile Val Arg Ala Leu Arg Lys Asn Asn Val Asp Pro Glu
    450                 455                 460

Ser Val Asp Leu Ile Ser Lys Met Leu Thr Gly Thr Thr Tyr Ala Glu
465                 470                 475                 480

Ile Lys Gly Leu Gln Gly Lys Pro Ile Thr Ile Arg Asn Gly Val Arg
                485                 490                 495

Gln Gly Asp Pro Leu Ser Pro Leu Leu Phe Ser Leu Phe Ile Asp Glu
            500                 505                 510

Ile Ile Gly Arg Leu Gln Ala Cys Gly Pro Ala Tyr Asp Phe His Gly
        515                 520                 525

Glu Lys Ile Cys Ile Leu Ala Phe Ala Asp Asp Leu Thr Leu Val Ala
    530                 535                 540

Asp Asn Ala Ala Gly Met Lys Ile Leu Leu Lys Ala Ala Cys Asp Phe
545                 550                 555                 560

Leu Glu Glu Ser Gly Met Ser Leu Asn Ala Glu Lys Cys Arg Thr Leu
                565                 570                 575

Cys Ile Ser Arg Ser Pro Arg Ser Arg Lys Thr Phe Val Asn Pro Ala
            580                 585                 590

Ala Lys Phe Asn Ile Ser Asp Trp Lys Thr Gly Ile Ser Ser Glu Ile
        595                 600                 605

Pro Ser Leu Cys Ala Thr Asp Thr Phe Arg Phe Leu Gly His Thr Phe
    610                 615                 620

Asp Gly Glu Gly Lys Ile His Ile Asp Met Glu Glu Ile Arg Ser Met
625                 630                 635                 640

Leu Lys Ser Val Arg Ser Ala Pro Leu Lys Pro Glu Gln Lys Val Ala
                645                 650                 655
```

```
Leu Ile Arg Ser His Leu Leu Pro Arg Leu Gln Phe Leu Phe Ser Thr
            660                 665                 670

Ala Glu Ala Asp Ser Arg Lys Ala Trp Leu Ile Asp Ser Ile Ile Arg
        675                 680                 685

Gly Cys Val Lys Glu Ile Leu His Ser Val Lys Ala Gly Met Cys Thr
    690                 695                 700

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

Leu Gly Glu Phe Ser Leu Phe Ser Arg Gln Lys Ala Leu Ala Lys Met
                725                 730                 735

Ala Gly Ser Ser Asp Pro Leu Ser Lys Arg Val Ala Glu Phe Phe Met
            740                 745                 750

Glu Arg Trp Asn Ile Ala Arg Asp Pro Lys Val Thr Glu Ala Ala Arg
        755                 760                 765

Arg Val Tyr Gln Lys Lys Arg Tyr Gln Arg Phe Phe Gln Thr Tyr Gln
    770                 775                 780

Ser Gly Gly Trp Asn Glu Phe Ser Gly Asn Thr Ile Gly Asn Ala Trp
785                 790                 795                 800

Leu Thr Asn Gly Arg Ala Arg Gly Arg Asn Tyr Val Met Ala Val Lys
                805                 810                 815

Phe Arg Ser Asn Thr Ala Ala Thr Arg Ala Glu Asn Leu Arg Gly Arg
            820                 825                 830

Pro Gly Met Lys Glu Cys Arg Phe Cys Lys Ser Ala Thr Glu Thr Leu
        835                 840                 845

Ala His Ile Cys Gln Lys Cys Pro Ala Asn His Gly Leu Val Ile Gln
    850                 855                 860
```

Arg His Asn Ala Val Val Ser Phe Leu Gly Glu Val Ala Arg Lys Glu
865 870 875 880

Gly Tyr Gln Val Met Ile Glu Pro Lys Val Ser Thr Pro Val Gly Ala
885 890 895

Leu Lys Pro Asp Leu Leu Leu Ile Lys Ala Asp Thr Ala Phe Ile Val
900 905 910

Asp Val Gly Ile Ala Trp Glu Gly Gly Arg Pro Leu Lys Leu Val Asn
915 920 925

Lys Met Lys Cys Asp Lys Tyr Lys Ile Ala Ile Pro Ala Ile Leu Glu
930 935 940

Thr Phe His Val Gly His Ala Glu Thr Tyr Gly Val Ile Leu Gly Ser
945 950 955 960

Arg Gly Cys Trp Leu Lys Ser Asn Asp Lys Ala Leu Ala Ser Ile Gly
965 970 975

Leu Asn Ile Thr Arg Lys Met Lys Glu His Leu Ser Trp Leu Thr Phe
980 985 990

Glu Asn Thr Ile Arg Ile Tyr Asn Ser Phe Met Lys Asn
995 1000 1005

<210> 27
<211> 510
<212> PRT
<213> Rhipicephalus microplus

<400> 27
Pro Leu Leu Phe Asn Leu Val Ile Asp Glu Phe Leu Ala Glu Leu Asp
1 5 10 15

Pro Gln Leu Ala Phe Thr Ser Glu Gly Met Lys Val Ser Ala Met Ala
20 25 30

Phe Ala Asp Asp Ile Ile Leu Thr Thr Ala Thr His Trp Gly Leu Lys
35 40 45

```
Gln Gln Ile Asp Arg Leu Asn Ser Phe Leu Gly Ala Arg Gly Leu Lys
    50                  55                  60

Ile Asn Ala Ala Lys Ser Thr Thr Leu Val Ile Glu Pro Ser Gly Trp
65                  70                  75                  80

Gln Lys Arg Ser Lys Ile Arg Thr Asp Ile Asp Phe Phe Val Asn Gly
                85                  90                  95

Glu Arg Leu Ala Thr Thr Asn Cys Thr Ser Thr Trp Arg Tyr Leu Gly
            100                 105                 110

Val His Phe Gly Val Lys Gly Leu Glu Lys Gly Leu Val Arg Arg Gln
        115                 120                 125

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

Gln Arg Leu Val Val Leu Arg Phe Tyr Leu Leu Pro Arg Leu Tyr His
145                 150                 155                 160

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

Arg Val Val Arg Ser Ala Val Arg Arg Trp Leu Ala Leu Pro Leu Asp
            180                 185                 190

Ala Pro Leu Gly Phe Phe Tyr Ala Ala Val Glu Glu Gly Gly Leu Gly
        195                 200                 205

Val Pro Cys Phe Arg Thr Val Val Pro Ala Met Arg Leu Arg Arg Tyr
    210                 215                 220

Gln Thr Val Ala Gln Ser Ser Asn Pro Ala Cys Ala Phe Ala Ala Thr
225                 230                 235                 240

Arg Pro Thr Ile Thr Gln Leu Lys Arg Gln Ala Asp Asn Leu Thr Ile
                245                 250                 255
```

```
Phe Lys Gly Thr Lys Ile Gly Asn Ser Lys Gln Ser Arg Lys Tyr Trp
            260                 265                 270

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

Lys Glu Ala Pro Gly Ser Thr Ser Trp Leu Gly Asn Gly Thr Ser Leu
    290                 295                 300

Leu Arg Gly Arg Glu Phe Ile Asp Leu Ala Lys Phe His Val Ala Ala
305                 310                 315                 320

Val Pro Asn Leu Thr Arg Leu Arg Arg Gly Arg Glu Leu Pro Lys Gln
                325                 330                 335

Cys Arg Ala Gly Cys Gln Ala Glu Glu Ser Leu Gly His Ile Leu Gln
            340                 345                 350

Arg Cys His Arg Thr His His Ala Arg Ile Lys Arg His Asp Asn Ile
        355                 360                 365

Leu Arg Tyr Leu Ala Gly Arg Leu Thr Glu Leu Gly Trp Gln Val Gln
    370                 375                 380

Gln Glu Arg His Phe Lys Thr Ser Gln Gly Thr Lys Ile Pro Asp Leu
385                 390                 395                 400

Val Ile Ile Lys Arg Glu Lys Ser His Ile Leu Asp Val Gln Val Val
                405                 410                 415

Ser Thr Arg Val Glu Leu Thr Glu Ala His His His Lys Cys Asp Lys
            420                 425                 430

Tyr Lys Ile Pro Asp Leu Leu Phe Gln Val Ser Pro Thr Pro Thr Val
        435                 440                 445

Ser Ser Val Thr Leu Ser Tyr Arg Gly Thr Trp Ala Gly Glu Ser Val
    450                 455                 460
```

```
Arg Thr Leu Gln Glu Val Gly Leu Thr Arg Asn Asp Phe Lys Met Met
465                 470                 475                 480


Thr Ile Arg Cys Leu Gln Gly Gly Leu Ala Ala Phe Lys Met His Gln
                485                 490                 495


Met Ser Thr Ala Val Val Arg Arg Gly Val Gly Ser Gln Gly
            500                 505                 510


<210> 28
<211> 1080
<212> PRT
<213> Trichinella sp.

<400> 28
Met Ser Asn Arg Leu Ala Asn Thr Ala Ala Ala Gly Gly Val Pro Glu
1               5                   10                  15


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


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


Ser Phe Thr Ser Thr Thr Trp Leu Ser Val Glu Leu His Phe Lys Ser
    50                  55                  60


Val His Asn Thr Arg Glu Phe Val Phe Leu Cys Ser Lys Cys Glu Lys
65                  70                  75                  80


Ser Trp Pro Ser Ile Asn Ser Val Ala Ser His Tyr Pro Arg Cys Lys
                85                  90                  95


Gly Ser Val Lys Ala Ala Val Val Pro Ser Ser Leu Ala Asn Thr Cys
            100                 105                 110


Thr Thr Cys Gly Ser Ser Phe Gly Thr Phe Ser Gly Leu Gln Leu His
        115                 120                 125
```

```
Arg Lys Arg Ala His Pro Asp Val Phe Ala Ala Ser Cys Ser Lys Lys
    130                 135                 140

Thr Lys Ala Arg Trp Ser Asn Asp Glu Phe Ile Leu Leu Ala Arg Leu
145                 150                 155                 160

Glu Ala Gly Leu Asp Pro Ala Cys Lys Asn Ile Asn Gln Val Leu Ala
                165                 170                 175

Glu Arg Leu Met Gly Phe Asn Ile Thr Arg Gly Val Glu Met Ile Lys
            180                 185                 190

Gly Gln Arg Arg Lys Asp Gln Tyr Lys Ala Leu Val Arg Gln Leu Arg
        195                 200                 205

Ser Asn Ser Glu Thr Gln Gln Cys Val Gly Leu Ala Gly Ser Met Asp
    210                 215                 220

Ser Asn Val Pro Val Asn Asp Thr Thr Ser Ser Val Ala Ser Glu Val
225                 230                 235                 240

Thr Ile Thr Tyr Pro Glu Tyr Gly Ala Val Met Ser Cys Asp Leu Ile
                245                 250                 255

Lys Glu Ala Thr Gly Met Ala Thr Val Asp Ile Asn Glu Leu Gln Ser
            260                 265                 270

Asn Ile Arg Lys Val Phe Ser Ser Gly Arg Lys Leu Pro Met Lys Val
        275                 280                 285

Arg Gly Val Arg Glu Thr Val Gln Lys Lys Met Ala Asn Pro Arg Val
    290                 295                 300

Ala Lys Phe Lys Arg Phe Gln Arg Leu Phe Arg Ser Asn Arg Arg Lys
305                 310                 315                 320

Leu Ala Ser His Ile Phe Asp Lys Ala Ser Leu Glu Gln Phe Gly Gly
                325                 330                 335
```

```
Ser Ile Asp Glu Ala Ser Asp His Leu Glu Lys Phe Leu Ser Arg Pro
            340                 345                 350

Arg Leu Glu Ser Asp Ser Tyr Ser Val Ile Ser Gly Asp Lys Ser Ile
        355                 360                 365

Gly Val Ala His Pro Ile Leu Ala Glu Asp Val Glu Leu Glu Leu Lys
    370                 375                 380

Ala Thr Arg Pro Thr Ala Val Gly Pro Asp Gly Ile Gly Leu Glu Asp
385                 390                 395                 400

Ile Lys Lys Leu Asn Thr Tyr Asp Leu Ala Ser Leu Phe Asn Ile Trp
                405                 410                 415

Leu Lys Ala Gly Asp Leu Pro Asp Ser Val Lys Ala Ser Arg Thr Ile
            420                 425                 430

Phe Leu Pro Lys Ser Asp Gly Thr Thr Asp Ile Ser Asn Cys Arg Pro
        435                 440                 445

Ile Thr Ile Ala Ser Ala Leu Tyr Arg Leu Phe Ser Lys Ile Ile Thr
    450                 455                 460

Arg Arg Leu Ala Ala Arg Leu Glu Leu Asn Val Arg Gln Lys Ala Phe
465                 470                 475                 480

Arg Pro Glu Met Asn Gly Val Phe Glu Asn Ser Ala Ile Leu Tyr Ala
                485                 490                 495

Leu Ile Lys Asp Ala Lys Val Arg Ser Lys Glu Ile Cys Ile Thr Thr
            500                 505                 510

Leu Asp Leu Ala Lys Ala Phe Asp Thr Val Pro His Ser Arg Ile Leu
        515                 520                 525

Arg Ala Leu Arg Lys Asn Asn Val Asp Pro Glu Ser Val Asp Leu Ile
    530                 535                 540
```

```
Ser Lys Met Leu Thr Gly Thr Thr Tyr Ala Glu Ile Lys Gly Leu Gln
545                 550                 555                 560


Gly Lys Pro Ile Ile Ile Arg Asn Gly Val Arg Gln Gly Asp Pro Leu
                565                 570                 575


Ser Pro Leu Leu Phe Ser Leu Phe Ile Asp Glu Ile Ile Gly Arg Leu
            580                 585                 590


Gln Ala Cys Gly Pro Ala Tyr Asp Phe His Gly Glu Lys Ile Cys Ile
        595                 600                 605


Leu Ala Phe Ala Asp Asp Leu Thr Leu Val Ala Asp Ser Ala Ala Gly
    610                 615                 620


Met Lys Ile Leu Leu Lys Ala Ala Cys Asp Phe Leu Glu Glu Ser Gly
625                 630                 635                 640


Met Ser Leu Asn Ala Glu Lys Cys Arg Thr Leu Cys Ile Ser Arg Ser
                645                 650                 655


Pro Arg Ser Arg Lys Thr Phe Val Asn Pro Ala Ala Lys Phe Asn Ile
            660                 665                 670


Ser Asp Trp Lys Thr Gly Val Ser Ser Glu Ile Pro Ser Leu Cys Ala
        675                 680                 685


Thr Asp Thr Phe Arg Phe Leu Gly His Thr Phe Asp Gly Glu Gly Lys
    690                 695                 700


Ile His Ile Asp Thr Glu Glu Ile Arg Ser Met Leu Lys Ser Val Lys
705                 710                 715                 720


Ser Ala Pro Leu Lys Pro Glu Gln Lys Val Ala Leu Ile Arg Ser His
                725                 730                 735


Leu Leu Pro Arg Leu Gln Phe Leu Phe Ser Thr Ala Glu Ala Asp Ser
            740                 745                 750
```

```
Arg Lys Ala Trp Leu Ile Asp Ser Ile Ile Arg Gly Cys Val Lys Glu
        755                 760                 765

Ile Leu His Ser Val Lys Ala Gly Met Cys Thr Asp Ile Phe Tyr Ile
    770                 775                 780

Pro Ser Arg Asp Gly Gly Leu Gly Phe Thr Ser Leu Gly Glu Phe Ser
785                 790                 795                 800

Leu Phe Ser Arg Gln Lys Ala Leu Ala Lys Met Ala Gly Ser Ser Asp
                805                 810                 815

Pro Leu Ser Lys Leu Val Ala Glu Phe Phe Ile Glu Arg Trp Asn Ile
            820                 825                 830

Ala Arg Asp Pro Lys Val Ile Glu Ala Ala Arg Arg Val Tyr Gln Lys
        835                 840                 845

Lys Arg Tyr Gln Arg Phe Phe Gln Thr Tyr Gln Ser Gly Gly Trp Ser
    850                 855                 860

Glu Phe Ser Gly Asn Thr Ile Gly Asn Ala Trp Leu Thr Asn Gly Arg
865                 870                 875                 880

Ala Arg Gly Arg Asn Phe Ile Met Ala Val Lys Phe Arg Ser Asn Thr
                885                 890                 895

Ala Ala Thr Arg Ala Glu Asn Leu Arg Gly Arg Pro Gly Met Lys Glu
            900                 905                 910

Cys Arg Phe Cys Lys Ser Ala Ile Glu Thr Leu Ala His Ile Cys Gln
        915                 920                 925

Lys Cys Pro Ala Asn His Gly Leu Val Ile Gln Arg His Asp Ala Val
    930                 935                 940

Val Thr Phe Leu Gly Glu Val Ala Arg Lys Glu Gly Tyr Gln Val Met
945                 950                 955                 960
```

Ile Glu Pro Lys Val Ser Thr Pro Val Gly Ala Leu Lys Pro Asp Leu
965 970 975

Leu Leu Ile Lys Ala Asp Thr Ala Phe Ile Val Asp Val Gly Ile Ala
980 985 990

Trp Glu Gly Gly Arg Pro Leu Lys Leu Val Asn Lys Met Lys Cys Asp
995 1000 1005

Lys Tyr Lys Val Ala Ile Pro Ala Ile Leu Glu Thr Phe His Val
1010 1015 1020

Gly His Ala Glu Thr Tyr Gly Val Ile Leu Gly Ser Arg Gly Cys
1025 1030 1035

Trp Leu Lys Ser Asn Asp Lys Ala Leu Ala Ser Ile Gly Leu Asn
1040 1045 1050

Ile Thr Arg Arg Met Lys Glu His Leu Ser Trp Leu Thr Phe Glu
1055 1060 1065

Asn Thr Ile Arg Ile Tyr Asn Ser Phe Met Lys Asn
1070 1075 1080

<210> 29
<211> 1126
<212> PRT
<213> Trichinella sp.

<400> 29
Met Ser Asn Arg Leu Ala Asp Thr Asp Ala Ala Gly Gly Val Pro Glu
1 5 10 15

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

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

Ser Phe Thr Ser Thr Thr Trp Leu Ser Met Glu Leu His Phe Lys Ser
50 55 60

```
Val His Asn Ile Arg Glu Phe Val Phe Leu Cys Ser Lys Cys Glu Lys
65                  70                  75                  80

Ser Lys Pro Ser Ile Asn Ser Val Ala Ser His Tyr Pro Arg Cys Lys
                85                  90                  95

Gly Ser Val Lys Ala Ala Val Val Pro Ser Ser Leu Ala Asn Thr Cys
            100                 105                 110

Thr Thr Cys Gly Ser Ser Phe Gly Thr Phe Gly Gly Leu Gln Leu His
        115                 120                 125

Arg Lys Arg Ala His Pro Asp Val Phe Ala Ala Ser Cys Ser Lys Lys
    130                 135                 140

Thr Lys Ala Arg Trp Ser Asn Asp Glu Phe Thr Leu Leu Ala Thr Leu
145                 150                 155                 160

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

Glu Arg Leu Met Gly Tyr Asn Ile Thr Arg Ser Val Glu Met Ile Lys
            180                 185                 190

Gly Gln Arg Arg Lys Glu Gln Tyr Lys Ala Leu Val Arg Gln Leu Arg
        195                 200                 205

Ser Lys Ser Glu Thr Gln Gln Cys Val Gly Phe Ala Gly Ser Met Asp
    210                 215                 220

Ser Asn Val Pro Val Asn Val Thr Thr Pro Ser Val Val Ala Glu Val
225                 230                 235                 240

Ala Ile Thr Tyr Pro Glu Tyr Gly Ala Val Met Ser Cys Asp Leu Ile
                245                 250                 255

Lys Gln Ala Thr Gly Met Ala Ile Val Asp Ile Asn Glu Leu Gln Asn
            260                 265                 270
```

```
Asn Leu Arg Lys Val Phe Ser Ser Gly Arg Asn Leu Pro Ala Lys Ser
        275                 280                 285

His Gly Val Arg Glu Ser Val Pro Lys Lys Met Ala Asn Pro Arg Val
    290                 295                 300

Ala Lys Phe Lys Arg Phe Gln Arg Leu Phe Arg Ser Asn Arg Arg Lys
305                 310                 315                 320

Leu Ala Ser His Ile Phe Asp Lys Ala Ser Leu Glu Gln Phe Gly Gly
                325                 330                 335

Ser Ile Asp Glu Ala Ser Asp His Leu Glu Lys Phe Leu Ser His Pro
            340                 345                 350

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

Gly Ile Ala His Pro Ile Leu Ala Glu Glu Val Glu Leu Glu Leu Lys
    370                 375                 380

Ala Thr Arg Pro Thr Ala Val Gly Pro Asp Gly Ile Ala Leu Glu Asp
385                 390                 395                 400

Ile Lys Arg Leu Asn Pro Tyr Asp Ile Ala Ser Leu Phe Asn Leu Trp
                405                 410                 415

Leu Lys Ala Gly Asp Leu Pro Asp Ser Val Lys Ala Ser Arg Thr Ile
            420                 425                 430

Phe Leu Pro Lys Ser Asp Gly Thr Thr Asp Ile Ser Asn Cys Arg Pro
        435                 440                 445

Ile Thr Ile Ala Ser Ala Leu Tyr Arg Leu Phe Ser Lys Ile Ile Thr
    450                 455                 460

Arg Arg Leu Ala Ala Lys Leu Glu Leu Asn Val Arg Gln Lys Ala Phe
465                 470                 475                 480
```

```
Gln Pro Glu Met Asn Gly Val Phe Glu Asn Thr Ala Ile Leu Tyr Ala
                485                 490                 495

Leu Ile Lys Asp Ala Lys Val Arg Ser Lys Glu Ile Cys Ile Thr Thr
            500                 505                 510

Leu Asp Leu Ala Lys Ala Phe Asp Thr Val Pro His Ser Arg Ile Leu
        515                 520                 525

Arg Ala Leu Lys Lys Asn Asn Val Asp Pro Glu Ser Val Asp Leu Ile
    530                 535                 540

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

Gly Lys Pro Ile Thr Ile Arg Asn Gly Val Arg Gln Gly Asp Pro Leu
                565                 570                 575

Ser Pro Leu Leu Phe Ser Leu Phe Ile Asp Glu Ile Ile Gly Arg Leu
            580                 585                 590

Gln Ala Cys Gly Pro Ala Tyr Asp Phe His Gly Glu Lys Ile Cys Ile
        595                 600                 605

Leu Ala Phe Ala Asp Asp Leu Thr Leu Val Ala Asp Ser Ala Ala Gly
    610                 615                 620

Met Lys Ile Leu Leu Lys Ala Ala Cys Asp Phe Leu Ala Glu Ser Gly
625                 630                 635                 640

Met Ser Leu Asn Thr Glu Lys Cys Arg Thr Leu Cys Ile Ser Arg Ser
                645                 650                 655

Pro Arg Ser Arg Lys Thr Phe Val Asn Pro Ala Ala Lys Phe Ile Ile
            660                 665                 670

Ser Asp Trp Lys Thr Gly Val Ser Ser Glu Ile Pro Ser Leu Cys Ala
        675                 680                 685
```

```
Thr Asp Thr Phe Arg Phe Leu Gly His Thr Phe Asp Gly Glu Gly Lys
    690                 695                 700

Ile His Ile Asp Leu Glu Glu Ile Arg Ser Met Val Lys Ser Val Lys
705                 710                 715                 720

Ser Ala Pro Leu Lys Pro Glu Gln Lys Val Ala Leu Ile Arg Ser His
                725                 730                 735

Leu Leu Pro Arg Leu Gln Phe Leu Phe Ser Thr Ala Glu Val Asp Ser
            740                 745                 750

Arg Arg Ala Trp Leu Ile Asp Ser Ile Ile Arg Gly Cys Val Lys Glu
        755                 760                 765

Ile Leu His Ser Val Lys Ala Gly Met Cys Thr Asp Phe Phe Tyr Ile
    770                 775                 780

Pro Ser Arg Asp Gly Gly Met Gly Leu Thr Ser Leu Gly Glu Phe Ser
785                 790                 795                 800

Leu Phe Gly Arg Gln Lys Ala Leu Ala Lys Met Ala Gly Ser Ser Asp
                805                 810                 815

Pro Leu Ser Lys Arg Val Ala Glu Phe Phe Ile Glu Arg Trp Asn Ile
            820                 825                 830

Ala Arg Asp Pro Lys Val Ile Glu Ala Ala Arg Arg Val Tyr Gln Lys
        835                 840                 845

Lys Arg Tyr Gln Arg Phe Phe Arg Thr Tyr Gln Ser Gly Gly Trp Asn
    850                 855                 860

Glu Phe Ser Gly Asn Thr Ile Gly Asn Ala Trp Leu Thr Asn Gly Arg
865                 870                 875                 880

Ala Arg Gly Arg Asn Phe Ile Met Ala Val Lys Phe Arg Ser Asn Thr
                885                 890                 895
```

```
Ala Ala Thr Arg Ala Glu Asn Leu Arg Gly Arg Leu Gly Met Lys Glu
            900                 905                 910

Cys Arg Phe Cys Lys Ser Ala Thr Glu Thr Leu Ala His Ile Cys Gln
        915                 920                 925

Arg Cys Pro Ala Asn His Gly Leu Val Ile Gln Arg His Asn Ala Val
    930                 935                 940

Val Thr Phe Leu Gly Glu Met Ala Arg Lys Glu Gly Tyr Gln Val Met
945                 950                 955                 960

Ile Glu Pro Lys Val Ser Thr Pro Val Gly Ala Leu Lys Pro Asp Leu
                965                 970                 975

Leu Leu Ile Lys Ala Asp Ser Ala Phe Ile Val Asp Val Gly Ile Ala
            980                 985                 990

Trp Glu Gly Gly Arg Pro Leu Lys  Leu Val Ser Lys Met  Lys Cys Asp
        995                 1000                1005

Lys Tyr  Lys Ile Ala Ile Pro  Ala Ile Leu Glu Thr  Phe His Val
    1010                1015                1020

Gly His  Ala Glu Thr Tyr Gly  Val Ile Leu Gly Ser  Arg Gly Cys
    1025                1030                1035

Trp Leu  Lys Ser Asn Asp Lys  Ala Leu Ala Ser Ile  Gly Leu Asn
    1040                1045                1050

Ile Thr  Arg Lys Met Lys Glu  His Leu Ser Trp Leu  Thr Phe Glu
    1055                1060                1065

Asn Thr  Ile Arg Ile Asn Asn  Ser Gln Met Pro Arg  His Leu Ile
    1070                1075                1080

Ser Asp  Ala Tyr Glu Trp Ile  Asn Lys Ile Pro Ser  Val Pro Ile
    1085                1090                1095
```

```
Tyr Tyr  Leu Ala Lys Pro Gln  Pro Arg Glu Arg Ala  Trp Gln Asn
    1100                1105                1110


Gln Arg  Gly Lys Lys Thr Leu  Leu Ser Leu Thr Leu  Val
    1115                1120                1125


<210> 30
<211> 526
<212> PRT
<213> Lepidurus couesii

<400> 30
Lys Gln Gly Asp Pro Leu Ser Pro Val Leu Phe Asn Leu Val Ile Asn
1               5                   10                  15


Glu Ile Ile Arg Lys Leu Pro Ala Ser Ile Gly Phe Pro Ile Asn Asp
            20                  25                  30


Lys Leu Ser Ile Asn Cys Ile Ala Tyr Ala Asp Asp Leu Ile Leu Val
        35                  40                  45


Ala Asn Thr Arg Glu Gly Leu Lys Arg Leu Leu Glu Ile Leu Asn Glu
    50                  55                  60


Glu Leu Pro Lys Arg Gly Leu Glu Leu Asn Ala Ser Lys Cys Phe Gly
65                  70                  75                  80


Leu Ser Leu Thr Ala Leu Gly Lys Met Lys Lys Thr Tyr Leu Cys Ser
                85                  90                  95


Ser Ser His Leu Asp Leu His Gly Thr Leu Ile Lys Asn Leu Thr Ala
            100                 105                 110


Asp Glu Ser Trp Val Tyr Leu Gly Val Pro Phe Ser His Ile Gly Arg
        115                 120                 125


Ser Lys Ser Phe Ser Pro Asp Leu Glu Ala Leu Leu Asn Lys Leu Gln
    130                 135                 140
```

```
Lys Ser Pro Leu Lys Leu Gln Gln Lys Leu Phe Ala Leu Arg Val Tyr
145                 150                 155                 160

Leu Ile Pro Arg Val Leu His Gly Leu Val Leu Ser Lys Val Ala Met
                165                 170                 175

Gly Glu Leu Lys Ile Met Asp Lys Leu Ile Leu Lys Tyr Leu Arg Leu
            180                 185                 190

Trp Leu Arg Leu Pro Lys Asp Thr Pro Leu Gly Phe Phe Tyr Ala Ser
        195                 200                 205

Val Lys Leu Gly Gly Leu Gly Ile Lys Asn Leu Arg Thr Asn Val Leu
    210                 215                 220

Lys Cys Arg Lys Gln Arg Ile Glu Arg Met Leu Val Ser Pro Asp Asp
225                 230                 235                 240

Val Val Arg Leu Ala Ala Glu Ser Glu Ile Phe Leu Lys Glu Thr Val
                245                 250                 255

Lys Leu Lys Asp Leu Leu Thr Tyr Asp Glu Lys Cys Leu Asp Thr Thr
            260                 265                 270

Glu Lys Ile Asn Lys Phe Trp Ser Glu Arg Leu Tyr Thr Ser Phe Asp
        275                 280                 285

Gly Lys Pro Leu Ala Tyr Ser Glu Tyr Phe Pro Gln Gly Cys Gly Trp
    290                 295                 300

Ile Arg Glu Asp Lys Ile Ala Gln Pro Ala His Ile Phe Ala Glu Cys
305                 310                 315                 320

Ile Lys Leu Arg Ile Asn Ala Leu Pro Thr Arg Ser Arg Leu Ala Arg
                325                 330                 335

Gly Arg Pro Thr Lys Asp Arg Ser Cys Arg Ala Gly Cys Leu Asp Val
            340                 345                 350
```

Gln Lys Glu Pro Ala Ile Glu Ser Leu Asn His Ile Ala Gln Val Cys
355 360 365

Pro Arg Thr His Gly Ala Arg Ile Lys Arg His Asp Arg Leu Val Gln
370 375 380

Phe Leu Cys Leu Asn Leu Lys Lys Asn Pro Lys Arg Asn Ile Leu Val
385 390 395 400

Glu Tyr Asn Phe Arg Thr Ala Ala Gly Ile Arg Lys Pro Asp Ile Ile
405 410 415

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

Asp Ser Ser Asn Leu Glu His Glu Tyr Leu Glu Lys Ser Arg Lys Tyr
435 440 445

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

Val Thr Asn Leu Ser Phe His Ala Val Thr Leu Asn Asn Arg Gly Leu
465 470 475 480

Ile Ala Lys Ser Thr Val Thr Ala Leu Arg Arg Leu Gly Val Pro Pro
485 490 495

Arg Cys Ile Met Ile Leu Cys Val Ile Ser Leu Glu Lys Thr Leu Glu
500 505 510

Ile Trp Arg Ile Phe Asn Gln Ser Thr Ala Ala Ala Arg Lys
515 520 525

<210> 31
<211> 521
<212> PRT
<213> Drosophila ambigua

<400> 31
Pro Leu Gly Ser Gln Gly Asp Pro Leu Ser Pro Ile Ile Ile Asn Met
1 5 10 15

```
Ile Ile Asp Arg Leu Leu Arg Val Leu Pro Asn Glu Ile Gly Ala Thr
            20                  25                  30

Val Gly Asn Ala Ile Thr Asn Ala Glu Arg Phe Ala Asp Asp Leu Val
        35                  40                  45

Leu Phe Ala Glu Thr Pro Met Gly Leu Gln Lys Leu Leu Asp Thr Thr
    50                  55                  60

Val Asp Phe Leu Ser Ser Val Gly Leu Thr Leu Asn Ser Asp Lys Cys
65                  70                  75                  80

Phe Thr Ile Gly Ile Lys Gly Gln Pro Lys Gln Lys Cys Thr Val Val
                85                  90                  95

Ile Pro Gln Ser Phe Cys Ile Gly Ser Arg Pro Cys Pro Ala Leu Lys
            100                 105                 110

Arg Ser Asp Glu Trp Lys Tyr Leu Gly Ile His Phe Thr Ala Glu Gly
        115                 120                 125

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

Leu Thr Arg Ser Pro Leu Lys Pro Gln Gln Lys Leu Phe Ala Leu Arg
145                 150                 155                 160

Thr Val Leu Ile Pro Gln Leu Tyr His Lys Leu Thr Leu Gly Ser Val
                165                 170                 175

Met Ile Gly Val Leu Arg Lys Cys Asp Ile Val Val Arg Ser Phe Ile
            180                 185                 190

Arg Lys Trp Leu Gly Leu Pro Met Asp Val Ser Thr Ala Phe Phe His
        195                 200                 205

Ala Pro His Thr Cys Gly Gly Leu Gly Val Pro Ser Val Arg Tyr Leu
    210                 215                 220
```

```
Ala Pro Met Leu Arg Met Lys Arg Leu Ser Gly Ile Lys Trp Pro His
225                 230                 235                 240

Leu Val Gln Ser Glu Ala Ala Ser Ser Phe Leu Glu Val Glu Leu Asn
                245                 250                 255

Lys Ala Arg Gly Arg Thr Leu Ala Gly Glu Asn Glu Leu Thr Ser Arg
            260                 265                 270

Thr Ala Ile Glu Thr Tyr Trp Ala Asp Lys Leu Tyr Met Ser Val Asp
        275                 280                 285

Gly Ser Gly Leu Arg Glu Ala Arg Leu Phe Arg Pro Gln His Gly Trp
    290                 295                 300

Val Phe Gln Pro Thr Arg Leu Leu Thr Gly Lys Asp Tyr Arg Asn Gly
305                 310                 315                 320

Ile Lys Leu Arg Ile Asn Ala Leu Pro Ser Arg Ser Arg Thr Thr Arg
                325                 330                 335

Gly Arg His Asp Leu Ala Arg Gln Cys Arg Ala Gly Cys Asp Ala Pro
            340                 345                 350

Glu Thr Asn Asn His Ile Leu Gln Asn Cys Tyr Arg Thr His Gly Lys
        355                 360                 365

Arg Val Ala Arg His Asn Cys Val Val Asn Asn Leu Lys Arg Ile Leu
    370                 375                 380

Glu Glu Lys Gly His Thr Val His Val Glu Pro Asn Leu Gln Gly Glu
385                 390                 395                 400

Ser Ala Val Ser Lys Pro Asp Leu Val Ala Ile Arg Gln Asn His Ala
                405                 410                 415

Phe Val Ile Asp Ala Gln Ile Val Thr Asp Gly Leu Ser Leu Asp Gln
            420                 425                 430
```

Ala His Leu Pro Lys Val Glu Arg Tyr Lys Arg Pro Asp Val Ile Thr
435 440 445

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

Ala Thr Leu Asn Trp Arg Gly Ile Trp Ser Asn Gln Ser Val Lys Gly
465 470 475 480

Leu Ile Thr Asn Asn Leu Leu Thr Thr Ser Asp Ser Asn Val Ile Ser
485 490 495

Ala Arg Val Val Ile Gly Gly Leu Tyr Cys Phe Arg Gln Phe Met Tyr
500 505 510

Leu Ala Gly Tyr Ser Arg Asn Trp Thr
515 520

<210> 32
<211> 1149
<212> PRT
<213> Trichinella nelsoni

<400> 32
Met Ala Ala Ile Arg Val Asn Tyr Pro Gly Pro Phe Thr Cys Gln Lys
1 5 10 15

Cys Thr Phe Thr Glu Thr Val Phe Ala Arg Phe Val Thr His Cys Thr
20 25 30

His His Ala Leu Asn Val Asn Leu Ala Cys Ser Ile Cys Gly Lys Asp
35 40 45

Phe Thr Ser Ile Asn Ala Val Ala Ser His Phe Pro His Cys Lys Lys
50 55 60

Gly Thr Lys Arg Asn Glu Thr Pro Ile Asp Ala Pro Thr Asn Thr Glu
65 70 75 80

```
Met His Val Ser Thr His Asn Thr His Ile Cys Thr Val Cys Ser Arg
                85                  90                  95

Ala Phe Asn Ser Phe Ala Gly Leu Arg Leu His Glu Lys Arg Ala His
            100                 105                 110

Pro Ala Thr Phe Ala Ala Ser Ser Gln Lys Pro Thr Lys His Gln Trp
        115                 120                 125

Thr Ile Asp His Leu Arg Glu Ala Lys Glu Val Glu Asp Gln Leu Thr
    130                 135                 140

Asp Ser Asn Ser Cys Ser Ala Lys Ser Phe Ala Glu Ala Leu Ser Ser
145                 150                 155                 160

Lys Trp Ser Glu Ala Ile Ser Val Asp Met Ala Lys Tyr Leu Arg Lys
                165                 170                 175

Lys Leu Arg Arg Val Asp Ile Asn Phe Asn Ala His Asn Arg Gly Thr
            180                 185                 190

Thr Asp Gly Asp Thr Ser Gly Leu Leu Pro Glu Val Val Gly Lys Ser
        195                 200                 205

Ile Ser Leu Glu Gly Val Gly Gly Lys Asn Arg Ala Ala Leu Ile Gly
    210                 215                 220

Glu Glu Ile His Gly Val Gly Val Leu Ser Met Arg Lys Thr Ser Gly
225                 230                 235                 240

Phe Arg Val Glu Ile Val Gly Gln Thr Thr Pro Ser Pro Asn Lys Ser
                245                 250                 255

Ser Asn Ala Leu Ser Pro Gln His Arg Asp Arg Asp Pro Gly Arg Asp
            260                 265                 270

Leu Arg His His Leu Glu Asp Ser Leu Thr Ser Cys Asn Ser Glu Leu
        275                 280                 285
```

```
Glu Gly Leu Leu Asn Phe Leu Thr Asn Lys Ile Leu Asn Ser Lys Pro
    290                 295                 300

Glu Asp Arg Asn Lys Tyr Val Asp Asp Val Ile Ser Ile Val Thr Glu
305                 310                 315                 320

Phe Val Cys Lys Pro Asn Gly His Gln Pro Pro Pro Ala Pro Lys Lys
                325                 330                 335

Arg Thr Lys Glu Glu Pro Lys Asn Arg Arg Gln Lys Ile Arg Ser Lys
            340                 345                 350

Tyr Ala Lys Met Gln Ser Leu Phe Lys Arg Asp Pro Lys Arg Ile Ala
        355                 360                 365

Ala His Leu Ile Lys Asn Gln Pro Leu Cys Asn Val Ser Cys Pro Ile
    370                 375                 380

Asp Ala Ala Glu Ser Ala Leu Arg Gln Arg Leu Ser Gln Arg Pro Ser
385                 390                 395                 400

Val Asp Ala Ala Pro Phe Thr Ser Lys Cys Pro Pro Asn Ser Lys Asn
                405                 410                 415

Ile Leu Asp Pro Ile Ser Pro Glu Glu Val Thr Leu His Leu Gln Arg
            420                 425                 430

Met Lys Ile His Thr Ser Ala Gly Pro Asp Gly Ile Gln Val Ser His
        435                 440                 445

Leu Arg Ser Cys Asp Pro Val Cys Leu Ala Lys Ala Phe Asn Leu Phe
    450                 455                 460

Leu Leu Ala Arg His Ile Pro Gln Gln Leu Lys Asp Cys Arg Thr Thr
465                 470                 475                 480

Leu Ile Pro Lys Ile Asp His Pro Arg Pro Asp Ala Glu Asp Tyr Arg
                485                 490                 495
```

```
Pro Ile Thr Val Ala Ser Ser Leu Tyr Arg Leu Phe Ser Lys Ile Val
            500                 505                 510

Thr Arg Arg Leu Glu Asp Ser Leu Ser Leu His Pro Arg Gln Lys Ala
        515                 520                 525

Phe Arg Ser Gly Thr Asp Gly Ala Phe Asp Asn Thr Ser Thr Leu Met
    530                 535                 540

Thr Ile Ile Arg Asn Ala His Lys Arg Gly Arg Glu Leu Asn Ile Val
545                 550                 555                 560

Ser Ile Asp Leu Ala Lys Ala Phe Asp Thr Ile Asn His Thr Ser Ile
                565                 570                 575

Asp Arg Ala Leu Arg Met Gln Gly Leu Asp Val Asp Ser Arg Ala Leu
            580                 585                 590

Ile Ala Gln Met Val Thr Gly Ser Ser Thr Ile Ile Lys Gly Asp Gly
        595                 600                 605

Gly Ala Phe Ser Asn Arg Ile Glu Ile Asn Gln Gly Val Arg Gln Gly
    610                 615                 620

Asp Pro Ile Ser Pro Leu Leu Phe Asn Ser Val Met Asp Glu Leu Ile
625                 630                 635                 640

Glu Arg Leu Glu Lys Ser Lys Val Gly Phe Lys Phe Met Gly Glu Glu
                645                 650                 655

Ile Thr Thr Leu Ala Phe Ala Asp Asp Val Thr Leu Ile Ser Arg Ser
            660                 665                 670

His Arg Gly Met Ala Lys Leu Leu Ser Ile Thr Leu Asp Phe Leu Asn
        675                 680                 685

Glu Arg Gly Leu Ser Leu Asn Val Asn Lys Cys Lys Gly Ile Arg Leu
    690                 695                 700
```

```
Val Arg Thr Pro Lys Thr Lys Ser Leu Val Gln Asp Thr Ser Lys Ala
705                 710                 715                 720

Phe Arg Val Pro Asn Ile Gly Glu Glu Lys Gln Tyr Ile Pro Met Val
                725                 730                 735

Pro Ser Gly Asn Val Ile Lys Phe Leu Gly Ile Gln Ile Thr Leu Asn
            740                 745                 750

Gly Lys Pro His Phe Glu Leu Ala Pro Leu Glu Gly Thr Leu Glu Arg
        755                 760                 765

Ile Arg Lys Ala Pro Leu Lys Pro Ala Gln Lys Leu Ala Thr Val Arg
    770                 775                 780

Asp Tyr Leu Ile Pro Ser Leu Glu Tyr Lys Leu Gly Val Pro Gly Ile
785                 790                 795                 800

Ser Met Lys Leu Leu Glu Ser Val Asp Ala Ala Ile Arg Leu Thr Val
                805                 810                 815

Lys Arg Phe Leu His Leu Gln Ile Thr Gly Met Asn Ser Met Phe Leu
            820                 825                 830

Thr Met Pro Ile Lys Glu Gly Gly Leu Gly Leu Arg Pro Leu Thr Thr
        835                 840                 845

Gln Arg Ile Ala Arg Val Ala Val Gly Thr Asn Ser Met Met Thr Ser
    850                 855                 860

Met Asp Asn Val Ser Arg Val Val Ala Asn Thr Ala Thr Leu Arg Lys
865                 870                 875                 880

Pro Leu Leu Ser Ala Leu Glu His Phe Ala Val Pro Ala Ala Thr Lys
                885                 890                 895

Gly Ala Ile Arg Glu Gly Lys Gln Asn Leu Leu Arg Glu Glu Ile Ala
            900                 905                 910
```

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


Gly Ser Leu Val Asn Ser Trp Leu Arg Gly Thr Cys Gly Met Arg Ser
    930                 935                 940


Arg Asp Tyr Ile Thr Gly Leu Lys Leu Arg Phe Gly Val Ile Glu Thr
945                 950                 955                 960


Arg Ser Gln Lys Trp Arg Gly Arg Thr Pro Gln Asn Pro Asp Ala Leu
                965                 970                 975


Leu Cys Arg His Cys Gly His Leu Ser Gly Tyr Arg Glu Thr Ala Ala
            980                 985                 990


His Ile Ser Gln Lys Cys Pro Thr  Thr His Ala Thr Ile  Ile Gln Arg
        995                 1000                1005


His Asn  Lys Ile Val Asn Leu  Val Ala Asp Arg Ala  Lys Arg Glu
    1010                1015                1020


Gly Phe  Ala Val His Val Glu  Pro Ala Ile Lys Ser  Gly Gly Asn
    1025                1030                1035


Val Phe  Lys Pro Asp Leu Val  Leu Val Lys Asp Gly  Ala Ala His
    1040                1045                1050


Ile Val  Asp Val Ala Val Pro  Trp Glu Lys Gly Thr  Ser Met His
    1055                1060                1065


Glu Lys  His Gln Lys Lys Thr  Asn Glu Tyr Ser Pro  Thr Val Glu
    1070                1075                1080


Glu Val  Arg Ala Gln Phe Asp  Ala Glu Thr Cys Thr  Val Gly Ala
    1085                1090                1095


Ile Ile  Ile Gly Ala Arg Ser  Ser Trp Cys Pro Ser  Asn Asn Arg
    1100                1105                1110
```

Ser Leu Lys Ala Cys Gly Leu His Leu Pro Lys Lys Phe Lys Arg
    1115   1120   1125

Leu Leu Cys Arg Val Ala Leu Glu Gly Thr Cys Lys Ile Phe Gln
    1130   1135   1140

Asn Phe Phe Thr Leu Thr
    1145

<210> 33
<211> 754
<212> PRT
<213> Trichuris suis

<400> 33
Met Val Lys Ser Leu Pro Gly Lys Gly Leu Glu Leu Leu Phe Asn Leu
1   5   10   15

Trp Leu Tyr Leu Gly Asp Val Pro Ser Arg Leu Lys Glu Cys Arg Thr
            20   25   30

Val Leu Val Pro Lys Arg Tyr Pro Pro Gln Gly Pro Gly Asp Tyr Arg
        35   40   45

Pro Ile Thr Ile Ala Ser Thr Leu Tyr Arg Val Phe Thr Lys Ile Leu
    50   55   60

Ala Asn Arg Leu Ser Gln Cys Val Glu Leu Asn Arg Arg Gln Asn Gly
65   70   75   80

Phe Met Lys Gly Ile Asn Gly Cys Gly Glu Asn Thr Phe Ile Leu Ser
                85   90   95

Thr Ala Leu Glu Ser Ser Arg Arg His Ala Arg Glu Leu Asn Leu Ala
            100   105   110

Ser Leu Asp Leu Gln Lys Ala Phe Asp Thr Val Ser His Ala Ser Ile
        115   120   125

Arg Arg Ala Leu Cys Arg Gln Asn Val Pro Thr Lys Gly Ile Gln Leu
    130   135   140

```
Leu Met Asn Leu Leu Ser Asn Ser Tyr Thr Arg Leu Asp His Ala Asn
145                 150                 155                 160

Gly Met Ser Ala Pro Ile Pro Met Cys Arg Gly Val Lys Gln Gly Asp
                165                 170                 175

Pro Leu Ser Pro Leu Leu Phe Asn Leu Val Met Asp Glu Leu Leu Asp
            180                 185                 190

Glu Leu Glu Gly Ala Gly Gly Gly Phe Thr Phe Ser Pro Ser Thr Gln
        195                 200                 205

Val Asn Cys Leu Ala Tyr Ala Asp Asp Ile Leu Leu Leu Ser Asp Ser
    210                 215                 220

Arg Ala Gly Leu Gln Ser Asn Leu Leu Arg Cys Ser Arg Phe Leu Ser
225                 230                 235                 240

Ala Arg Ser Leu Arg Leu Asn Ile Gln Lys Cys Ser Thr Leu Arg Met
                245                 250                 255

Tyr Lys Val Pro Arg Ile Arg Ser Ile Cys Ala Thr Arg Asp Pro Met
            260                 265                 270

Phe Tyr Leu Asp Pro Thr Asp Glu Ser Thr Leu Leu Pro Ala Phe Thr
        275                 280                 285

Gly Ala Glu Phe Leu His Tyr Leu Gly Val Asp Phe Asn Pro Tyr Gly
    290                 295                 300

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

Arg Arg Ala Pro Leu Lys Pro Gln Gln Lys Ile Glu Leu Ile Arg Asn
                325                 330                 335

His Leu Leu Pro Arg Leu Leu Tyr Ser Leu Thr Val Gly Asn Pro Leu
            340                 345                 350
```

```
Ala Asn Thr Gly Arg Thr Ile Asp Lys Lys Ile Arg Gln Cys Val Lys
        355                 360                 365

Glu Ile Leu His Leu Pro Ala Ser Thr Met Cys Asp Asp Phe Phe Tyr
    370                 375                 380

Val Pro Arg Ser Arg Gly Gly Leu Gly Phe Leu Asn Leu Gln Glu Ala
385                 390                 395                 400

Thr Asp Leu Ser Val Leu Arg Leu Met Val Lys Met Arg Thr Asn Asp
                405                 410                 415

Asp Asp Val Ala Arg Thr Ser Ala Glu Gln Trp Phe Asn Gln Arg Arg
            420                 425                 430

Phe Ala Lys Leu Ala Ala Arg Arg Gly Leu Pro Thr Ala Asn Leu Gly
        435                 440                 445

Ala Leu His Lys Val Lys Glu Glu Ile Ala Lys Lys His Gln Glu Arg
    450                 455                 460

Phe Gln Arg Ser Tyr Gln Gly Ser Gly His Ala Glu Phe His Asp Lys
465                 470                 475                 480

Arg Ser Asn Ala Trp Met Gly Gly Glu Gln Met Thr Gly Arg Gly Tyr
                485                 490                 495

Ile Asn Ala Ile Lys Val Arg Ala Ser Leu Val Pro Thr Arg Val Gln
            500                 505                 510

Thr Leu Arg Gly Arg Ala Asp Pro Gly Asp His Arg Thr Leu Cys Arg
        515                 520                 525

Arg Cys Gly Asp Val Ser Arg Ala Pro Glu Ser Leu Ala His Ile Ser
    530                 535                 540

Gln Thr Cys Ala Phe Cys His Gly Leu Ile Ile Arg Arg His Asn Ala
545                 550                 555                 560
```

```
Ile Val Gln Lys Leu Ala Gln Leu Ala Gln Thr Gln Gly Phe Gln Cys
                565                 570                 575

Thr Thr Glu Pro Ile Ile Arg Ile Asn Asp Gln Thr His Lys Pro Asp
            580                 585                 590

Leu Val Leu Ala Lys Asn Ser Ser Cys Trp Thr Ile Asp Val Ser Ile
        595                 600                 605

Pro Trp Glu Ser Arg Asp Pro Leu Asp Arg Arg His Met Gln Lys Cys
    610                 615                 620

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

Thr Glu Phe Ser Thr Gly Ala Ile Val Ile Gly Ala Arg Gly Ala Trp
                645                 650                 655

Cys Glu Arg Asn Asp Asp Thr Leu Ser Arg Ala Gly Leu Ser Ile Thr
            660                 665                 670

Asp Arg Met Lys Gln Leu Leu Cys Leu Ile Thr Leu Glu Lys Thr Cys
        675                 680                 685

Gln Leu Ile Ser Trp Phe Met Arg Ser Thr Asp Arg Leu Ala Leu Arg
    690                 695                 700

Gln Pro Thr Arg His Arg Ser Ser Ala Gln Arg Thr Glu Ala Arg Ile
705                 710                 715                 720

Pro Arg Ser Val Asp Gln Ala Ala Phe Gly Ser Pro Ala Arg His His
                725                 730                 735

Val Ala Ala Ser Pro Arg His Ala Pro Glu Asn Arg Thr Val Pro Ala
            740                 745                 750

Ala His
```

<210> 34
<211> 2419
<212> PRT
<213> Tribolium castaneum

<400> 34
Met Glu Asn Phe Ile Ile Ala Asn Asn Met Cys Ile Phe Asn Glu Pro
1   5   10   15

Asn Asn Pro Pro Thr Phe Glu Thr Thr Asn Gly Ala Ser Tyr Ile Asp
            20   25   30

Leu Thr Ile Gly Ser Glu Phe Leu Leu Asn Lys Ile Gln Thr Trp Lys
        35   40   45

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

Asn Asp Asn His Asn Gln Ile Phe Pro Glu Val Asn Ala Ser Met Asp
65   70   75   80

Gln Lys Ile Cys Asn Phe Asn Ile Lys Lys Ala Ala Pro Leu Leu Glu
                85   90   95

Gln Leu Ser Thr Asp Leu Ile Asn Lys Tyr Ser Ile Leu Ile Ser Gln
            100   105   110

Asn Lys Ile Asp Gln Cys Leu Glu Lys Phe Tyr Phe Glu Leu Asn Lys
        115   120   125

Ile Ile Ser Ser Cys Ser Arg Val Lys Lys Thr Phe Lys Asn Arg Pro
    130   135   140

Thr Phe Trp Asn Glu Gln Ile Glu Ala Leu Arg Arg Gln Tyr Leu Lys
145   150   155   160

Ala Lys Lys Asp Leu Tyr Lys Asn Lys Asn Pro Asp Leu Lys Glu Ala
                165   170   175

```
Leu Tyr Ile Ser Met Ser Gln Val Lys Gln Lys Phe Lys Asp Arg Ile
            180                 185                 190

Lys Leu Asp Lys Glu Lys Ser Trp Glu Asn Phe Val Lys Glu Asp Leu
        195                 200                 205

Ala Pro Asn Pro Trp Gly Val Val Tyr Arg Val Ala Ala Glu Lys Phe
    210                 215                 220

Lys Lys Thr Asn Leu Leu Gly Val Phe Glu Asn Asp Gly Glu Thr Ser
225                 230                 235                 240

Leu Asn Pro Ser Asp Ala Ala Lys Arg Leu Leu His Ser Leu Leu Pro
                245                 250                 255

Asp Asp Asn Glu Glu Asn Glu Thr Leu Ser Gln Lys Ile Thr Arg Gln
            260                 265                 270

Asp Phe Asn Thr Ile Glu Met Thr Tyr Arg Tyr Asn Ile Asp Glu Val
        275                 280                 285

Thr Asn Thr Glu Leu Glu Ile Ile Ile Lys Asn Leu Lys Lys Lys Ala
    290                 295                 300

Pro Gly Leu Asp Lys Ile Asp Gly Asn Leu Thr Lys Ile Met His Pro
305                 310                 315                 320

Ser Leu Ser Asn Phe Leu Leu His Ile Tyr Asn Ser Cys Leu Arg Ala
                325                 330                 335

Ser Tyr Phe Pro Lys Cys Trp Lys Met Gly Asn Leu Val Val Ile Pro
            340                 345                 350

Lys Asp Ser Gly Gly Asp Pro Ser Asp Ile Lys Asn Tyr Arg Pro Ile
        355                 360                 365

Thr Leu Leu Asn Asp Leu Gly Lys Ile Phe Glu Lys Leu Ile Arg Thr
    370                 375                 380
```

```
Arg Leu Phe Lys Ser Thr Asp Val Phe His Ala Asp Asn Gln Tyr Gly
385                 390                 395                 400

Phe Cys Val Gly Lys Ser Ser Thr Asp Ala Leu Leu Phe Phe Lys Asn
                405                 410                 415

Gln Leu Gln Ala Tyr Asn Gln Lys Tyr Lys Tyr Thr Ala Ala Val Phe
            420                 425                 430

Phe Asp Ile Ser Gly Ala Phe Asp Asn Val Trp Tyr Pro Ser Ile Ile
        435                 440                 445

Lys Ser Leu Arg Gln Lys Gly Val Ser Pro His Leu Ile Arg Ile Met
    450                 455                 460

Lys Ser Tyr Val Ser Asp Arg Asn Val Ile Tyr Ser Tyr Arg Gly Ile
465                 470                 475                 480

Val Asn Arg Lys Asn Cys Thr Lys Gly Cys Pro Gln Gly Ser Val Leu
                485                 490                 495

Gly Pro Thr Leu Trp Asn Thr Ile Leu Asp Glu Phe Leu Arg Lys Lys
            500                 505                 510

Ile Ala Pro Asn Thr Glu Thr Ile Ala Tyr Ala Asp Asp Ile Val Val
        515                 520                 525

Ile Thr Gly Ala Asn Thr Arg Asn Glu Phe Arg Ser Thr Ile Gln Thr
    530                 535                 540

Ile Val Thr Ala Val Cys Gln Phe Ala Gly Asn Gln Lys Leu Gln Val
545                 550                 555                 560

Ser Ser Ser Lys Thr Lys Ile Met Met Phe Asn Ser Pro Lys Arg Val
                565                 570                 575

His Asn Arg Asp Leu Ala Ile Lys Ile Asn Asn Ser Thr Ile Gln Ile
            580                 585                 590
```

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

Phe Gln Lys His Ile Asn Asn Val Cys Ser Lys Ala Arg Thr Ile Met
    610                 615                 620

Met Ala Leu Arg Arg Lys Ile Lys Leu Arg Trp Asn Ile Ser Val Ala
625                 630                 635                 640

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

Tyr Gly Ser Glu Val Trp Ala Asp Arg Leu Asn Ile Ser Lys Ile Lys
            660                 665                 670

Ser Lys Leu Thr Ser Leu Ser Gly Leu Ala Ser Arg Cys Ile Ala Gly
        675                 680                 685

Cys Tyr Ala Ser Val Ser Asn Asp Ala Ala His Val Leu Ala Gly Val
    690                 695                 700

Pro Pro Leu Asp Leu Glu Ala Ala Arg Ile Asn Cys Cys Lys Leu Leu
705                 710                 715                 720

Lys Lys Asp Gln Asn Cys Asn Leu Leu Gly Phe Glu Ile Glu Lys Ser
                725                 730                 735

Asp Phe Asp Thr Tyr Lys His Ala Arg Glu Tyr Val Ala Ile Leu Val
            740                 745                 750

Glu Asp Leu Trp Gln Glu Arg Trp Asp Ser Ser Thr Lys Gly Arg Thr
        755                 760                 765

Thr Tyr Arg Phe Arg Pro Ile Val Gln Ser Gly Leu Arg Tyr Ser His
    770                 775                 780

Ser Phe Ala Ala Thr Gln Ile Leu Thr Gly His Gly Asn Phe Met Ser
785                 790                 795                 800
```

```
His Leu Gln Arg Val Gly Lys Ser Glu Thr Asp Glu Cys Ala Glu Cys
                805                 810                 815

Gly Val Arg Asp Asp Pro Ile His Arg Leu Leu Val Cys Pro Leu Phe
            820                 825                 830

Asp Val Pro Arg Arg Asp Ile Tyr Arg Ser Val Asn Ser Pro Phe Leu
        835                 840                 845

Ser Leu Asn Trp Ile Ile His Leu Lys Ser Glu Leu Leu Glu Pro Phe
    850                 855                 860

Thr Ala Leu Pro Gln Ser Leu Phe Ile Ala Arg Thr Ser Arg Ile Ala
865                 870                 875                 880

Pro Leu Arg Ser Asp Tyr Ile Glu His Arg Glu Ser Glu Ser Gly Ser
                885                 890                 895

Glu Asn Cys Phe Val Leu Val Gln Thr Val Phe Gln Gly Lys Ser Arg
            900                 905                 910

Ile Glu Gln His Leu Asp Leu Asp Ala Asp Gln Leu Ile Ser Glu Ile
        915                 920                 925

Gln Lys Gln Gln Asp Leu Pro Glu Ser Leu Pro Lys Asn Phe Val Lys
    930                 935                 940

Thr Ala Phe Lys Val Gly Asn Lys Asp Gly Lys Ala Asn Gln Trp Val
945                 950                 955                 960

Val Glu Leu His Pro Val Ala Arg Asn His Phe Ile Lys Ser Gly Ser
                965                 970                 975

Arg Leu Phe Ile Asn Trp Lys Ser Leu His Ile Arg Asp Tyr Leu Arg
            980                 985                 990

Val Thr Arg Cys Phe Lys Cys Gln  Lys Phe Gly His Val  Ser Lys Phe
        995                 1000                1005
```

```
Cys Asn  Ser Glu Lys Gln Cys  Gly Tyr Cys Ala Ser  Thr Asp His
    1010                1015                1020

Glu Ser  Val Thr Cys Lys Leu  Lys Asn Glu Glu Asn  Lys His Lys
    1025                1030                1035

Cys Ile  Ala Ala Val Phe Gly  Ser Ser Pro Arg Thr  Leu Thr Ile
    1040                1045                1050

Pro Gly  Glu Gly His Val Glu  Ala Ser Arg Arg Phe  Val Pro Ile
    1055                1060                1065

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

Met Ile  Gly Ser Glu Asp Arg  Gly Val Ser Gly Leu  Ala Arg Lys
    1085                1090                1095

Arg Val  Ala Ala Asp Val Pro  Gly Leu Cys Glu Val  Lys Arg Cys
    1100                1105                1110

Ser Val  Ser Ala Val Asn Val  Glu Ser Glu Phe Gly  Pro Val Pro
    1115                1120                1125

Arg Pro  Pro Ala Glu Pro Ser  Cys Cys Glu Ala Pro  Gly Ala Pro
    1130                1135                1140

Val Arg  Ala Arg Ala Met Gly  Leu Thr Thr Leu Ser  Gly Thr Lys
    1145                1150                1155

Thr Ser  Asn Ser Gly Ala Gln  Gly Pro Ser Thr Ser  Ala Pro Met
    1160                1165                1170

Gln Asn  Met Ala Gly Gly Phe  Val Cys Asp Cys Gly  Arg Ser Tyr
    1175                1180                1185

Ala Leu  Lys Thr Ser Leu Ala  Arg His Lys Lys Glu  Cys Gly Lys
    1190                1195                1200
```

```
Asn Asn  Thr Glu Cys Arg Trp  Cys Gly Thr Arg Phe  Asn Thr Leu
    1205                 1210                 1215

Ala Gly  Thr Arg Gln His Glu  Arg Lys Ala His Phe  Val Gln Tyr
    1220                 1225                 1230

Gln Ser  Asp Leu Ala Lys Ala  Leu Pro Gln Pro Glu  Ser Glu Leu
    1235                 1240                 1245

Met Glu  Lys Ile Ala Ile Val  Glu Ala Arg Ser Ser  Asn Gly Ile
    1250                 1255                 1260

Phe Tyr  Lys Glu Met Met Ala  Ser Thr Gly Leu Thr  His Gln Gln
    1265                 1270                 1275

Val Arg  Ser Arg Arg Glu Lys  Pro Glu Tyr Lys Gly  Phe Leu Glu
    1280                 1285                 1290

Arg Ala  Arg Arg Ser Leu Ala  Gln Thr Asn Ile Arg  Ala Gly Ser
    1295                 1300                 1305

Ile Ser  Pro Ala Ser Thr Ile  Ala Gly Ser Leu Glu  Ser Ala Ser
    1310                 1315                 1320

Pro Lys  Ala Gly Cys Ser Ser  Ser Ala Ser Pro Gly  Pro Thr Thr
    1325                 1330                 1335

Arg Ser  Arg Ala Pro Thr Lys  Gly Val Pro Leu Arg  Ser Ser Asn
    1340                 1345                 1350

Ser Ala  Arg Ile Val Val Glu  Ala Gln Val His Thr  Arg Ala Pro
    1355                 1360                 1365

Pro Asn  Thr Gly Glu Thr Glu  Val Ala Leu Arg Glu  Ser Arg Arg
    1370                 1375                 1380

Thr Val  Pro Arg Leu Gly Pro  Asn Pro Ser Arg Pro  Cys Gly Ile
    1385                 1390                 1395
```

```
Ser Pro  Leu Met Ala Ile Ala  Ile Asp Glu Asp Ser  Val Leu Gly
    1400                 1405                 1410

Gly Leu  Arg Val Gln Ala Glu  Pro Ser Pro Thr Ala  Val His Ser
    1415                 1420                 1425

Val Glu  Thr Phe Pro Gly Thr  Ser Ser Met Thr Pro  Met Glu Thr
    1430                 1435                 1440

Asp Arg  Val His Asn Lys Ser  Gly Ile Asp Pro Ile  Leu Glu His
    1445                 1450                 1455

Asn Gly  Thr Arg Gln Val Arg  Arg Glu Glu Ser Ser  Thr Arg Glu
    1460                 1465                 1470

Asp Pro  Val Glu Gln Trp Ser  Pro Asn Tyr Pro Lys  Thr Pro Val
    1475                 1480                 1485

Thr Met  Pro Asn Ile Thr Thr  Thr Ala Asp Ala Ser  Cys Thr Ser
    1490                 1495                 1500

Tyr Asn  Arg Thr Pro Gln Thr  Leu Pro Gly Asn Arg  Arg Arg Arg
    1505                 1510                 1515

Ser Arg  Ser Leu Pro Pro Val  Gln Arg Lys Ser Ala  Ser Asp Asp
    1520                 1525                 1530

Leu Glu  Ser Val Asp Ser Leu  Gly Pro Trp Ala Val  Phe Leu Gln
    1535                 1540                 1545

Asp Gln  Val Asp Ala Gly Ser  Leu Ser Gly Asn Asp  Ser Leu Ala
    1550                 1555                 1560

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

Asn Asp  Ala Val Asn Arg Tyr  Leu Ala Gln Arg Ala  Glu Ser Leu
    1580                 1585                 1590
```

```
Arg Ile  Arg Lys Arg Gly Ser  Lys Gly Lys Arg Lys  Ser Lys Thr
    1595                 1600                 1605

Gly Arg  His Tyr Gly Gln Thr  Thr Ser Gly Ser Gly  Gln Arg Ala
    1610                 1615                 1620

Ala Leu  Phe Lys Lys His Gln  Asp Leu Phe Leu Lys  Asn Arg Arg
    1625                 1630                 1635

Gly Leu  Ala Glu Thr Ile Leu  Ser Gly Lys Glu Asp  Phe Gly Pro
    1640                 1645                 1650

Arg Pro  Glu Pro Pro Val Thr  Ser Val Glu Glu Phe  Tyr Gly Gly
    1655                 1660                 1665

Ile Phe  Glu Ser Pro Ser Pro  Pro Asp Asn Glu Pro  Leu Glu Val
    1670                 1675                 1680

Arg Ala  Thr Gly Val Glu Asp  Pro Pro Thr Tyr Ile  Thr Met Asp
    1685                 1690                 1695

Glu Ile  Lys Ala Ala Arg Ala  Gly Trp Gln Ile Ser  Ala Pro Gly
    1700                 1705                 1710

Ser Asp  Gln Ile Pro Val Ala  Ala Val Lys Thr Met  Ser Glu Leu
    1715                 1720                 1725

Glu Leu  Ala Ile Leu Phe Asn  Ile Ile Leu Phe Arg  Asn Val Gln
    1730                 1735                 1740

Pro Ser  Ala Trp Gly Val Leu  Arg Thr Thr Leu Val  Pro Lys Asp
    1745                 1750                 1755

Gly Asp  Leu Arg Asn Pro Ala  Asn Trp Arg Pro Ile  Thr Ile Ser
    1760                 1765                 1770

Ser Ala  Met Gln Arg Leu Leu  His Arg Val Leu Ala  Ala Arg Leu
    1775                 1780                 1785
```

```
Ser Lys  Leu Val Ser Leu Ser  Ser Ser Gln Arg Gly  Phe Thr Glu
    1790                 1795                 1800

Ile Asp  Gly Thr Leu Ala Asn  Ala Leu Ile Leu His  Glu Tyr Leu
    1805                 1810                 1815

Gln Tyr  Arg Arg Gln Thr Gly  Arg Thr Tyr Gln Val  Val Ser Leu
    1820                 1825                 1830

Asp Val  Arg Lys Ala Phe Asp  Thr Val Ser His Cys  Ser Val Ser
    1835                 1840                 1845

Arg Ala  Leu Gly Arg Phe Gly  Ile Pro Ser Val Ile  Arg Glu Tyr
    1850                 1855                 1860

Ile Leu  Ala Thr Phe Gly Ala  Gln Thr Thr Ile Lys  Cys Gly Thr
    1865                 1870                 1875

Val Thr  Thr Arg Pro Ile Arg  Met Leu Arg Gly Val  Arg Gln Gly
    1880                 1885                 1890

Asp Pro  Leu Ser Pro Val Leu  Phe Asn Leu Val Met  Asp Glu Leu
    1895                 1900                 1905

Leu Glu  Lys Val Asn Glu Lys  Tyr Glu Gly Gly Ser  Leu Gln Ser
    1910                 1915                 1920

Gly Glu  Arg Cys Ala Ile Met  Ala Phe Ala Asp Asp  Leu Ile Leu
    1925                 1930                 1935

Ile Ala  Asp Arg Asp Gln Asp  Val Pro Ala Met Leu  Asp Asp Val
    1940                 1945                 1950

Ser Thr  Phe Leu Glu Arg Arg  Gly Met Ser Val Asn  Pro Ala Lys
    1955                 1960                 1965

Cys Arg  Ala Leu Ile Ala Gly  Ala Val Ser Gly Arg  Ser Val Val
    1970                 1975                 1980
```

```
Arg Thr  Gly Ser Ser Tyr Lys  Ile His Asn Thr Pro  Ile Pro Asn
    1985                 1990                 1995

Val Asp  Ala Leu Asp Ala Phe  Lys Tyr Leu Gly Leu  Glu Phe Gly
    2000                 2005                 2010

His Lys  Gly Val Glu Arg Pro  Thr Ile His Asn Leu  Ser Val Trp
    2015                 2020                 2025

Leu Asn  Asn Leu Arg Arg Ala  Pro Leu Lys Pro Asp  Gln Lys Cys
    2030                 2035                 2040

Leu Phe  Ile Arg Gln Tyr Val  Ile Pro Arg Leu Leu  Tyr Gly Met
    2045                 2050                 2055

Gln Asn  Pro Gln Val Thr Ser  Lys Val Leu Arg Glu  Ala Asp Arg
    2060                 2065                 2070

Leu Ile  Arg Arg His Leu Lys  Thr Tyr Tyr His Leu  Asn Val His
    2075                 2080                 2085

Thr Pro  Asp Ser Leu Ile His  Ala Ser Val Arg Asp  Gly Gly Leu
    2090                 2095                 2100

Gly Ile  Met Glu Leu Arg Lys  Ala Ile Pro Arg Ile  Phe Leu Gly
    2105                 2110                 2115

Arg Leu  Val Lys Leu Leu Asn  Lys Asn Asn Asp Ser  Val Leu Ser
    2120                 2125                 2130

Ser Val  Leu Gln Ser Asp Arg  Val Arg Thr Leu Met  Gly Lys Leu
    2135                 2140                 2145

Ser Thr  Met Ala Gly Glu Val  Pro Glu Ser Thr Phe  Trp Arg Asn
    2150                 2155                 2160

Arg Ile  Ala Ser Gly Pro Leu  Ser Lys Gly Leu Glu  Gln Ala Ala
    2165                 2170                 2175
```

```
Glu Asp  Ser Ala Ser Arg Leu  Trp Ile Ser Glu Lys  Pro Ser Gly
    2180                 2185                 2190

Trp Ser  Gly Arg Asp His Val  Arg Ala Val Gln Leu  Arg Thr Gly
    2195                 2200                 2205

Asn Leu  Pro Thr Lys Ala Ile  Pro Ser Val Pro Val  Gly Gln Arg
    2210                 2215                 2220

Arg Cys  Arg His Gly Cys Ala  Cys Asp Glu Ser Ile  Ser His Val
    2225                 2230                 2235

Leu Gln  Met Cys Pro Leu Thr  His Ala Asp Arg Ile  Arg Arg His
    2240                 2245                 2250

Asp Glu  Val Val Lys Lys Val  Ala Arg His Cys Thr  Ser Arg Gly
    2255                 2260                 2265

Trp Thr  Val Glu Val Glu Pro  His Ile Arg Ser Arg  Cys Gly Arg
    2270                 2275                 2280

Leu Phe  Lys Pro Asp Leu Ala  Val His Gln Pro Gly  Gly Ala Ile
    2285                 2290                 2295

Val Ile  Ala Asp Val Gln Ile  Ser Trp Asp Ser Glu  Ser Leu Thr
    2300                 2305                 2310

Val Pro  Tyr Glu Arg Lys Arg  Ala Lys Tyr Asp Val  Pro Gln Phe
    2315                 2320                 2325

His Gln  Ala Ala Gln His Ala  Trp Pro Gly Lys Ala  Leu Thr Phe
    2330                 2335                 2340

Ala Pro  Val Ile Val Gly Ala  Arg Gly Ile Trp Pro  Arg Ile Asn
    2345                 2350                 2355

Asn Asp  Arg Ser Ala Ala Leu  Gln Ile Pro Pro Val  Val Arg Arg
    2360                 2365                 2370
```

Ala Cys Val Asn Ser Val Val Lys Trp Gly Ser Ser Ile His Ala
2375 2380 2385

Thr Phe Met Ser Glu Thr Thr Ala Lys Gly Thr Gly Leu Glu Lys
2390 2395 2400

Leu Ala Gly Lys Glu Asp Pro Val Glu Leu Asp Ser Ser Leu Ala
2405 2410 2415

Leu

<210> 35
<211> 405
<212> PRT
<213> Ixodes scapularis

<400> 35
Met Ala Cys Ser Pro His Gln Phe His Pro Gln Lys Glu Pro Ala Ala
1 5 10 15

Leu Pro Ser Asp Phe Arg Pro Ile Thr Val Gly Pro Val Leu Gln Arg
20 25 30

Leu Phe His Lys Ile Leu Ala Lys Arg Val Met Ala Ala Ala Pro Leu
35 40 45

Asp Phe Arg Gln Arg Ala Phe Gln Pro Val Asp Gly Cys Ala Glu Asn
50 55 60

Ile Leu Leu Leu Ser Thr Val Leu Asp Glu Ala Arg Cys Arg Leu Arg
65 70 75 80

Pro Leu His Leu Ala Ser Val Asp Leu Ala Lys Ala Phe Asp Arg Val
85 90 95

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

Ala Phe Leu Ala Tyr Leu Arg Glu Leu Tyr Ala Thr Ser Tyr Thr Thr
115 120 125

```
Leu Gln Tyr Gly Gly Glu Glu Leu Val Val Gln Pro Thr Thr Gly Val
    130                 135                 140

Arg Gln Gly Asp Pro Leu Ser Pro Val Leu Phe Asn Met Val Leu Asp
145                 150                 155                 160

Glu Phe Leu Ser Ser Val Asp Pro Arg Val Ala Phe Arg Ser Gly Asp
                165                 170                 175

Phe Thr Val Asp Ala Met Ala Phe Ala Asp Asp Leu Val Val Cys Ala
            180                 185                 190

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

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

Ser Leu Gln Pro Ser Ala Arg Glu Lys Lys Cys Lys Ile Val Thr Thr
225                 230                 235                 240

Asn Arg Phe His Ile Asn Gly Glu Pro Leu Pro Val Ser Gly Val Ala
                245                 250                 255

Ser Val Trp Arg Tyr Leu Gly Val Ser Phe Thr Pro Asp Gly Thr Arg
            260                 265                 270

Ser Asn Gly Val Glu Met Glu Leu Glu Glu Leu Leu Glu Arg Val Lys
        275                 280                 285

Lys Ala Pro Leu Lys Pro Gln Gln Arg Leu Leu Val Leu Arg Thr Tyr
    290                 295                 300

Leu Leu Pro Arg Leu Phe His Arg Leu Ile Leu Gly Pro Trp Ser Val
305                 310                 315                 320

Gly Leu Leu Lys Lys Leu Asp Thr Lys Val Arg Ala Ala Leu Arg Ser
                325                 330                 335
```

```
Trp Leu Ala Leu Pro His Asp Val Pro Leu Gly Tyr Phe His Ala Pro
            340                 345                 350

Val Gly Glu Gly Gly Leu Gly Val Val Ser Leu Arg Ala Ser Ile Pro
        355                 360                 365

Ser Met Arg Leu Arg Arg Ile Glu Gly Leu Arg Phe Ser Asp His Pro
    370                 375                 380

Gly Cys Ala Glu Ala Leu Arg Cys Pro Leu Leu Leu Glu Gly Phe Pro
385                 390                 395                 400

Phe Arg Asn Lys Asn
                405
```

<210> 36
<211> 486
<212> PRT
<213> Eptatretus burgeri

<400> 36

```
Ala Leu Ala Phe Ala Asp Asp Leu Val Leu Cys Ala Arg Thr Ser Ser
1               5                   10                  15

Gly Leu Arg Arg Ser Met Asp Ala Val Gln Thr Arg Leu Ser Ala Ala
            20                  25                  30

Gly Leu Val Leu Asn Val Glu Lys Ser Ala Thr Leu Ala Ile Thr Ile
        35                  40                  45

Asp Ala Lys Ala Lys Arg Tyr Val Val Asp Thr Ser Glu Val Phe Tyr
    50                  55                  60

Leu Gly Gln Gln Asn Leu Gly Val Leu Asp Ala Ala Ser Gln Leu Lys
65                  70                  75                  80

Tyr Leu Gly Ile Gln Phe Leu Pro Arg Gly Ala Ala Pro Ser Asp Gly
                85                  90                  95
```

```
Ser Ala Leu Glu Lys Gly Leu Arg Asn Leu Arg Arg Ala Pro Ile Lys
            100                 105                 110

Pro Gln Gln Arg Met Phe Met Leu Arg Asp His Leu Ile Pro Gln Leu
        115                 120                 125

Gln His Gly Leu Val Leu Gly Ala Ala Arg Arg Gly Thr Leu Arg Lys
    130                 135                 140

Leu Asp Val Gln Met Arg His His Thr Arg Leu Trp Leu Arg Leu Pro
145                 150                 155                 160

Lys Asp Thr Pro Val Ala Tyr Phe His Ala Arg Ser Ala Asp Gly Gly
                165                 170                 175

Leu Gly Leu Pro Gln Phe Ser Val Thr Ile Pro Ile Leu Arg Glu Arg
            180                 185                 190

Arg Met Arg Gly Leu Glu Gln Ser Asp Ser Pro Tyr Val Arg Ala Val
        195                 200                 205

Ile Arg Thr Lys Leu Gly Asp Val Val Arg Ser Arg Asn Thr Tyr Asn
    210                 215                 220

Leu His Tyr Gly Gly Glu Arg Pro Arg Ser Ile Lys Gln Ala Asp Val
225                 230                 235                 240

Ile Thr Ala Lys Leu Leu His Gln Ala Val Asp Gly Arg Gly Leu Leu
                245                 250                 255

Glu Ala Ser Arg Val Pro Glu Pro Asn Asp Trp Val Leu Gly Arg Ser
            260                 265                 270

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

Asn Leu Leu Pro Thr Gly Ser Arg Ser Ser Arg Gly Arg Arg Gly Gln
    290                 295                 300
```

```
Gly Ser Glu Gly Trp Cys Asp Ala Gly Cys Arg Ala Lys Glu Ser Leu
305                 310                 315                 320


Asn His Ile Ser Gln Ala Cys Ile Arg Thr His Gly Gly Thr Val Gln
                325                 330                 335


Arg His Asp Ala Val Ser Arg Phe Ala Cys Gly Arg Leu Arg Gln Arg
            340                 345                 350


Gly Phe Val Val Ile Glu Glu Pro Arg Ile Pro Thr Pro Ala Gly Ile
        355                 360                 365


Arg Lys Pro Asp Ile Ile Ala Glu Lys Asn Gly Lys Pro Val Ile Leu
    370                 375                 380


Asp Thr Gln Ile Lys Ser Asp Thr Leu Lys Leu Ser Asp Glu His Val
385                 390                 395                 400


Arg Lys Arg Asn Tyr Tyr Asp Thr Pro Glu Val Leu Asp Trp Val Arg
                405                 410                 415


Asn Lys Phe Glu Ser Glu Asn Val Pro Leu Val Ser Thr Ile Thr Leu
            420                 425                 430


Ser Trp Arg Gly Val Trp Ala Pro Glu Ser Ala Thr Leu Leu Arg Glu
        435                 440                 445


Leu Gly Leu Thr Lys Thr Asp Leu Arg Leu Ile Ser Val Met Val Val
    450                 455                 460


Glu Lys Thr Ala Leu Met Phe Arg Trp Phe Lys Arg Ser Ala Leu Thr
465                 470                 475                 480


Arg Asn Ala Pro Arg Gln
                485


<210> 37
<211> 519
<212> PRT
<213> Triops cancriformis
```

<400> 37
Pro Ile Ile Phe Asn Leu Val Ile Asn Gly Ala Ile Arg Arg Leu Pro
1   5   10   15

Asp Glu Phe Gly Phe Glu Val Ser Pro Lys Ile Phe Leu Asn Cys Leu
            20   25   30

Ala Tyr Ala Asp Asp Leu Ile Leu Val Ala Thr Thr Arg Ile Gly Leu
        35   40   45

Lys Arg Leu Ile Ile Ile Val Gly Glu Tyr Leu Gln Arg Arg Gly Leu
    50   55   60

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

Lys Glu Gly Leu Thr Tyr Val Ser Ser Ala Asn Lys Ile Asp Phe Gln
                85   90   95

Gly Val Glu Ile Lys Asn Met Cys Val Leu Asp Thr Trp Gln Tyr Leu
            100   105   110

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

Val Ser Asp Leu Leu Phe Lys Leu Gln Lys Ala Pro Leu Lys Val Gln
    130   135   140

Gln Lys Leu Tyr Ala Leu Arg His Tyr Leu Ile Pro Arg Leu Leu His
145   150   155   160

Gly Leu Ile Leu Ser Arg Val Leu Ile Thr Glu Leu Lys Ser Ile Asp
                165   170   175

Asn Leu Ile Arg Lys Tyr Val Arg Ser Leu Leu His Leu Pro Lys Asp
            180   185   190

Thr Pro Leu Gly Tyr Leu Tyr Ala Ser Thr Lys Asp Gly Gly Leu Gly
        195   200   205

```
Ile Pro Cys Leu Arg Tyr Leu Ile Leu Lys Cys Arg Leu Ala Arg Ile
    210                 215                 220

Leu Arg Met Arg Ser Ser Asn Asp Ala Val Val Arg Glu Ile Ala Asn
225                 230                 235                 240

Ser Glu Phe Leu Leu His Glu Thr Gln Arg Leu Arg Asp Ser Leu Ser
                245                 250                 255

Ile Asp Gly Ser Val Leu Asp Thr Asn Glu Leu Ile Arg Lys Tyr Trp
            260                 265                 270

Ala Lys Arg Leu Tyr Thr Ser Tyr Asp Gly Lys Ser Leu Ala Tyr Ser
        275                 280                 285

Glu Phe Phe Pro Tyr Gly Asn Ser Trp Val Arg Glu Asp His Met Asn
    290                 295                 300

Gln Arg Ala His Val Phe Cys Asp Cys Ile Lys Leu Arg Ile Asn Ala
305                 310                 315                 320

Leu Pro Thr Arg Ala Arg Thr Ser Arg Gly Arg Thr Glu Ser Lys Asp
                325                 330                 335

Ser Ser Cys Arg Ala Gly Cys Lys Phe Ser Ser Gly Ile Pro Met Arg
            340                 345                 350

Glu Thr Val Asn His Ile Thr Gly Val Cys Gln Arg Thr His Asp Ala
        355                 360                 365

Arg Val Arg Arg His Asp Ser Ile Val Asp Phe Leu Val Ser Ile Trp
    370                 375                 380

Lys Thr Lys Ser Thr Asn Glu Val Tyr Lys Glu Pro Asn Tyr Arg Thr
385                 390                 395                 400

Pro Leu Gly Leu Arg Lys Pro Asp Ile Val Val Lys Thr Pro Asn Glu
                405                 410                 415
```

Val Trp Ile Ala Asp Val Gln Val Leu Ala Asp Asn Ala Asn Leu Glu
420 425 430

Lys Glu Tyr Ser Ile Lys Thr Asn Lys Tyr Ala Ser Asp Ala Gly Leu
435 440 445

Ile Gln Gly Leu Lys Lys Gln Phe Pro Asn Ile Asn Leu Phe Ser Phe
450 455 460

Phe Ala Val Thr Ile Asn Asn Arg Gly Leu Ile Ser Arg Ser Ser Val
465 470 475 480

Asn Glu Leu Arg Lys Arg Gly Val Asn Ser Arg Asp Met Leu Thr Ile
485 490 495

Ile Leu Arg Ala Met Glu Gly Ser Leu Met Ile Trp Arg Ile Phe Asn
500 505 510

Gln Thr Thr Ser Ser Ala Arg
515

<210> 38
<211> 1308
<212> PRT
<213> Trichinella murrelli

<400> 38
Met Gly Lys Arg Ser Thr Asp Asn Val Asn Lys Leu Glu Gly Pro Leu
1 5 10 15

Ser Asn Asn Glu Ala Pro Val Asn Asn Arg Met Val Thr Arg Ser Thr
20 25 30

Ile Lys Arg Ala Thr Val Val Asp Ser Arg Ser Ala Pro Pro Leu Leu
35 40 45

Val Arg Pro Pro Val Glu Ser Pro Glu Phe Lys Leu Val Cys Ala Thr
50 55 60

```
Ile Asp Asn Arg Arg Gln Lys Ser Thr Ala Ser Ser Ala Pro Leu Asn
65                  70                  75                  80

Asn Gly Gly Ile Cys Gln Pro Leu Ser Glu Ala Pro Asp Asp Asn Ala
                85                  90                  95

Ala Val Val Ser Asn Ser Cys Ala Val Ser Glu Ile Lys Glu Met Pro
            100                 105                 110

Pro Ala Arg Ile Asn Met Arg Leu Arg Ser Arg Lys Ala Cys Gly Asn
        115                 120                 125

Ile Pro Glu Pro Pro Arg Leu Pro Arg Thr Ser Gln Thr Ala Ser Glu
    130                 135                 140

Ser His Asp Gly Ser Gln Pro Cys Pro Gly Ser Ser Thr Ala Ile Thr
145                 150                 155                 160

Ser Phe Pro Arg Ala Ser Asp Asn His Pro Val Ser Thr Asn Thr Gln
                165                 170                 175

Gly Thr His Val Cys Ser Val Cys Ser Arg Val Phe Asn Ser Phe Pro
            180                 185                 190

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

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

Glu Val Lys Glu Val Glu Glu Ile Leu Ala Ala Asn Asn Ser Arg Ser
225                 230                 235                 240

Val Lys Ala Leu Ala Glu Ala Leu Ser Arg Lys Trp Ser Glu Asp Ile
                245                 250                 255

Ser Met Asp Met Ala Lys Tyr Leu Arg Lys Lys Leu Arg Ala Val Asp
            260                 265                 270
```

```
Leu Asn Ser Ala Gln Pro Thr Asn Thr Ala Leu Thr Asp Gly Val Asn
        275                 280                 285

Ser Pro Arg Glu Gly Pro Glu Asn Leu Thr Glu Glu Gly Glu Ser Leu
    290                 295                 300

Asn Asn Gly Ser Gln Val Ile Gly Thr Glu Ile Met Gly Pro Glu Arg
305                 310                 315                 320

Phe Pro Glu Cys Asp Ser Phe Gln Thr His Ser Ala Asn Ala Asp Leu
                325                 330                 335

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

Leu Asp Arg Asp Gln Gly Gly Val Leu Arg Lys His Leu Glu Asp Gly
        355                 360                 365

Leu Ala Ser Cys Asn Ser Glu Leu Glu Gly Leu Leu Asn Phe Ile Val
    370                 375                 380

Ser Lys Val Leu Asn Ser Gly Ile Glu Asp Arg Asn Lys His Val Asp
385                 390                 395                 400

Ala Ala Ile Ser Val Leu Thr Glu Phe Leu Cys Glu Ser Lys Ser His
                405                 410                 415

Gln Pro Pro Pro Pro Arg Lys Lys Arg Thr Arg Glu Glu Pro Lys Asn
            420                 425                 430

Arg Arg Gln Lys Ile Arg Ser Lys Tyr Ala Gln Met Gln Thr Leu Phe
        435                 440                 445

Lys Arg Asp Pro Lys Arg Val Ala Ala His Leu Ile Arg Asn Gln Pro
    450                 455                 460

Leu Cys Asn Val Ser Cys Pro Ile Asp Ala Ala Glu Ser Ala Leu Arg
465                 470                 475                 480
```

```
Gln Arg Leu Ser Gln Arg Pro Gly Val Asp Ala Ala Pro Ile Thr Ser
                485                 490                 495

Lys Cys Pro Gln Asn Ser Lys Asn Ile Leu Asp Pro Ile Phe Pro Glu
            500                 505                 510

Glu Val Thr Leu His Leu Gln Lys Met Lys Ile His Thr Ser Ala Gly
        515                 520                 525

Pro Asp Gly Ile Lys Val Ser His Leu Arg Ser Cys Asp Pro Val Cys
    530                 535                 540

Leu Ala Lys Ala Phe Asn Leu Phe Leu Leu Ala Arg His Ile Pro Gln
545                 550                 555                 560

Gln Leu Lys Asp Cys Arg Thr Thr Leu Ile Pro Lys Thr Asp Asp Pro
                565                 570                 575

Arg Pro Asp Ala Glu Asp Tyr Arg Pro Ile Thr Val Ala Ser Cys Leu
            580                 585                 590

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

Ser Leu His Pro Arg Gln Lys Ala Phe Arg Ser Gly Thr Asp Gly Ala
    610                 615                 620

Phe Asp Asn Thr Ser Thr Leu Met Thr Val Ile Arg Glu Ala His Asn
625                 630                 635                 640

Cys Gly Lys Glu Leu Asn Ile Val Ser Ile Asp Leu Ala Lys Ala Phe
                645                 650                 655

Asp Thr Val Asn His Thr Ser Ile Thr Arg Ala Leu Arg Met His Gly
            660                 665                 670

Leu Asp Asp Glu Ser Arg Thr Leu Ile Thr Glu Met Val Thr Gly Ser
        675                 680                 685
```

```
Ser Thr Ile Ile Lys Gly Asp Gly Gly Ala Leu Ser Asn Arg Ile Glu
    690                 695                 700

Ile Asn Gln Gly Val Arg Gln Gly Asp Pro Ile Ser Pro Leu Leu Phe
705                 710                 715                 720

Asn Ala Val Met Asp Glu Leu Val Glu Arg Leu Glu Arg Thr Gly Glu
                725                 730                 735

Gly Phe Lys Leu Lys Gly Val Glu Val Thr Thr Leu Ala Phe Ala Asp
            740                 745                 750

Asp Val Thr Leu Ile Ser Arg Ser His Arg Gly Met Glu Lys Leu Leu
        755                 760                 765

Ser Ile Thr Leu Asp Phe Leu Asn Glu Arg Gly Leu Gln Leu Asn Ile
    770                 775                 780

Asn Lys Cys Lys Gly Ile Arg Leu Val Arg Thr Pro Lys Thr Lys Ser
785                 790                 795                 800

Leu Val Glu Asp Thr Ser Lys Pro Phe Arg Val Pro Ser Phe Gly Glu
                805                 810                 815

Glu Asn Gln His Ile Pro Met Val Leu Pro Gly Asp Leu Ile Lys Phe
            820                 825                 830

Leu Gly Ile Asp Ile Thr Leu Asn Gly Lys Pro His Phe Asp Leu Ala
        835                 840                 845

Pro Leu Glu Asp Thr Leu Glu Arg Ile Arg Lys Ala Pro Leu Lys Pro
    850                 855                 860

Ala Gln Lys Leu Ala Thr Val Arg Asp Tyr Leu Ile Pro Ser Leu Glu
865                 870                 875                 880

Tyr Arg Leu Gly Val Pro Gly Ile Ser Arg Lys Leu Leu Glu Ser Val
                885                 890                 895
```

```
Asp Gly Ala Ile Arg Leu Thr Val Lys Arg Phe Leu His Leu Pro Leu
            900                 905                 910

Thr Gly Met Asn Ser Met Phe Leu Ser Met Pro Val Lys Glu Gly Gly
        915                 920                 925

Leu Gly Leu Arg Ser Leu Ser Thr Gln His Ile Ala Arg Leu Ala Val
    930                 935                 940

Gly Thr Asn Ser Met Ser Ile Ser Thr Asp Thr Val Ser Arg Val Val
945                 950                 955                 960

Ala Asp Thr Thr Thr Leu Arg Lys Pro Leu Leu Ser Ala Leu Glu His
                965                 970                 975

Phe Ala Val Pro Thr Ala Thr Lys Ser Ala Ile Arg Glu Gly Lys Arg
            980                 985                 990

Asn Leu Leu Arg Ala Glu Ile Ala  Gln Leu Ser Glu Thr  Tyr Gln Gly
        995                 1000                1005

Ser Cys  Leu Pro Ser Phe Lys  His Gly Ser Leu Val  Asn Thr Trp
    1010                1015                1020

Leu Arg  Gly Thr Ser Gly Met  Arg Ser Arg Asp Tyr  Ile Thr Gly
    1025                1030                1035

Leu Lys  Leu Arg Phe Gly Val  Ile Glu Thr Arg Ser  Gln Lys Trp
    1040                1045                1050

Arg Gly  Arg Thr Pro Gln Asn  Pro Asp Ala Leu Leu  Cys Arg His
    1055                1060                1065

Cys Gly  His Ser Ser Gly Asn  Arg Glu Thr Ala Ala  His Val Ser
    1070                1075                1080

Gln Lys  Cys Leu Val Thr His  Ala Leu Ile Val Gln  Arg His Asn
    1085                1090                1095
```

```
Lys Ile  Val Arg Leu Val Gly  Asp Arg Ala Lys Asp  Glu Gly Phe
    1100                1105                1110

Ala Val  His Val Glu Thr Ala  Val Lys Ser Gly Glu  Glu Val Tyr
    1115                1120                1125

Lys Pro  Asp Leu Ile Leu Ile  Lys Ala Asp Thr Ala  His Ile Ile
    1130                1135                1140

Asp Val  Ala Val Pro Trp Glu  Lys Gly Thr Asn Met  His Glu Lys
    1145                1150                1155

His Glu  Arg Lys Thr Asn Lys  Tyr Ala Gln Leu Val  Asp Asp Val
    1160                1165                1170

Lys Ala  Leu Phe Gly Val Gln  Asn Cys Thr Val Gly  Ala Leu Val
    1175                1180                1185

Ile Gly  Ala Arg Ser Ser Trp  Cys Thr Ser Asn Asp  Gly Ser Leu
    1190                1195                1200

Lys Ala  Cys Gly Leu His Leu  Pro Lys Lys Thr Asp  Gly Glu Asp
    1205                1210                1215

Leu Thr  Thr Glu Ala Asp Asp  Ser Asp Ala Glu Pro  Trp Gln Lys
    1220                1225                1230

Pro Glu  His Ser Pro Pro His  Ala Lys Glu Asn Thr  Glu Asp Arg
    1235                1240                1245

Asn Thr  Glu Glu Gln Ser Glu  Pro Tyr Thr Thr Pro  Gln Thr Leu
    1250                1255                1260

Arg Thr  Ser Glu Asn Pro Glu  Ile Gln Arg Arg Arg  Arg Leu His
    1265                1270                1275

Arg Thr  Thr Thr Arg Arg Asp  Cys Ala Arg Arg Thr  Asp His Asn
    1280                1285                1290
```

Trp Thr Pro Glu Arg Gly Thr Thr His Pro Gln Lys Gln Gly Pro
1295 1300 1305

<210> 39
<211> 1327
<212> PRT
<213> Trichinella papuae

<400> 39
Met Gly Lys Pro Ser Arg Pro Ala Gln Glu Thr Pro Ser Thr Ala Ala
1 5 10 15

Gly Ser Asp Gly Gln Ala Arg Ser Gly Leu Arg Arg Arg Asn His Ala
20 25 30

Glu Val Thr Tyr Pro Gly Pro Phe Thr Cys Thr Val Cys Ser Leu Thr
35 40 45

Glu Cys Val Tyr Ser Arg Phe Lys Asn His Cys Met Thr His His Leu
50 55 60

His Leu Glu Leu Ser Cys Ser Val Cys Arg Lys Val Phe Pro Thr Ile
65 70 75 80

Asn Ala Val Ala Cys His Tyr Pro His Cys Ala Lys Thr Pro Arg Asn
85 90 95

Pro Asn Ile Ser Gln Asn Ile Pro Glu Thr Thr Gln Val Gly Arg Thr
100 105 110

Val Ala Ser Ser Ile Asn Asn Lys Gly Ile Ser Glu Asn Lys Glu Pro
115 120 125

Pro Gln Asn Asn Arg Val Val Thr Arg Ser Gln Val Lys Arg Ala Ala
130 135 140

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

Ala Val Asn Ala Ala Ala Gly Ile Val Arg Ser Gln Val Asn Val Val
165 170 175

```
Phe Pro Asp Cys Ala Thr Leu Asn Asn Asn Ser Arg Gln Arg Leu Met
            180                 185                 190

Val Ala Pro Ala Pro Pro Asn Asn Gly Glu Leu Cys Ser Pro Leu Ser
        195                 200                 205

Gly Lys Val Thr Asp Gly Gly Asn Val Ile Val Arg Arg Ser Ala Arg
    210                 215                 220

Leu Ala Ser Asn Cys Glu Ala Gly Leu His Asn Asn Gly Ala Asp Ala
225                 230                 235                 240

Ser Ser Val Ala Asn Val Pro Val Ile Lys Glu Val Pro Pro Ala Arg
                245                 250                 255

Thr Tyr Arg Arg Asn Arg Pro Ala Ser Ala Asn Thr Asn Ile Thr Glu
            260                 265                 270

Thr Pro Arg Gln Pro Pro Thr Ser Met Thr Val Pro Glu Cys Arg Arg
        275                 280                 285

Arg Thr Arg Glu Gln Pro Gln Arg Thr Thr Ala Ser Glu Ala Thr Gln
    290                 295                 300

Pro Ala Ala Pro Thr Val Ala Asp Asn Ala Phe Pro Cys Gly Glu Cys
305                 310                 315                 320

Gly Arg Val Phe Ser Thr Phe Ala Gly Met Arg Leu His Leu Lys Arg
                325                 330                 335

Ala His Pro Ser Ser Phe Ser Ser Leu Gln Pro Pro Val Lys Val Pro
            340                 345                 350

Arg Trp Ser Ala Leu Glu Ser Asp Thr Leu Arg Glu Leu Glu Asp Ala
        355                 360                 365

Leu Arg Arg Asn Gly Glu Leu Ser Asn Glu Lys Leu Ala Ser Leu Met
    370                 375                 380
```

```
Thr Asp Arg Phe Glu Arg Val Phe Thr Ile Asp Met Val Lys Gly His
385                 390                 395                 400

Arg Arg Lys Phe Arg Glu Thr Pro Arg Thr Glu Gly Glu Asn Ser Arg
                405                 410                 415

Pro Ser Thr Pro Arg Glu Ser Thr Pro Ala Pro Thr Ala Gln Thr Ser
            420                 425                 430

Pro Ser Thr Met Pro Val Asn Asn Ile Thr Arg Asp Asn Pro Glu Thr
        435                 440                 445

Ala Glu Asp Ile Asn Lys Lys Leu Lys Gln His Leu Leu His Cys Thr
    450                 455                 460

Thr Thr His Asn Thr Glu Val Glu Ala Glu Ile Asn Asp Ile Ile Arg
465                 470                 475                 480

Asn His Ile Ile Lys Gly Asn Asn Lys Asn Tyr Val Thr Arg Ile Val
                485                 490                 495

Lys Tyr Leu Ile Gly Ala Met Arg Pro Glu Glu Glu Arg Gly Pro Lys
            500                 505                 510

Lys Gly Arg Lys Lys Lys Lys Pro Glu Pro Ser Val Pro Leu Asn Ser
        515                 520                 525

Lys Gln Arg Lys Arg Met Ala Tyr Arg Lys Val Gln Gln Ala Tyr His
    530                 535                 540

Lys Asp Pro Lys Arg Val Val Ala His Leu Phe His Ser Gln Pro Leu
545                 550                 555                 560

Glu Asn Val Ser Cys Pro Val Glu Ser Gly Glu Lys Ala Leu Gln Ala
                565                 570                 575

Arg Leu Gly Lys Arg Pro Pro Ala Asp Arg Ala Pro Phe Leu Pro Lys
            580                 585                 590
```

```
Arg Ala Pro Leu Lys Asn His Leu Leu Ser Pro Ile Ser Ala Lys Glu
        595                 600                 605

Val Ser Glu His Leu Lys Gln Met Asn Leu Ala Ser Ala Ser Gly Pro
    610                 615                 620

Asp Gly Val Lys Val Ser His Leu Arg Asp Ile Gly Pro Gln Cys Leu
625                 630                 635                 640

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

Leu Lys Asp Cys Arg Thr Thr Leu Ile Pro Lys Val Asp Asn Pro Arg
            660                 665                 670

Pro Asp Ala Glu Asp Phe Arg Pro Ile Thr Ile Gly Ser Cys Ile Tyr
        675                 680                 685

Arg Leu Phe Ser Lys Ile Val Thr Ser Arg Leu Ser Gln Leu Thr Pro
    690                 695                 700

Leu Asn Pro Arg Gln Lys Ala Phe Arg Ser Gly Thr Asp Gly Ala Phe
705                 710                 715                 720

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

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

Thr Val Asn His Thr Ser Ile Thr Arg Ala Leu His Arg His Gly Val
        755                 760                 765

Asp Ser Ala Ser Ile Glu Leu Val Glu Ser Met Val Gly Glu Ala Thr
    770                 775                 780

Thr Val Ile Ile Asn Ser Asp Gly Thr Arg Ser Asn Val Ile Lys Phe
785                 790                 795                 800
```

```
Asn Arg Gly Val Arg Gln Gly Asp Pro Ile Ser Pro Leu Leu Phe Asn
                805                 810                 815

Leu Val Leu Asp Glu Leu Ile Asp Asn Leu Asp Gln Ala Arg Cys Gly
            820                 825                 830

Phe Ser Ile Thr Lys Glu Ile Gln Val Ser Cys Val Ala Phe Ala Asp
        835                 840                 845

Asp Ile Thr Leu Val Ser Gly Ser Arg Glu Gly Met Asn Asn Leu Leu
    850                 855                 860

Thr Ile Thr Arg Glu Phe Leu Gly Glu Arg Gly Leu Gly Ile Asn His
865                 870                 875                 880

Ser Lys Cys Lys Gly Ile Arg Phe Thr Lys Val Pro Lys Ser Lys Ser
                885                 890                 895

Leu Ile Ile Asp Thr Asn Pro Asn Cys Phe Leu Ile Arg Asn Gln Gln
            900                 905                 910

Gly Thr Pro Glu Pro Ile Pro Met Ala Lys Pro Gly Glu Pro Leu Lys
        915                 920                 925

Thr Leu Gly Ile Asn Leu Thr Leu Glu Gly Asn Pro Thr Phe Asn Tyr
    930                 935                 940

Pro Glu Leu Thr Arg Ile Leu Asn Thr Ile Lys His Ala Pro Leu Lys
945                 950                 955                 960

Pro His Gln Lys Val Gln Ile Ile Arg Asp His Leu Ile Pro Leu Leu
                965                 970                 975

Gln Tyr Lys Leu Gly Val Pro Thr Phe Tyr Arg Ala Thr Leu Asn Asn
            980                 985                 990

Ile Asp Lys Ser Ile Arg Leu Thr  Val Lys Glu Ile Leu  His Leu Pro
        995                 1000                1005
```

```
Thr Thr  Gly Leu His Asn Ser  Tyr Leu Tyr Leu Pro  Leu Lys Glu
    1010                1015                1020

Gly Gly  Leu Gly Leu Lys Arg  Leu Ala Thr Gln Tyr  Ala Ser Arg
    1025                1030                1035

Val Gly  Leu Gly Leu Ser Asn  Met Ala Thr Ser Asp  Asp Ala Val
    1040                1045                1050

Ser Arg  Ala Val Ala Gly Leu  His Leu Ser Leu Met  Asp Lys Ala
    1055                1060                1065

Lys Asn  Cys Leu Gly Leu Ser  Glu Ile Ser Lys Glu  Ala Ile Lys
    1070                1075                1080

Lys Ala  Lys Glu Lys Leu Val  Gln Ala Glu Ile Arg  Thr Leu Leu
    1085                1090                1095

Gln Cys  His Leu Gly Arg Ser  His Ser Ser Phe Thr  Asn Asp Thr
    1100                1105                1110

Ile Ser  Asn Ser Trp Met Arg  Tyr Pro Thr Phe Leu  Ser Ala Arg
    1115                1120                1125

Asn Tyr  Ile Met Gly Ile Lys  Leu Arg Ala Gly Ile  Ile Glu Thr
    1130                1135                1140

Arg Ala  Gln Lys Trp Arg Gly  Arg Ser Pro Pro His  Pro Thr Met
    1145                1150                1155

Leu Leu  Cys Arg His Cys Gly  Ala Arg Ser Arg Thr  Arg Glu Thr
    1160                1165                1170

Asp Ile  His Val Ser Gln Lys  Cys Leu His Asn Lys  Lys Leu Ile
    1175                1180                1185

Leu Arg  Arg His Asn Cys Val  Val Ser Thr Leu Gly  Arg Arg Ala
    1190                1195                1200
```

```
Thr Gln  Gln Gly Phe Ala Val  Tyr Tyr Glu Pro Cys  Ile Lys His
    1205                 1210                 1215


Gly Glu  Thr Val Leu Lys Pro  Asp Leu Val Ile Ile  Lys Gly Asp
    1220                 1225                 1230


Thr Ala  Thr Ile Ile Asp Val  Ala Val Pro Trp Glu  Gln Gly Thr
    1235                 1240                 1245


Asn Leu  Arg Glu His Asn Ser  Arg Lys Ile Ser Lys  Tyr Gln Cys
    1250                 1255                 1260


Leu Glu  Arg Glu Ala Ala Lys  Tyr Phe Asn Val Lys  Thr Val Lys
    1265                 1270                 1275


Thr Gly  Ser Leu Val Val Gly  Ala Arg Gly Lys Trp  Ser Ala Gly
    1280                 1285                 1290


Asn Asp  Ser Thr Leu Lys Ser  Cys Gly Leu His Cys  Ser Lys Arg
    1295                 1300                 1305


Leu Lys  Lys Leu Leu Cys Thr  Ile Ala Leu Glu Gly  Thr Cys Ala
    1310                 1315                 1320


Val Phe  Lys His
    1325


<210> 40
<211> 1365
<212> PRT
<213> Trichinella britovi

<400> 40
Met Val Thr Arg Ser Thr Ile Lys Arg Ala Thr Val Val Asp Ser Arg
1               5                  10                  15


Ser Ala Pro Pro Leu Leu Asp Arg Pro Pro Val Glu Arg Pro Glu Ile
            20                  25                  30
```

```
Lys Leu Val Cys Ala Thr Ile Asp Asn Arg Arg Gln Lys Ser Thr Ala
        35                  40                  45

Ala Ser Ala Pro Leu Asn Ile Val Gly Ile Cys Gln Pro Leu Phe Glu
    50                  55                  60

Ala Pro Asp Asp Asn Ala Ala Val Val Ser Asn Asn Cys Ala Val Ser
65                  70                  75                  80

Glu Ile Lys Glu Met Pro Pro Ala Arg Ile Asn Met Arg Leu Arg Ser
                85                  90                  95

Arg Lys Ala Cys Gly Asn Ile Leu Glu Pro Pro Arg Pro Pro Arg Thr
            100                 105                 110

Ser Gln Ser Ala Ser Glu Ser His Asp Gly Ser Gln Pro Cys Pro Gly
        115                 120                 125

Ser Ser Ala Ala Ser Thr Asn Ser Pro Arg Ala Ser Ile Ser Gln Pro
    130                 135                 140

Ala Ser Thr Asn Ala Gln Gly Thr His Val Cys Ser Val Cys Ser Arg
145                 150                 155                 160

Ala Phe Asn Ser Phe Pro Gly Leu Arg Leu His Glu Lys Arg Ala His
                165                 170                 175

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

Thr Ile Asp His Leu Arg Glu Val Lys Glu Val Glu Glu Met Leu Ala
        195                 200                 205

Ala Asn Asn Ser Arg Ser Val Lys Ala Leu Ala Glu Ala Leu Ser Arg
    210                 215                 220

Lys Trp Ser Glu Asp Ile Ser Met Asp Met Ala Lys Tyr Leu Arg Lys
225                 230                 235                 240
```

```
Lys Leu Arg Ala Val Asp Leu Asn Ser Ala Gln Pro Thr Asn Thr Ala
                245                 250                 255

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

Glu Glu Gly Glu Ser Leu Asn Asn Gly Ser Gln Val Val Gly Thr Glu
        275                 280                 285

Ile Met Gly Pro Glu Arg Leu Pro Glu Cys Asp Ser Leu Gln Thr His
    290                 295                 300

Ser Ala Asn Ala Asp Leu Ser Asn Pro Cys Pro Gln His Pro Asp Gly
305                 310                 315                 320

Leu Leu Ser Glu Gln Gly Leu Asp Arg Asp Gln Trp Gly Val Leu Arg
                325                 330                 335

Lys His Leu Glu Asp Gly Leu Ala Ser Cys Asn Ser Glu Leu Glu Gly
            340                 345                 350

Leu Leu Asn Phe Ile Ile Asn Lys Ile Leu Asn Ser Gly Ser Glu Asp
        355                 360                 365

Arg Asn Lys Leu Val Asp Ala Ala Ile Ser Val Leu Ile Glu Phe Leu
    370                 375                 380

Gly Glu Pro Lys Ser His Gln Pro Pro Pro Pro Arg Lys Lys Arg Thr
385                 390                 395                 400

Arg Glu Glu Pro Lys Asn Arg Arg Gln Lys Ile Arg Ser Lys Tyr Ala
                405                 410                 415

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

Leu Ile Lys Asn Gln Pro Leu Cys Asn Val Ser Cys Pro Ile Asp Ala
        435                 440                 445
```

```
Ala Glu Ser Ala Leu Arg Gln Arg Leu Ser Gln Arg Pro Gly Val Asp
    450                 455                 460

Ala Ala Pro Phe Thr Ser Lys Cys Pro Gln Asn Ser Lys Asn Ile Leu
465                 470                 475                 480

Asp Pro Ile Phe Pro Glu Glu Val Thr Leu His Leu Gln Asn Met Lys
                485                 490                 495

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

Ser Cys Asp Pro Val Cys Leu Ala Lys Ala Phe Asn Leu Phe Leu Leu
        515                 520                 525

Ala Arg His Ile Pro Gln Gln Leu Lys Asp Cys Arg Thr Ser Leu Ile
    530                 535                 540

Pro Lys Thr Asp Asp Pro Arg Pro Asp Ala Glu Asp Tyr Arg Pro Ile
545                 550                 555                 560

Thr Val Ala Ser Cys Leu Tyr Arg Leu Phe Ser Lys Ile Val Thr Arg
                565                 570                 575

Arg Leu Glu Asp Ser Leu Ser Leu His Pro Arg Gln Lys Ala Phe Arg
            580                 585                 590

Ser Gly Thr Asp Gly Ala Phe Asp Asn Thr Ser Thr Leu Met Thr Val
        595                 600                 605

Ile Arg Glu Ala His Ser Cys Gly Lys Glu Leu Asn Ile Val Ser Ile
    610                 615                 620

Asp Leu Ala Lys Ala Phe Asp Thr Val Asn His Thr Ser Ile Thr Arg
625                 630                 635                 640

Ala Leu Arg Met His Gly Leu Asp Asp Glu Ser Arg Thr Leu Ile Thr
                645                 650                 655
```

```
Glu Met Val Thr Gly Ser Ser Thr Ile Ile Lys Gly Asp Gly Gly Ala
            660                 665                 670

Leu Ser Asn Arg Ile Glu Ile Asn Gln Gly Val Arg Gln Gly Asp Pro
        675                 680                 685

Ile Ser Pro Leu Leu Phe Asn Ala Val Met Asp Glu Leu Val Glu Arg
    690                 695                 700

Leu Glu Gln Thr Gly Glu Gly Phe Lys Leu Lys Gly Val Glu Val Thr
705                 710                 715                 720

Thr Leu Ala Phe Ala Asp Asp Val Thr Leu Ile Ser Arg Ser His Arg
                725                 730                 735

Gly Met Glu Lys Leu Leu Ser Thr Thr Leu Asp Phe Leu Asn Glu Arg
            740                 745                 750

Gly Leu Lys Leu Asn Ile Ser Lys Cys Lys Gly Ile Arg Leu Val Arg
        755                 760                 765

Thr Pro Lys Thr Lys Ser Leu Val Glu Asp Thr Ser Lys Pro Phe Arg
    770                 775                 780

Val Pro Ser Phe Gly Glu Glu Asn Gln His Ile Pro Met Val Leu Pro
785                 790                 795                 800

Gly Asp Leu Ile Lys Phe Leu Gly Ile Asp Ile Thr Leu Asn Gly Lys
                805                 810                 815

Pro His Phe Asp Leu Ala Pro Leu Glu Ala Thr Leu Glu Arg Ile Arg
            820                 825                 830

Lys Ala Pro Leu Lys Pro Ala Gln Lys Leu Ala Thr Val Arg Asp Tyr
        835                 840                 845

Leu Ile Pro Ser Leu Glu Tyr Arg Leu Gly Val Pro Gly Ile Ser Arg
    850                 855                 860
```

```
Lys Leu Leu Glu Ser Val Asp Gly Ala Ile Arg Leu Thr Val Lys Arg
865                 870                 875                 880


Phe Leu His Leu Pro Leu Thr Gly Met Asn Ser Met Phe Leu Ser Met
                885                 890                 895


Pro Val Lys Glu Gly Gly Leu Gly Leu Arg Ser Leu Ser Thr Gln His
            900                 905                 910


Ile Ala Arg Leu Ala Val Gly Thr Asn Ser Met Ser Ile Ser Thr Asp
        915                 920                 925


Thr Val Ser Arg Val Val Ala Asp Thr Thr Thr Leu Arg Lys Pro Leu
    930                 935                 940


Leu Ser Ala Leu Glu His Phe Ala Val Pro Thr Ala Thr Lys Ser Ala
945                 950                 955                 960


Ile Arg Glu Gly Lys Arg Asn Leu Leu Arg Ala Glu Ile Ala Gln Leu
                965                 970                 975


Ser Glu Thr Tyr Gln Gly Ser Cys Leu Pro Ser Phe Lys His Gly Ser
            980                 985                 990


Leu Val Asn Ser Trp Leu Arg Gly  Thr Ser Gly Met Arg  Ser Arg Asp
        995                 1000                1005


Tyr Ile  Thr Gly Leu Lys Leu  Arg Phe Gly Val Ile  Glu Thr Arg
    1010                1015                1020


Ser Gln  Lys Trp Arg Gly Arg  Thr Pro Gln Asn Pro  Asp Ala Leu
    1025                1030                1035


Leu Cys  Arg His Cys Gly His  Ser Ser Gly Asn Arg  Glu Thr Ala
    1040                1045                1050


Ala His  Val Ser Gln Lys Cys  Leu Val Thr His Ala  Leu Ile Val
    1055                1060                1065
```

```
Gln Arg  His Asn Lys Ile Met  Arg Leu Val Gly Asp  Arg Ala Lys
    1070                1075                1080

Asp Glu  Gly Phe Ala Val His  Val Glu Thr Ala Ile  Lys Ser Gly
    1085                1090                1095

Glu Glu  Val Tyr Lys Pro Asp  Leu Ile Leu Ile Lys  Asp Asp Thr
    1100                1105                1110

Ala His  Ile Leu Asp Val Ala  Val Pro Trp Glu Lys  Gly Thr Asn
    1115                1120                1125

Met His  Glu Lys His Glu Arg  Lys Thr Asn Lys Tyr  Ala Gln Leu
    1130                1135                1140

Val Gly  Asp Val Lys Ala Leu  Phe Gly Val Gln Asn  Cys Thr Val
    1145                1150                1155

Gly Ala  Leu Val Ile Gly Ala  Arg Ser Ser Trp Cys  Pro Ser Asn
    1160                1165                1170

Asp Gly  Ser Leu Lys Ala Cys  Gly Leu His Leu Pro  Lys Lys Pro
    1175                1180                1185

Asp Gly  Glu Asp Leu Lys Thr  Glu Asp Asn His Pro  Cys Ala Glu
    1190                1195                1200

Ser Arg  Gln Arg Pro Lys His  Ser Pro Pro Leu Glu  Glu Glu Asn
    1205                1210                1215

Thr Glu  Glu Arg Asn Thr Ala  Glu Gln Thr Glu Pro  Cys Thr Thr
    1220                1225                1230

Pro Gln  Thr Leu Arg Thr Thr  Glu Asn Pro Asp Ile  Arg Arg Arg
    1235                1240                1245

Thr Arg  Leu Asn Arg Thr Thr  Thr Arg Arg Asp Cys  Ala Arg Arg
    1250                1255                1260
```

Thr Gly His Asn Trp Thr Pro Tyr Ile Lys Thr Asp Leu Cys Arg
1265 1270 1275

Asn Ile Gly Leu Asn Leu Ser Leu Ile Lys Ser His Trp Cys Ala
1280 1285 1290

Ser Gln Ile Arg Leu Thr Ala Ala Gly Thr Phe Leu Arg Glu Ser
1295 1300 1305

Pro Ala Asn Ser Ala Thr Ser Gln Met Pro Arg His Leu Ile Ser
1310 1315 1320

Asp Ala Tyr Glu Trp Ile Asn Lys Ile Pro Ser Val Pro Ile Tyr
1325 1330 1335

Tyr Leu Ala Lys Pro Gln Pro Arg Glu Arg Ala Trp Gln Asn Gln
1340 1345 1350

Arg Gly Lys Lys Thr Leu Leu Ser Leu Thr Leu Val
1355 1360 1365

<210> 41
<211> 1144
<212> PRT
<213> Schistosoma mansoni

<400> 41
Met Pro Val Ser Thr Gly Ala Glu Thr Asp Ile Thr Ser Ser Leu Pro
1 5 10 15

Ile Pro Ala Ser Ser Ile Val Ser Pro Asn Tyr Thr Leu Pro Asp Ser
20 25 30

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

Leu Leu Ser His Ala Thr Ala Ile His His Ile Ser Cys Pro Pro Thr
50 55 60

Pro Val Gln Asp Gly Ser Gln Gln Met Ser Cys Val Leu Cys Ala Ala
65 70 75 80

```
Ala Phe Ser Ser Asn Arg Gly Leu Thr Gln His Ile Arg His Arg His
                85                  90                  95

Ile Ser Glu Tyr Asn Glu Leu Ile Arg Gln Arg Ile Ala Val Gln Pro
            100                 105                 110

Thr Ser Arg Ile Trp Ser Pro Phe Asp Asp Ala Ser Leu Leu Ser Ile
        115                 120                 125

Ala Asn His Glu Ala His Arg Phe Pro Thr Lys Asn Asp Leu Cys Gln
    130                 135                 140

His Ile Ser Thr Ile Leu Thr Arg Arg Thr Ala Glu Ala Val Lys Arg
145                 150                 155                 160

Arg Leu Leu His Leu Gln Trp Ser Arg Ser Pro Thr Ala Ile Thr Thr
                165                 170                 175

Ser Ser Asn Asn His Thr Ile Thr Asp Ile Pro Asn Thr Glu Ala Arg
            180                 185                 190

Tyr Ile Phe Pro Val Asp Leu Asp Glu His Pro Pro Leu Ser Asp Ala
        195                 200                 205

Thr Thr Pro Asn Ala Ser Thr His Pro Leu Pro Glu Leu Leu Val Ile
    210                 215                 220

Leu Thr Pro Leu Pro Ser Pro Thr Arg Leu Gln Asn Ile Ser Glu Ser
225                 230                 235                 240

Gln Thr Ser His Glu Ser Asn Lys Asn Ser Met His Thr Pro Pro Thr
                245                 250                 255

Tyr Ala Cys Asp Pro Asp Glu Thr Leu Gly Ala Thr Pro Ser Ser Thr
            260                 265                 270

Ile Pro Ser Cys Phe His Ser Tyr Gln Asp Pro Leu Ala Glu Gln Arg
        275                 280                 285
```

```
Gly Lys Leu Leu Arg Ala Ser Ala Ser Leu Leu Gln Ser Ser Cys Thr
    290                 295                 300

Arg Ile Arg Ser Ser Ser Leu Leu Ala Phe Leu Gln Asn Glu Ser Thr
305                 310                 315                 320

Leu Met Asp Glu Glu His Val Ser Thr Phe Leu Asn Ser His Ala Glu
                325                 330                 335

Phe Val Phe Pro Arg Thr Trp Thr Pro Ser Arg Pro Lys His Pro Ser
            340                 345                 350

His Ala Pro Ala Asn Val Ser Arg Lys Lys Arg Arg Lys Ile Glu Tyr
        355                 360                 365

Ala His Ile Gln Arg Leu Phe His His Arg Pro Lys Asp Ala Ser Asn
    370                 375                 380

Thr Val Leu Asp Gly Arg Trp Arg Asn Pro Tyr Val Ala Asn His Ser
385                 390                 395                 400

Met Ile Pro Asp Phe Asp Cys Phe Trp Thr Thr Val Phe Thr Lys Thr
                405                 410                 415

Asn Ser Pro Asp Ser Arg Glu Ile Thr Pro Ile Ile Pro Met Thr Pro
            420                 425                 430

Ser Leu Ile Asp Pro Ile Leu Pro Ser Asp Val Thr Trp Ala Leu Lys
        435                 440                 445

Glu Met His Gly Thr Ala Gly Gly Ile Asp Arg Leu Thr Ser Tyr Asp
    450                 455                 460

Leu Met Arg Phe Gly Lys Asn Gly Leu Ala Gly Tyr Leu Asn Met Leu
465                 470                 475                 480

Leu Ala Leu Ala Tyr Leu Pro Thr Asn Leu Ser Thr Ala Arg Val Thr
                485                 490                 495
```

```
Phe Val Pro Lys Ser Ser Ser Pro Val Ser Pro Glu Asp Phe Arg Pro
            500                 505                 510

Ile Ser Val Ala Pro Val Ala Thr Arg Cys Leu His Lys Ile Leu Ala
        515                 520                 525

Lys Arg Trp Met Pro Leu Phe Pro Gln Glu Arg Leu Gln Phe Ala Phe
    530                 535                 540

Leu Asn Arg Asp Gly Cys Phe Glu Ala Val Asn Leu Leu His Ser Val
545                 550                 555                 560

Ile Arg His Val His Thr Arg His Thr Gly Ala Ser Phe Ala Leu Leu
                565                 570                 575

Asp Ile Ser Arg Ala Phe Asp Thr Val Ser His Asp Ser Ile Ile Arg
            580                 585                 590

Ala Ala Lys Arg Tyr Gly Ala Pro Glu Leu Leu Cys Arg Tyr Leu Asn
        595                 600                 605

Asn Tyr Tyr Arg Arg Ser Thr Ser Cys Val Asn Arg Thr Glu Leu His
    610                 615                 620

Pro Thr Cys Gly Val Lys Gln Gly Asp Pro Leu Ser Pro Leu Leu Phe
625                 630                 635                 640

Ile Met Val Leu Asp Glu Val Leu Glu Gly Leu Asp Pro Met Thr His
                645                 650                 655

Leu Thr Val Asp Gly Glu Ser Leu Asn Tyr Ile Ala Tyr Ala Asp Asp
            660                 665                 670

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

Arg Ile Ser Ile Leu Leu His Glu Ala Gly Trp Ser Val Asn Pro Glu
    690                 695                 700
```

```
Lys Ser Arg Thr Leu Asp Leu Ile Ser Gly Gly His Ser Lys Ile Thr
705                 710                 715                 720

Ala Leu Ser Gln Thr Glu Phe Thr Ile Ala Gly Met Arg Ile Pro Pro
                725                 730                 735

Leu Ser Ala Ala Asp Thr Phe Asp Tyr Leu Gly Ile Lys Phe Asn Phe
            740                 745                 750

Lys Gly Arg Cys Pro Val Ala His Ile Asp Leu Leu Asn Asn Tyr Leu
        755                 760                 765

Thr Glu Ile Ser Cys Ala Pro Leu Lys Pro Gln Gln Arg Met Lys Ile
    770                 775                 780

Leu Lys Asp Asn Leu Leu Pro Arg Leu Leu Tyr Pro Leu Thr Leu Gly
785                 790                 795                 800

Ile Val His Leu Lys Thr Leu Lys Ser Met Asp Arg Asn Ile His Thr
                805                 810                 815

Ala Ile Arg Lys Trp Leu Arg Leu Pro Ser Asp Thr Pro Leu Ala Tyr
            820                 825                 830

Phe His Ser Pro Val Ala Ala Gly Gly Leu Gly Ile Leu His Leu Ser
        835                 840                 845

Ser Ser Val Pro Phe His Arg Arg Lys Arg Leu Glu Thr Leu Leu Ser
    850                 855                 860

Ser Pro Asn Arg Leu Leu His Lys Leu Pro Thr Ser Pro Thr Leu Ala
865                 870                 875                 880

Ser Tyr Ser His Leu Ser Gln Leu Pro Val Arg Ile Gly His Glu Thr
                885                 890                 895

Val Thr Ser Arg Glu Glu Ala Ser Asn Ser Trp Val Arg Arg Leu His
            900                 905                 910
```

```
Ser Ser Cys Asp Gly Lys Gly Leu Leu Leu Ala Pro Leu Ser Thr Glu
        915                 920                 925

Ser His Ala Trp Leu Arg Tyr Pro Gln Ser Ile Phe Pro Ser Val Tyr
    930                 935                 940

Ile Asn Ala Val Lys Leu Arg Gly Gly Leu Leu Ser Thr Lys Val Arg
945                 950                 955                 960

Arg Ser Arg Gly Gly Arg Val Thr Asn Gly Leu Asn Cys Arg Gly Gly
                965                 970                 975

Cys Ala His His Glu Thr Ile His His Ile Leu Gln His Cys Ala Leu
            980                 985                 990

Thr His Asp Ile Arg Cys Lys Arg  His Asn Glu Leu Cys  Asn Leu Val
        995                 1000                1005

Ala Lys  Lys Leu Arg Arg Gln  Lys Ile His Phe Leu  Gln Glu Pro
    1010                1015                1020

Cys Ile  Pro Leu Glu Lys Thr  Tyr Cys Lys Pro Asp  Phe Ile Ile
    1025                1030                1035

Ile Arg  Asp Ser Ile Ala Tyr  Val Leu Asp Val Thr  Val Ser Asp
    1040                1045                1050

Asp Gly  Asn Thr His Ala Ser  Arg Leu Leu Lys Ile  Ser Lys Tyr
    1055                1060                1065

Gly Asn  Glu Arg Thr Val Ala  Ser Ile Lys Arg Phe  Leu Thr Ser
    1070                1075                1080

Ser Gly  Tyr Ile Ile Thr Ser  Val Arg Gln Thr Pro  Val Val Leu
    1085                1090                1095

Thr Phe  Arg Gly Ile Leu Asp  Arg Ala Ser Ser Gln  Ser Leu Arg
    1100                1105                1110
```

```
Arg Leu  Cys Phe Ser Ser Arg  Asp Leu Gly Asp Leu  Cys Leu Ser
    1115                1120                1125


Ala Ile  Gln Gly Ser Ile Lys  Ile Tyr Asn Thr Tyr  Met Arg Gly
    1130                1135                1140


Thr
```

<210> 42
<211> 1025
<212> PRT
<213> Nasonia vitripennis

<400> 42

```
Asn Gln Ile Lys Lys Ser Asn Thr Ser Thr Gly Ala Arg Ile Pro Lys
1               5                   10                  15


Ala Met Thr Asn Pro Ala Asp Asn Phe Ala Gly Gly Gln Trp Lys Pro
            20                  25                  30


Pro Gly Arg Arg Ser Ala Arg Thr Ser Ala Thr Gly Met Phe Val Cys
        35                  40                  45


Glu His Cys Leu Arg Ala Phe Thr Thr Asn Thr Gly Arg Gly Leu His
    50                  55                  60


Ile Lys Arg Ala His Glu Glu Gln Ala Asn Glu Ala Ile Thr Thr Glu
65                  70                  75                  80


Arg Ser Arg Ala Arg Trp Thr Asn Glu Glu Met Glu Ala Val Gln Ala
                85                  90                  95


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


Ile Ile Pro Tyr Gln Arg Thr Ile Asp Ala Ile Lys Cys Leu Arg Lys
        115                 120                 125
```

```
Gln Gln Lys Tyr Lys Thr Ile Arg Glu Arg Val Ala Asn Arg Arg Ala
    130                 135                 140

Glu Asn Arg Ala Arg Glu Thr Glu Leu Thr Arg Leu Glu Thr Ala Asp
145                 150                 155                 160

Glu Asp Pro Ala Ser Gln Glu Gln Asp Asn Pro Asn Met Ser Leu Lys
                165                 170                 175

Asn Trp Leu Lys Glu Val Ile Glu Ser Asp Asp Asp Arg Leu Cys Ala
            180                 185                 190

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

Asp Val Cys Thr Val Gly Cys Tyr Gln Tyr Thr Met Thr Asn Leu Pro
    210                 215                 220

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

Ser Arg Ser Asn Pro Gly Glu Thr Gln Arg Arg Gln Thr Ile Lys Glu
                245                 250                 255

Ser Asn Asn Ser Trp Lys Lys Asn Met Ser Lys Ala Ala His Ile Val
            260                 265                 270

Leu Asp Gly Asp Thr Asp Ala Cys Pro Ala Gly Leu Glu Gly Thr Glu
        275                 280                 285

Ala Ser Gly Ala Ile Met Arg Ala Gly Cys Pro Thr Thr Arg His Leu
    290                 295                 300

Arg Ser Arg Met Gln Gly Glu Ile Lys Asn Leu Trp Arg Pro Ile Ser
305                 310                 315                 320

Asn Asp Glu Ile Lys Glu Val Glu Ala Cys Lys Arg Thr Ala Ala Gly
                325                 330                 335
```

```
Pro Asp Gly Met Thr Thr Thr Ala Trp Asn Ser Ile Asp Glu Cys Ile
            340                 345                 350

Lys Ser Leu Phe Asn Met Ile Met Tyr His Gly Gln Cys Pro Arg Arg
        355                 360                 365

Tyr Leu Asp Ser Arg Thr Val Leu Ile Pro Lys Glu Pro Gly Thr Met
    370                 375                 380

Asp Pro Ala Cys Phe Arg Pro Leu Ser Ile Ala Ser Val Ala Leu Arg
385                 390                 395                 400

His Phe His Arg Ile Leu Ala Asn Arg Ile Gly Glu His Gly Leu Leu
                405                 410                 415

Asp Thr Arg Gln Arg Ala Phe Ile Val Ala Asp Gly Val Ala Glu Asn
            420                 425                 430

Thr Ser Leu Leu Ser Ala Met Ile Lys Glu Ala Arg Met Lys Ile Lys
        435                 440                 445

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

Glu His Arg Ser Ile Leu Asp Ala Leu Arg Arg Lys Lys Leu Pro Leu
465                 470                 475                 480

Glu Met Arg Asn Tyr Ile Met Trp Val Tyr Arg Asn Ser Lys Thr Arg
                485                 490                 495

Leu Glu Val Val Lys Thr Lys Gly Arg Trp Ile Arg Pro Ala Arg Gly
            500                 505                 510

Val Arg Gln Gly Asp Pro Leu Ser Pro Leu Leu Phe Asn Cys Val Met
        515                 520                 525

Asp Ala Val Leu Arg Arg Leu Pro Glu Asn Thr Gly Phe Leu Met Gly
    530                 535                 540
```

```
Ala Glu Lys Ile Gly Ala Leu Val Phe Ala Asp Asp Leu Val Leu Leu
545                 550                 555                 560


Ala Glu Thr Arg Glu Gly Leu Gln Ala Ser Leu Ser Arg Ile Glu Ala
                565                 570                 575


Gly Leu Gln Glu Gln Gly Leu Glu Met Met Pro Arg Lys Cys His Thr
            580                 585                 590


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


His Lys Pro Phe Thr Val Gly Asn Gln Glu Ile Thr Gln Leu Gly His
    610                 615                 620


Ala Asp Gln Trp Lys Tyr Leu Gly Val Val Tyr Asn Ser Tyr Gly Pro
625                 630                 635                 640


Ile Gln Val Lys Ile Asn Ile Ala Gly Asp Leu Gln Arg Val Thr Ala
                645                 650                 655


Ala Pro Leu Lys Pro Gln Gln Arg Met Ala Ile Leu Gly Met Phe Leu
            660                 665                 670


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


Asp Val Arg Lys Gly Asp Lys Ile Ile Arg Lys Thr Val Arg Gly Trp
    690                 695                 700


Leu Arg Leu Pro His Asp Thr Pro Ile Gly Tyr Phe His Ala Pro Ile
705                 710                 715                 720


Lys Glu Gly Gly Leu Gly Ile Pro Ala Phe Glu Ser Arg Ile Pro Glu
                725                 730                 735


Leu Leu Lys Ser Arg Ile Glu Ala Leu Gly Ala Ser Asn Met Gln Thr
            740                 745                 750
```

```
Ala Arg Ser Leu Leu Gly Gly Asp Trp Val Ala Glu Arg Lys Lys Trp
        755                 760                 765

Ile Asn Thr Gln Lys Ile Lys Asn Ser Glu Trp Ala Gln Lys Leu His
    770                 775                 780

Leu Thr Thr Asp Gly Lys Asp Leu Arg Asp Thr Arg Lys Ala Glu Ala
785                 790                 795                 800

Ser Tyr Ser Trp Ile Arg Asp Ile His Val Ala Ile Pro Ala Ser Val
                805                 810                 815

Trp Ile Lys Tyr His His Thr Arg Ile Asn Ala Leu Pro Thr Leu Met
            820                 825                 830

Arg Met Ser Arg Gly Arg Arg Thr Asn Gly Asn Ala Leu Cys Arg Ala
        835                 840                 845

Gly Cys Gly Leu Pro Glu Thr Leu Tyr His Val Val Gln Gln Cys Pro
    850                 855                 860

Arg Thr His Gly Gly Arg Val Leu Arg His Asp Lys Ile Ala Glu Gln
865                 870                 875                 880

Val Ala Ile Phe Met Gln Glu Lys Gly Trp Leu Val Leu Arg Glu Ala
                885                 890                 895

His Ile Arg Thr Ser Val Gly Leu Arg Lys Pro Asp Ile Ile Ala Arg
            900                 905                 910

Lys Gly Gln Asp Cys Lys Ile Ile Asp Cys Gln Ile Val Thr Thr Gly
        915                 920                 925

Asn Asp Ile Arg Ile Gln His Glu Arg Lys Ile Gln Tyr Tyr Ala Ser
    930                 935                 940

Asn Trp Glu Leu Arg Arg Ser Ala Ala Thr Met Ile Gly His Gln Gly
945                 950                 955                 960
```

Gln Val Ser Val Glu Ala Ile Thr Ile Ser Trp Lys Gly Val Trp Glu
965 970 975

Pro Arg Ser Tyr Cys Leu Leu Arg Asp Cys Gly Ile Pro Lys Val Lys
980 985 990

Ile Lys Gly Leu Thr Thr Arg Val Leu Leu Gly Ala Tyr Leu Asn Phe
995 1000 1005

Asn Thr Phe Ser Lys Ala Thr Tyr Arg Thr Glu Arg Arg Arg Thr
1010 1015 1020

Ala Asn
1025

<210> 43
<211> 869
<212> PRT
<213> Bradysia coprophila

<400> 43
Val Ser Val Pro Pro Thr Ser Tyr Arg Asp Arg Ile Met Asn Ala Leu
1 5 10 15

Glu Glu Ser Met Ile Asp Val Asp Ala Ile Arg Gly Ser Ser Ala Arg
20 25 30

Glu Leu Val Glu Ile Gly Lys Val Ala Leu Leu Asn Gln Pro Met Asp
35 40 45

Glu Gly Arg Ile Met Ser Trp Leu Ser Asp Arg Phe Pro Asp Thr Gln
50 55 60

Lys Pro Lys Gly Pro Ile Tyr Ser Lys Thr Thr Ile Tyr His Gly Thr
65 70 75 80

Asn Lys Gln Lys Arg Lys Gln Arg Tyr Ala Leu Val Gln Ser Leu Tyr
85 90 95

Lys Lys Asp Ile Ser Ala Ala Ala Arg Val Val Leu Asp Glu Asn Asp
100 105 110

```
Lys Ile Ala Thr Lys Ile Pro Pro Val Arg His Met Phe Asp Tyr Trp
        115                 120                 125

Lys Asp Val Phe Ala Thr Gly Gly Gly Ser Ala Ala Thr Asn Ile Asn
    130                 135                 140

Arg Ala Pro Pro Ala Pro His Met Glu Thr Leu Trp Asp Pro Val Ser
145                 150                 155                 160

Leu Ile Glu Ile Lys Ser Ala Arg Ala Ser Asn Glu Lys Gly Ala Gly
                165                 170                 175

Pro Asp Gly Val Thr Pro Arg Ser Trp Asn Ala Leu Asp Asp Arg Tyr
            180                 185                 190

Lys Arg Leu Leu Tyr Asn Ile Phe Val Phe Tyr Gly Arg Val Pro Ser
        195                 200                 205

Pro Ile Lys Gly Ser Arg Thr Val Phe Thr Pro Lys Ile Glu Gly Gly
    210                 215                 220

Pro Asp Pro Gly Val Phe Arg Pro Leu Ser Ile Cys Ser Val Ile Leu
225                 230                 235                 240

Arg Glu Phe Asn Lys Ile Leu Ala Arg Arg Phe Val Ser Cys Tyr Thr
                245                 250                 255

Tyr Asp Glu Arg Gln Thr Ala Tyr Leu Pro Ile Asp Gly Val Cys Ile
            260                 265                 270

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

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

Val Tyr His Ser Ala Leu Ile Asp Ala Ile Thr Glu Ala Gly Cys Pro
305                 310                 315                 320
```

```
Pro Gly Val Val Asp Tyr Ile Ala Asp Met Tyr Asn Asn Val Ile Thr
                325                 330                 335

Glu Met Gln Phe Glu Gly Lys Cys Glu Leu Ala Ser Ile Leu Ala Gly
            340                 345                 350

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

Glu Lys Ala Leu Arg Ala Leu Asn Asn Glu Gly Arg Phe Asp Ile Ala
    370                 375                 380

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

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

Thr Leu Ala Lys Ile Gly Leu Arg Ile Asn Ser Arg Lys Ser Lys Thr
            420                 425                 430

Val Ser Leu Val Pro Ser Gly Arg Glu Lys Lys Met Lys Ile Val Ser
        435                 440                 445

Asn Arg Arg Leu Leu Leu Lys Ala Ser Glu Leu Lys Pro Leu Thr Ile
    450                 455                 460

Ser Asp Leu Trp Lys Tyr Leu Gly Val Val Tyr Thr Thr Ser Gly Pro
465                 470                 475                 480

Glu Val Ala Lys Val Ser Met Asp Asp Asp Leu Ser Lys Leu Thr Lys
                485                 490                 495

Gly Pro Leu Lys Pro Gln Gln Arg Ile His Leu Leu Lys Thr Phe Val
            500                 505                 510

Ile Pro Lys His Leu Asn Arg Leu Val Leu Ser Arg Thr Thr Ala Thr
        515                 520                 525
```

```
Gly Leu Cys Lys Met Asp Leu Leu Ile Arg Lys Tyr Val Arg Arg Trp
    530                 535                 540

Leu Arg Leu Pro Gly Asp Val Pro Val Ala Phe Leu Tyr Ala Pro Val
545                 550                 555                 560

Lys Ala Gly Gly Lys Gly Ile Pro Cys Leu Lys Gln Trp Ile Pro Leu
                565                 570                 575

Met Arg Phe Leu Arg Leu Asn Lys Ala Lys Arg Thr Gly Gly Asp Arg
            580                 585                 590

Ile Ala Ala Val Leu Asn Cys Gln Leu Tyr Ala Ser Ile Ser His Ser
        595                 600                 605

Cys Lys Thr Gly Pro Val Ser Val Gly Leu Trp Arg Ser Thr Asn Thr
    610                 615                 620

Gly Gly Leu Ser Ala Tyr Trp Arg Arg Ile Leu Ile Gly Met Val Asp
625                 630                 635                 640

Gly Lys Asp Leu Lys Ser Ala Gln Asn His Ser Ser Ala Thr Ser Phe
                645                 650                 655

Asn Ser Ile Arg Met Asn Asp Ile Ser Gly Glu Asp Tyr Ile His Tyr
            660                 665                 670

Asn Gln Leu Arg Thr Asn Ser Ile Pro Thr Arg Lys Arg Thr Ala Arg
        675                 680                 685

Gly Arg Pro Asn Lys Pro Thr Ala Cys Arg Ala Gly Cys Asp Lys Leu
    690                 695                 700

Lys Arg Leu Gln His Asp Ile Gln Gly Cys Ile Arg Ser Gln Gly Gly
705                 710                 715                 720

Leu Val Gln Arg His Asp Arg Val Val Asp Leu Leu Phe Asp Glu Cys
                725                 730                 735
```

Glu Thr Lys Gly Tyr Ala Ala Glu Lys Val Val His Leu Arg Thr Ser
740 745 750

Glu Glu Leu Trp Lys Pro Asp Leu Val Leu Lys Lys Asn Gly Arg Val
755 760 765

Val Val Val Asp Ala Gln Val Val Gln Cys Gly Arg Leu Glu Ser Asp
770 775 780

His Arg Val Lys Val Ser Lys Tyr Arg Asp Asp Pro Glu Leu Ala Asp
785 790 795 800

Val Ile Arg Glu Lys Tyr Ala Val Gln Glu Val Thr Phe Glu Ala Cys
805 810 815

Thr Leu Ser Tyr Lys Gly Ile Trp Ser Lys Asn Ser Val Glu Gly Leu
820 825 830

Gln Lys Leu Gly Ile Ser Asn Tyr Cys Leu Phe Lys Ile Val Thr Ser
835 840 845

Val Leu Arg Gly Ser Trp Leu Asn Trp Val Arg Phe Asn Asn Val Thr
850 855 860

Thr Val Val His Trp
865

<210> 44
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<212> PRT
<213> Tribolium castaneum

<400> 44
Met Val Pro Leu Leu Leu Val Leu Asp Leu Glu Pro Thr Val Leu Thr
1 5 10 15

Thr Pro Leu Asp Leu Arg Glu Arg Thr Met Leu Met Asp Met Asp Ser
20 25 30

```
Glu Asp Glu Ala Gly Glu His Gly Pro Pro Ala Asp Asn Ala His Leu
        35                  40                  45

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

Arg Ser Cys Ile Cys Leu Asn Ala Gly Lys Gly Asn Phe Arg Ala Thr
65                  70                  75                  80

Ala Asp Gly Asp Leu Glu Ser Trp Cys Gly Ser Asp Val His His Leu
                85                  90                  95

Arg Lys Thr Ser Trp Arg Lys Pro Gln Thr Gly Met Lys Ser Arg Ser
            100                 105                 110

Phe Arg Arg Ile Gly Asp Cys Ala Ala Gly Ser Ser Arg Arg Gly Val
        115                 120                 125

Arg Leu Thr Gly Lys Ala Gly Arg Glu Gly Arg Phe Ala Ala Ser Pro
    130                 135                 140

His Leu Ser Pro Arg Tyr Leu Ala Gly Ser Val Ser Gly Asn Val Pro
145                 150                 155                 160

Ser Val Pro Pro Asn Pro Gly Leu Gly Ala Gly Ala Pro Ala Phe Ala
                165                 170                 175

Ala Val Pro Asn Ala Asp Gly Gly Pro Ala Gln Asn Pro Cys Pro Tyr
            180                 185                 190

Cys Ala Arg Ser Phe Thr Thr Ala Asn Gly Arg Gly Leu His Ile Arg
        195                 200                 205

Arg Ala His Pro Asp Glu Ala Asn Asn Ala Ile Asp Ile Glu Arg Ile
    210                 215                 220

His Ala Arg Trp Ser His Glu Glu Thr Ala Met Met Ala Arg Leu Glu
225                 230                 235                 240
```

```
Ala Gly Ala Ile Gln Arg Gly Gly Val Arg Phe Met Asn Gln Phe Leu
                245                 250                 255

Val Pro Arg Met Pro Gly Arg Thr Leu Glu Ala Val Lys Ser Lys Arg
            260                 265                 270

Arg Asp Ala Thr Asp Lys Ala Leu Val Gln Arg Phe Leu Gln Gly Asp
        275                 280                 285

Arg Leu Cys Asn Ile Ala Arg Arg Ala Cys Asp Gly Gly Asp Val Ser
    290                 295                 300

Gly Gln Leu Leu Gly Trp Leu Arg Asp Val Phe Pro Val Lys Arg Val
305                 310                 315                 320

Ser Thr Arg Gly Asp Gln Ser Asn Leu Asp Val Asp Gly Ala Leu Val
                325                 330                 335

Ser Arg His Thr Ala Arg Thr Arg Glu Tyr Ala Arg Val Gln Glu Leu
            340                 345                 350

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

Arg Glu Gly Ala Asn Arg Ala Pro Asn Arg Asp Pro Ala Phe Ile Asp
    370                 375                 380

Phe Trp Arg Gly Val Phe Ser Glu Ala Ser Ala Glu Val Glu Gly Cys
385                 390                 395                 400

Ala Glu Glu Val Ser Asp His Gly Gly Gly Lys Val Ser Gly Pro Glu
                405                 410                 415

Trp Cys Ser Ala Gly Ala Arg Arg Asn Ser Gly Phe Arg Val Glu Gln
            420                 425                 430

Leu Pro Pro Glu Ala Ala Ala Leu Leu Phe Asn Val Leu Leu Leu Gly
        435                 440                 445
```

```
Arg Cys Leu Pro Ala Glu Leu Thr Arg Thr Arg Thr Val Phe Ile Pro
    450                 455                 460

Lys Thr Asp Ala Pro Arg Thr Pro Ala Asp Tyr Arg Pro Ile Ser Ile
465                 470                 475                 480

Ala Ser Val Val Ala Arg His Phe His Arg Val Leu Ser Ala His Val
                485                 490                 495

Gln Arg Ile Pro Asp Leu Phe Thr Lys Tyr Gln Arg Gly Phe Leu Ser
            500                 505                 510

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

Thr Met Ser Arg Arg Cys Cys Lys His Leu His Leu Ala Ala Leu Asp
    530                 535                 540

Val Ser Lys Ala Phe Asp Thr Val Ser His Phe Ala Ile Val Arg Ala
545                 550                 555                 560

Cys Arg Glu Thr His Ser Leu Leu Ser Ser Leu Thr Trp Ser Trp Thr
                565                 570                 575

Gly Leu Leu Lys Arg Leu Ser Thr Asp Val Gly Phe Arg Leu Thr Asp
            580                 585                 590

Ala Thr Lys Val Thr Ala Leu Ala Phe Ala Asp Asp Val Val Leu Cys
        595                 600                 605

Ala Thr Thr Ala Arg Gly Leu Gln Thr Asn Leu Asp Val Leu Glu Ala
    610                 615                 620

Glu Leu Arg Leu Ala Gly Leu Leu Leu Asn Pro Asn Lys Cys Gln Ala
625                 630                 635                 640

Leu Ser Leu Val Ala Ser Gly Arg Asp His Lys Val Lys Leu Val Thr
                645                 650                 655
```

```
Lys Pro Thr Phe Thr Val Gly Gln Asn Thr Ile Leu Lys Gly Ser Gly
            660                 665                 670

Met Cys Gly Cys Gly Ser Glu Gly Val Ala Ala Gly Leu Lys Arg Asn
        675                 680                 685

Thr Cys Ala Pro Leu Lys Pro Gln Gln Arg Met His Leu Leu Arg Val
    690                 695                 700

Phe Phe Leu Pro Lys Phe Tyr His Ala Trp Thr Phe Gly Arg Leu Asn
705                 710                 715                 720

Ala Gly Val Leu Arg Arg Leu Asn Val Val Val Arg Thr Ser Val Arg
                725                 730                 735

Thr Trp Leu Arg Leu Pro His Asp Ile Pro Val Gly Lys Phe His Ala
            740                 745                 750

Pro Thr Lys Ser Gly Gly Leu Gly Ile Pro Gln Leu Ser Arg Leu Ile
        755                 760                 765

Pro Phe Leu Arg Leu Lys Arg Phe Asp Arg Leu Gly Arg Ser Ala Val
    770                 775                 780

Asp Tyr Val Arg Glu Cys Ala Phe Thr Asp Ile Ala Asp Gln Lys Ile
785                 790                 795                 800

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

Gly Arg Asp Ala Leu Asp Ala Tyr Trp Thr Ala Gln Leu His Gln Ser
            820                 825                 830

Val Asp Gly Arg Ala Leu Arg Glu Ser Ala Ser Val Ala Ser Ser Thr
        835                 840                 845

Gln Trp Leu Arg Cys Ser Thr Arg Ala Ile Pro Ala Ser Asp Trp Leu
    850                 855                 860
```

```
His Tyr Thr Ala Val His Ile Gly Ala Leu Pro Ser Arg Val Arg Thr
865                 870                 875                 880

Ser Arg Gly Arg Arg Gly Gly Gln Asp Val Ser Cys Arg Gly Gly Cys
                885                 890                 895

Leu Leu Asp Glu Thr Pro Ala His Cys Ile Gln Val Cys His Arg Thr
            900                 905                 910

His Gly Gly Arg Met Leu Arg His Asp Ala Ile Ala Lys Arg Ile Ser
        915                 920                 925

Ala Asp Leu Met Glu Leu Gly Trp Ile Val Thr Arg Glu Val Ser Phe
    930                 935                 940

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

Gly Val Thr Val Ile Leu Asp Val Gln Ile Val Ser Pro Ala Pro Thr
                965                 970                 975

Leu Asp Glu Ala His Arg Arg Lys Val Ala Lys Tyr Arg Asp Arg Ala
            980                 985                 990

Asp Leu Ala Arg Tyr Leu Ala Glu  Ala Ala Val Ala Arg  Gly Arg Ala
        995                 1000                1005

Pro Pro  Ala Asn Ile Arg Phe  Ala Ser Ala Thr Ile  Ser Trp Arg
    1010                1015                1020

Asn Val  Trp Ser Ala Glu Ser  Val Gly Ser Leu Arg  Glu Leu Arg
    1025                1030                1035

Leu Ser  Ala Arg His Phe Asn  Arg Tyr Thr Thr Met  Ser Phe Cys
    1040                1045                1050

Gly Ser  Trp Arg Asn Trp Val  Arg Phe Asn Ala Ser  Thr Ala Ser
    1055                1060                1065
```

```
Gly Met  Gly Arg Gly Arg Gly  Asp Ala Ser Pro Arg  Arg His Glu
    1070                1075                1080

Asn Gln  His Asp Asn Asp Ser  Leu Ala Asp Leu Val  Arg Val Ala
    1085                1090                1095

Leu Thr  Lys Ser Asp Arg Gly  Val Leu Asn Asp Ala  Val Asn Arg
    1100                1105                1110

Tyr Leu  Ala Gln Arg Ala Glu  Ser Leu Arg Ile Arg  Lys Arg Gly
    1115                1120                1125

Ser Lys  Gly Lys Arg Lys Ser  Lys Thr Gly Arg Arg  Tyr Gly Gln
    1130                1135                1140

Thr Thr  Ser Gly Ser Gly Gln  Arg Ala Ala Leu Phe  Lys Lys His
    1145                1150                1155

Gln Asp  Leu Phe Leu Lys Asn  Arg Arg Gly Leu Ala  Glu Thr Ile
    1160                1165                1170

Leu Ser  Gly Lys Glu Asp Phe  Gly Pro Arg Pro Glu  Pro Pro Val
    1175                1180                1185

Thr Ser  Val Glu Glu Ser Tyr  Gly Gly Ile Phe Glu  Ser Pro Ser
    1190                1195                1200

Ser Pro  Asp Asn Lys Pro Phe  Glu Val Arg Ala Thr  Gly Val Glu
    1205                1210                1215

Asp Pro  Pro Thr Tyr Ile Thr  Met Asp Glu Ile Lys  Ala Ala Arg
    1220                1225                1230

Ala Gly  Trp Gln Ile Ser Ala  Pro Gly Ser Asp Gln  Ile Pro Val
    1235                1240                1245

Ala Ala  Val Lys Thr Met Ser  Glu Leu Glu Leu Ala  Ile Leu Phe
    1250                1255                1260
```

Asn Ile Ile Leu Phe Arg Asn Val Gln Pro Ser Ala Trp Pro Ser
1265 1270 1275

Gln Gly Ala Val Arg Pro Cys Arg Trp Trp Glu Gly Leu Ser Thr
1280 1285 1290

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

Ser Trp Gln Gly His Pro Cys Gln
1310 1315

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<212> PRT
<213> Drosophila melanogaster

<400> 45
Phe Glu Arg Lys Asn Phe Ser Asp Gly Leu Val Pro Gln Arg Lys Phe
1 5 10 15

Ile His Ile Gly Thr Thr Ser Thr Asn Asn Glu Pro Arg Ile Pro Leu
20 25 30

His Asn Leu Met Thr Thr Arg Pro Ser Val Asp Ile Phe Pro Glu Asp
35 40 45

Gln Tyr Glu Pro Asn Ala Ala Ala Thr Leu Ser Arg Val Pro Cys Thr
50 55 60

Val Cys Gly Arg Ser Phe Asn Ser Lys Arg Gly Leu Gly Val His Met
65 70 75 80

Arg Ser Arg His Pro Asp Glu Leu Asp Glu Glu Arg Arg Arg Val Asp
85 90 95

Ile Lys Ala Arg Trp Ser Asp Glu Glu Lys Trp Met Met Ala Arg Lys
100 105 110

Glu Val Glu Leu Thr Ala Asn Gly Cys Lys His Ile Asn Lys Gln Leu
115 120 125

```
Ala Val Tyr Phe Ala Asn Arg Ser Val Glu Ala Ile Lys Lys Leu Arg
    130                 135                 140

Gln Arg Gly Asp Tyr Lys Glu Lys Ile Glu Gln Ile Arg Gly Gln Ser
145                 150                 155                 160

Ala Leu Ala Pro Glu Val Ala Asn Leu Thr Ile Arg Arg Arg Pro Ser
                165                 170                 175

Arg Ser Glu Gln Asp His Gln Val Thr Thr Ser Glu Thr Thr Pro Ile
            180                 185                 190

Thr Pro Phe Glu Gln Ser Asn Arg Glu Ile Leu Arg Thr Leu Arg Gly
        195                 200                 205

Tyr Ser Pro Val Glu Cys His Ser Lys Trp Arg Ala Gln Glu Leu Gln
    210                 215                 220

Thr Ile Ile Asp Arg Ala His Leu Glu Gly Lys Glu Thr Thr Leu Gln
225                 230                 235                 240

Cys Leu Ser Leu Tyr Leu Leu Gly Ile Phe Pro Ala Gln Gly Val Arg
                245                 250                 255

His Thr Leu Thr Arg Pro Pro Arg Arg Pro Arg Asn Arg Arg Glu Ser
            260                 265                 270

Arg Arg Gln Gln Tyr Ala Val Val Gln Arg Asn Trp Asp Lys His Lys
        275                 280                 285

Gly Arg Cys Ile Lys Ser Leu Leu Asn Gly Thr Asp Glu Ser Val Met
    290                 295                 300

Pro Ser Gln Glu Ile Met Val Pro Tyr Trp Arg Glu Val Met Thr Gln
305                 310                 315                 320

Pro Ser Pro Ser Ser Cys Ser Gly Glu Val Ile Gln Met Asp His Ser
                325                 330                 335
```

```
Leu Glu Arg Val Trp Ser Ala Ile Thr Glu Gln Asp Leu Arg Ala Ser
            340                 345                 350

Arg Val Ser Leu Ser Ser Ser Pro Gly Pro Asp Gly Ile Thr Pro Lys
        355                 360                 365

Ser Ala Arg Glu Val Pro Ser Gly Ile Met Leu Arg Ile Met Asn Leu
    370                 375                 380

Ile Leu Trp Cys Gly Asn Leu Pro His Ser Ile Arg Leu Ala Arg Thr
385                 390                 395                 400

Val Phe Ile Pro Lys Thr Val Thr Ala Lys Arg Pro Gln Asp Phe Arg
                405                 410                 415

Pro Ile Ser Val Pro Ser Val Leu Val Arg Gln Leu Asn Ala Ile Leu
            420                 425                 430

Ala Thr Arg Leu Asn Ser Ser Ile Asn Trp Asp Pro Arg Gln Arg Gly
        435                 440                 445

Phe Leu Pro Thr Asp Gly Cys Ala Asp Asn Ala Thr Ile Val Asp Leu
    450                 455                 460

Val Leu Arg His Ser His Lys His Phe Arg Ser Cys Tyr Ile Ala Asn
465                 470                 475                 480

Leu Asp Val Ser Lys Ala Phe Asp Ser Leu Ser His Ala Ser Ile Tyr
                485                 490                 495

Asp Thr Leu Arg Ala Tyr Gly Ala Pro Lys Gly Phe Val Asp Tyr Val
            500                 505                 510

Gln Asn Thr Tyr Glu Gly Gly Gly Thr Ser Leu Asn Gly Asp Gly Trp
        515                 520                 525

Ser Ser Glu Glu Phe Val Pro Ala Arg Gly Val Lys Gln Gly Asp Pro
    530                 535                 540
```

```
Leu Ser Pro Ile Leu Phe Asn Leu Val Met Asp Arg Leu Leu Arg Thr
545                 550                 555                 560

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

Ala Ala Phe Ala Asp Asp Leu Val Leu Phe Ala Glu Thr Arg Met Gly
            580                 585                 590

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

Leu Lys Leu Asn Ala Asp Lys Cys Phe Thr Val Gly Ile Lys Gly Gln
    610                 615                 620

Pro Lys Gln Lys Cys Thr Val Leu Glu Ala Gln Ser Phe Tyr Val Gly
625                 630                 635                 640

Ser Ser Glu Ile Pro Ser Leu Lys Arg Thr Asp Glu Trp Lys Tyr Leu
                645                 650                 655

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

Asp Ile Gly Pro Lys Leu Gln Arg Leu Thr Lys Ala Pro Leu Lys Pro
        675                 680                 685

Gln Gln Arg Leu Phe Ala Leu Arg Thr Val Leu Ile Pro Gln Leu Tyr
    690                 695                 700

His Lys Leu Ala Leu Gly Ser Val Ala Ile Gly Val Leu Arg Lys Thr
705                 710                 715                 720

Asp Lys Leu Ile Arg Tyr Tyr Val Arg Arg Trp Leu Asn Leu Pro Leu
                725                 730                 735

Asp Val Pro Ile Ala Phe Val His Ala Pro Pro Lys Ser Gly Gly Leu
            740                 745                 750
```

```
Gly Ile Pro Ser Leu Arg Trp Val Ala Pro Met Leu Arg Leu Arg Arg
        755                 760                 765

Leu Ser Asn Ile Lys Trp Pro His Leu Thr Gln Asn Glu Val Ala Ser
    770                 775                 780

Ser Phe Leu Glu Ala Glu Lys Gln Arg Ala Arg Asp Arg Leu Leu Ala
785                 790                 795                 800

Glu Gln Asn Glu Leu Leu Ser Arg Pro Ala Ile Glu Lys Tyr Trp Ala
                805                 810                 815

Asn Lys Leu Tyr Leu Ser Val Asp Gly Ser Gly Leu Arg Glu Gly Gly
            820                 825                 830

His Tyr Gly Pro Gln His Gly Trp Val Ser Gln Pro Thr Arg Leu Leu
        835                 840                 845

Thr Gly Lys Glu Tyr Met Asp Gly Ile Arg Leu Arg Ile Asn Ala Leu
    850                 855                 860

Pro Thr Lys Ser Arg Thr Thr Arg Gly Arg His Glu Leu Glu Arg Gln
865                 870                 875                 880

Cys Arg Ala Gly Cys Asp Ala Pro Glu Thr Thr Asn His Ile Met Gln
                885                 890                 895

Lys Cys Tyr Arg Ser His Gly Arg Arg Val Ala Arg His Asn Cys Val
            900                 905                 910

Val Asn Arg Ile Lys Arg Gly Leu Glu Glu Arg Gly Cys Val Val Ile
        915                 920                 925

Val Glu Pro Ser Leu Gln Cys Glu Ser Gly Leu Asn Lys Pro Asp Leu
    930                 935                 940

Val Ala Leu Arg Gln Asn His Ile Asp Val Ile Asp Thr Gln Ile Val
945                 950                 955                 960
```

```
Thr Asp Gly His Ser Met Asp Asp Ala His Gln Arg Lys Ile Asn Arg
                965                 970                 975


Tyr Asp Arg Pro Asp Ile Arg Thr Glu Leu Arg Arg Arg Phe Glu Ala
            980                 985                 990


Ala Gly Asp Ile Glu Phe His Ser  Ala Thr Leu Asn Trp  Arg Gly Ile
        995                 1000                1005


Trp Ser  Gly Gln Ser Val Lys  Arg Leu Ile Ala Lys  Gly Leu Leu
    1010                1015                1020


Ser Lys  Tyr Asp Ser His Ile  Ile Ser Val Gln Val  Met Arg Gly
    1025                1030                1035


Ser Leu  Gly Cys Phe Lys Gln  Phe Met Tyr Leu Ser  Gly Phe Ser
    1040                1045                1050


Arg Asp  Trp Thr
    1055


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<211> 1080
<212> PRT
<213> Trichinella murrelli

<400> 46
Met Ser Asn Arg Leu Ala Asn Thr Ala Ala Ala Gly Gly Val Pro Glu
1               5                   10                  15


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


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


Ser Phe Thr Ser Thr Thr Trp Leu Ser Met Glu Leu His Phe Lys Ser
    50                  55                  60
```

```
Val His Asn Thr Cys Glu Phe Val Phe Leu Cys Ser Lys Cys Glu Lys
65                  70                  75                  80

Ser Trp Pro Ser Ile Asn Ser Val Ala Ser His Tyr Pro Arg Cys Lys
                85                  90                  95

Gly Ser Val Lys Ala Ala Val Val Pro Ser Ser Leu Thr Asn Thr Cys
            100                 105                 110

Thr Thr Cys Gly Ser Ser Phe Gly Thr Phe Ser Gly Leu Gln Leu His
        115                 120                 125

Arg Lys Arg Ala His Pro Asp Val Phe Ala Ala Ser Cys Ser Lys Lys
    130                 135                 140

Thr Lys Ala Arg Trp Ser Asn Asp Glu Phe Thr Leu Leu Ala Arg Leu
145                 150                 155                 160

Glu Ala Gly Leu Asp Pro Ala Cys Lys Asn Ile Asn Gln Val Leu Ala
                165                 170                 175

Glu Arg Leu Met Gly Tyr Asn Ile Thr Arg Gly Val Glu Met Ile Lys
            180                 185                 190

Gly Gln Arg Arg Lys Asp Gln Tyr Lys Ala Leu Val Arg Gln Leu Arg
        195                 200                 205

Ser Asn Ser Glu Thr Gln Gln Cys Val Gly Leu Ala Gly Ser Met Asp
    210                 215                 220

Leu Asn Val Pro Val Asn Asp Thr Thr Ser Ser Val Ala Ser Glu Val
225                 230                 235                 240

Thr Ile Thr Tyr Pro Glu Tyr Gly Ala Val Met Ser Cys Asp Leu Ile
                245                 250                 255

Lys Glu Ala Thr Gly Met Ala Met Val Asp Val Asn Glu Leu Gln Ser
            260                 265                 270
```

```
Asn Ile Arg Lys Leu Phe Ser Ser Gly Arg Lys Leu Pro Met Lys Leu
        275                 280                 285

Arg Gly Ala Arg Glu Ala Val Gln Lys Lys Met Ala Asn Pro Arg Val
    290                 295                 300

Ala Lys Phe Lys Arg Phe Gln Arg Leu Phe Arg Ser Asn Arg Arg Lys
305                 310                 315                 320

Leu Ala Asn His Ile Phe Asp Lys Ala Ser Leu Glu Gln Phe Gly Gly
                325                 330                 335

Ser Ile Asp Glu Ala Ser Asp His Leu Glu Arg Phe Leu Ser Arg Pro
            340                 345                 350

Arg Leu Glu Ser Asp Ser Tyr Ser Val Ile Ser Gly Asp Lys Ser Ile
        355                 360                 365

Gly Val Ala His Pro Ile Leu Ala Glu Glu Val Glu Leu Glu Leu Lys
    370                 375                 380

Ala Ser Arg Pro Thr Ala Val Gly Pro Asp Gly Ile Gly Leu Glu Asp
385                 390                 395                 400

Ile Lys Lys Leu Asn Ser Tyr Asp Leu Ala Ser Leu Phe Asn Leu Trp
                405                 410                 415

Leu Lys Ala Gly Asp Leu Pro Glu Ser Val Lys Ala Ser Arg Thr Ile
            420                 425                 430

Phe Leu Pro Lys Ser Asp Gly Thr Thr Asp Ile Ser Asn Cys Arg Pro
        435                 440                 445

Ile Thr Ile Ala Ser Ala Leu Tyr Arg Leu Phe Ser Lys Ile Ile Thr
    450                 455                 460

Arg Arg Leu Ala Ala Arg Leu Glu Leu Asn Val Arg Gln Lys Ala Phe
465                 470                 475                 480
```

```
Arg Pro Glu Met Asn Gly Val Phe Glu Asn Ser Ala Ile Leu Tyr Ala
                485                 490                 495

Leu Ile Lys Asp Ala Lys Val Arg Ser Lys Glu Ile Cys Ile Thr Thr
            500                 505                 510

Leu Asp Leu Ala Lys Ala Phe Asp Thr Val Pro His Ser Arg Ile Leu
        515                 520                 525

Arg Ala Leu Arg Lys Asn Asn Val Asp Pro Glu Ser Val Asp Leu Ile
    530                 535                 540

Ser Lys Met Leu Thr Gly Thr Thr Tyr Ala Glu Ile Lys Gly Leu Gln
545                 550                 555                 560

Gly Lys Pro Ile Thr Ile Arg Asn Gly Val Arg Gln Gly Asp Pro Leu
                565                 570                 575

Ser Pro Leu Leu Phe Ser Leu Phe Ile Asp Glu Ile Ile Gly Arg Leu
            580                 585                 590

Gln Ala Cys Gly Pro Ala Tyr Asp Phe His Gly Glu Lys Ile Cys Ile
        595                 600                 605

Leu Ala Phe Ala Asp Asp Leu Thr Leu Val Ala Asp Asn Ala Ala Gly
    610                 615                 620

Met Lys Ile Leu Leu Lys Ala Ala Cys Asp Phe Leu Glu Glu Ser Gly
625                 630                 635                 640

Met Ser Leu Asn Ala Glu Lys Cys Arg Thr Leu Cys Ile Ser Arg Ser
                645                 650                 655

Pro Arg Ser Arg Lys Thr Phe Val Asn Pro Ala Ala Lys Phe Asn Ile
            660                 665                 670

Ser Asp Trp Lys Thr Gly Val Ser Ser Glu Ile Pro Ser Leu Cys Ala
        675                 680                 685
```

```
Thr Asp Thr Phe Arg Phe Leu Gly His Thr Phe Asp Gly Glu Gly Lys
    690                 695                 700

Ile His Ile Asp Thr Glu Glu Ile Arg Ser Met Leu Lys Ser Val Lys
705                 710                 715                 720

Ser Ala Pro Leu Lys Pro Glu Gln Lys Val Ala Leu Ile Arg Ser His
                725                 730                 735

Leu Leu Pro Arg Leu Gln Phe Leu Phe Ser Thr Ala Glu Val Asp Ser
            740                 745                 750

Arg Lys Ala Trp Leu Ile Asp Ser Ile Ile Arg Gly Cys Val Lys Glu
        755                 760                 765

Ile Leu His Ser Val Lys Ala Gly Met Cys Thr Asp Ile Phe Tyr Ile
    770                 775                 780

Pro Ser Arg Asp Gly Gly Met Gly Leu Thr Ser Leu Gly Glu Phe Ser
785                 790                 795                 800

Leu Phe Ser Arg Gln Lys Ala Leu Ala Lys Met Ala Gly Ser Ser Asp
                805                 810                 815

Pro Leu Ser Lys Arg Val Ala Glu Phe Phe Ile Glu Arg Trp Asn Ile
            820                 825                 830

Ala Arg Asp Pro Lys Val Ile Glu Ala Ala Arg Arg Val Tyr Gln Lys
        835                 840                 845

Lys Arg Tyr Gln Arg Phe Phe Gln Thr Tyr Gln Ser Gly Gly Trp Asn
    850                 855                 860

Glu Phe Ser Gly Asn Thr Ile Gly Asn Ala Trp Leu Thr Asn Gly Arg
865                 870                 875                 880

Ala Arg Gly Arg Asn Phe Ile Met Ala Val Lys Phe Arg Ser Asn Thr
                885                 890                 895
```

```
Ala Ala Thr Arg Ala Glu Asn Leu Arg Gly Arg Leu Gly Met Lys Glu
            900                 905                 910

Cys Arg Phe Cys Lys Ser Ala Ile Glu Thr Leu Ala His Ile Cys Gln
        915                 920                 925

Lys Cys Pro Ala Asn His Gly Leu Val Ile Gln Arg His Asn Ala Val
    930                 935                 940

Val Thr Phe Leu Gly Glu Val Ala Arg Lys Glu Gly Tyr Gln Val Met
945                 950                 955                 960

Ile Glu Pro Lys Val Ser Thr Pro Val Gly Ala Leu Lys Pro Asp Leu
                965                 970                 975

Leu Leu Ile Lys Ala Asp Thr Ala Phe Ile Val Asp Val Gly Ile Ala
            980                 985                 990

Trp Glu Gly Gly Arg Pro Leu Lys  Leu Val Asn Lys Met  Lys Cys Asp
        995                 1000                1005

Lys Tyr  Lys Ile Ala Ile Pro  Ala Ile Leu Glu Thr  Phe His Val
    1010                1015                1020

Gly His  Ala Glu Thr Tyr Gly  Val Ile Leu Gly Ser  Arg Gly Cys
    1025                1030                1035

Trp Leu  Lys Ser Asn Asp Lys  Ala Leu Ala Ser Ile  Gly Leu Asn
    1040                1045                1050

Ile Thr  Arg Lys Met Lys Glu  His Leu Ser Trp Leu  Thr Phe Glu
    1055                1060                1065

Asn Thr  Ile Arg Ile Tyr Asn  Ser Phe Met Lys Asn
    1070                1075                1080
```

<210> 47
<211> 1168
<212> PRT
<213> Pediculus humanus corporis

<400> 47
Met Arg Thr Arg Gln Ser Lys Asn Gln Asn Lys Ser Cys Ser Thr Val
1   5   10   15

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

Gly His Ser Asn Asp Val Ser His Arg Ser Pro Val Gln Glu Thr Thr
        35   40   45

Arg Ser His Arg Ile Arg Trp Thr Gln Glu Asp Leu Gln Glu Leu Met
    50   55   60

Trp Cys Tyr Phe Tyr Ser Gln Lys Phe Gly Ser Gly Ser Glu Ser Asp
65   70   75   80

Thr Phe Lys Ile Trp Arg Gly Arg Asn Pro Asn Ser Arg Lys Asp Met
                85   90   95

Thr Ser Lys Lys Leu Ala Ala Gln Arg Arg Tyr Ile Ile Lys Lys Ile
            100   105   110

Glu Asn Asp Lys Leu Glu Glu Ile Lys Lys Asn Val Asp Ser Ser Cys
        115   120   125

Ser Asn Val Ile Arg Asp Asn Ala Pro Ile Ile Thr Lys Leu Asn Glu
    130   135   140

Ser Asn Asn Asn Asn Arg Tyr Glu Thr Asp Thr Asp Glu Gln Leu Leu
145   150   155   160

Thr Asp Ala Glu Met Lys Ser Ile Glu Glu Arg Leu Ile Glu Glu Ile
                165   170   175

Lys Lys Val Lys Met Cys Pro Leu Ile Asn Arg Glu Pro Leu Arg Lys
            180   185   190

Ile Tyr Lys Asn Lys Lys Ala Thr Glu Val Leu His Leu Ile Asp Asn
        195   200   205

```
Thr Leu Ile Asn Val Leu Glu Lys Val Val Asp Ile Asn Leu Thr Thr
    210                 215                 220

Ile Asn Glu Ile Ile Tyr Ala Ala Gly Val Val Ala Thr Asp Ile Ile
225                 230                 235                 240

Leu Gly Pro Arg Lys Glu Ala Arg His Lys Gly Ile Glu Thr Lys Lys
                245                 250                 255

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

Ile Arg Ser His Ile Ser Leu Val Ser Glu Met Lys Lys Asn Asn Asn
        275                 280                 285

Leu Lys Lys Arg Thr Ile Lys Lys Leu Asp His Leu Lys Arg Ile Tyr
    290                 295                 300

Lys Leu Lys Thr Met Glu Asp Ile Glu Leu Thr Met Glu Thr Leu Lys
305                 310                 315                 320

Gln Lys Val Leu Leu Tyr Ser Gln Arg Ile Arg Arg Tyr Lys Lys Arg
                325                 330                 335

Glu Gln Phe Trp Arg Gln Asn Lys Leu Phe Glu Ser Asp Pro Lys Lys
            340                 345                 350

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

Leu Asn Val Glu Lys Met Ala Asp Phe Trp Ser Asn Ile Trp Glu Lys
    370                 375                 380

Ser His Pro Leu Asn Lys Asn Ser Thr Trp Met Asn Lys Glu Lys Glu
385                 390                 395                 400

Ala His Ala Trp Ile Ala Ser Ser Thr Met Ser Asp Ile Ile Met Ala
                405                 410                 415
```

```
Asp Leu Glu Ile Cys Leu Lys Asn Thr Ala Asn Trp Lys Ser Pro Gly
            420                 425                 430

Leu Asp Arg Val Gln Asn Phe Trp Ile Lys Asn Phe Thr Ser Thr His
        435                 440                 445

Lys Tyr Leu Leu Val Ser Ile Asn Lys Leu Ile Met Gly Arg Gln Glu
    450                 455                 460

Met Pro Glu Trp Ile Thr Thr Gly Lys Thr Tyr Leu Leu Pro Lys Lys
465                 470                 475                 480

Ser Gly Ala Met Glu Pro Lys Asp Phe Arg Pro Ile Thr Cys Leu Pro
                485                 490                 495

Thr Met Tyr Lys Ile Ile Thr Ala Ile Ile Ala Glu Lys Ile Tyr Gly
            500                 505                 510

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

Lys Gly Ser Tyr Gly Cys Lys Glu Val Leu Leu Ile Asn Lys Leu Ile
    530                 535                 540

Met Ala Ser Ala Lys Gln Lys Arg Lys Asn Leu Ser Met Ala Trp Ile
545                 550                 555                 560

Asp Tyr Gln Lys Ala Phe Asp Ser Val Pro His Glu Trp Ile Ile Glu
                565                 570                 575

Ala Leu Lys Ile Tyr Lys Val Asp Pro Lys Ile Thr Ala Phe Cys Glu
            580                 585                 590

Lys Ser Met Lys Asn Trp Cys Thr Gln Leu Glu Val Gln Lys Tyr Ser
        595                 600                 605

Ser Arg Lys Ile Phe Ile Lys Arg Gly Ile Phe Gln Gly Asp Ser Leu
    610                 615                 620
```

```
Ser Pro Leu Leu Phe Cys Met Ser Leu Ile Pro Leu Ser Arg Gln Leu
625                 630                 635                 640

Asn Ile Lys Asp Gln Gly Tyr Gln Leu Val Pro Gly Gly Arg Lys Ile
                645                 650                 655

Thr His Met Leu Tyr Met Asp Asp Leu Lys Leu Tyr Ala Lys Asn Glu
            660                 665                 670

Glu Glu Leu Asn Lys Met Leu Arg Thr Val Gln Thr Phe Ser Ser Asp
        675                 680                 685

Ile Asn Met Lys Phe Gly Leu Glu Lys Cys Ala Arg Ile Asn Ile Val
    690                 695                 700

Arg Gly Lys Leu Lys Gln Lys Gln Asn Ile Glu Asp Ser Glu Glu Glu
705                 710                 715                 720

Leu Ile Lys Glu Leu Asp Pro Gly Ser Ser Tyr Lys Tyr Leu Gly Ile
                725                 730                 735

Glu Glu Asn Phe Gly Ile Ala Asn Lys Glu Ile Lys Pro Arg Leu Lys
            740                 745                 750

Lys Glu Tyr Phe Lys Arg Leu Arg Leu Ile Leu Gln Ser Glu Leu Asn
        755                 760                 765

Gly Arg Asn Lys Ile Thr Ala Val Gly Thr Leu Ala Val Pro Val Ile
    770                 775                 780

Glu Tyr Ser Phe Gly Leu Val Asp Trp Thr Lys Glu Glu Ile Thr His
785                 790                 795                 800

Leu Asp Arg Arg Thr Arg Lys Ile Leu Thr Met Asn Gly Ala Leu His
                805                 810                 815

Pro Lys Ala Asp Val Asp Arg Leu Tyr Val Ser Arg Lys Asp Gly Gly
            820                 825                 830
```

```
Arg Gly Leu Arg Gln Ile Glu Ala Ala His Gln Asn Ala Ile Ile Gly
        835                 840                 845

Met Gly Lys Tyr Ile Glu Ser His Arg Glu Asp Pro Ile Leu Ala Gln
    850                 855                 860

Val Ile His Ala Glu Glu Lys Thr Thr Lys Lys Gly Val Leu Lys Arg
865                 870                 875                 880

Ala Lys Gln Ile Val Gln Glu Asn Lys Glu Asn Glu Ile Met Glu Glu
                885                 890                 895

Gly Gln Leu Ala Thr Tyr Asn Ser Lys Ala Gln Ser Gln Lys Lys Leu
            900                 905                 910

Ile Gly Lys Trp Glu Gln Lys Lys Leu His Gly Gln Tyr Leu Lys Arg
        915                 920                 925

Ile Asn Ala Glu Asp Ile Asn Lys Lys Ser Thr His Asn Trp Leu Arg
    930                 935                 940

Arg Gly Lys Leu Lys Ile Glu Thr Glu Ala Phe Ile Thr Ala Ala Gln
945                 950                 955                 960

Asp Gln Ala Leu Arg Thr His Asn Tyr Glu Lys Val Ile Leu Lys Val
                965                 970                 975

Arg Gln Asp Asp Lys Cys Arg Ile Cys Gln Ser Gln Ser Glu Thr Ile
            980                 985                 990

Asp His Leu Ile Ser Gly Cys Pro  Ile Leu Ala Lys His  Glu Tyr Leu
        995                 1000                1005

Glu Arg  His Asn Lys Ile Cys  Gln Tyr Leu His Trp  Ser Ile Cys
    1010                1015                1020

Arg Glu  Tyr Gly Met Asp Gly  Leu Pro Lys Glu Trp  Tyr Asn His
    1025                1030                1035
```

```
Ile Pro  Ser Pro Val Thr Thr  Val Gly Pro Cys Thr  Val Leu Tyr
    1040                1045                1050


Asp Gln  Gln Ile His Thr Asp  Arg Thr Val Pro Ala  Asn Lys Pro
    1055                1060                1065


Asp Ile  Ile Leu Arg His Asn  Gly Glu Lys Trp Cys  Lys Leu Ile
    1070                1075                1080


Glu Val  Ser Val Pro Ala Glu  Lys Asn Thr Thr Ala  Lys Glu Ala
    1085                1090                1095


Asp Lys  Arg Leu Lys Tyr Arg  Asn Leu Glu Ile Glu  Ile Thr Arg
    1100                1105                1110


Met Trp  Gly Thr Lys Thr Glu  Thr Ile Pro Val Ile  Val Gly Ala
    1115                1120                1125


Leu Gly  Ala Met Pro His Ser  Ile Lys Gly Asn Leu  Lys Lys Ile
    1130                1135                1140


Met Lys  Asn Leu Lys Glu Glu  Thr Ile Gln Glu Ile  Ala Leu Cys
    1145                1150                1155


Gly Thr  Ala His Ile Leu Arg  Lys Ile Leu
    1160                1165


<210> 48
<211> 1168
<212> PRT
<213> Pediculus humanus corporis

<400> 48
Met Arg Thr Arg Gln Ser Lys Asn Gln Asn Lys Ser Cys Ser Thr Val
1               5                  10                  15


Asp Leu Arg Gln Leu Asp Glu Asn Val Asn Phe Thr Ala Ser Asp Pro
            20                  25                  30
```

```
Gly His Ser Asn Asp Val Ser His Arg Ser Pro Val Gln Glu Thr Thr
        35                  40                  45

Arg Ser His Arg Ile Arg Trp Thr Gln Glu Asp Leu Gln Glu Leu Met
    50                  55                  60

Trp Cys Tyr Phe Tyr Ser Gln Lys Phe Gly Ser Gly Ser Glu Ser Asp
65                  70                  75                  80

Thr Phe Lys Ile Trp Arg Gly Arg Asn Pro Asn Ser Arg Lys Asp Met
                85                  90                  95

Thr Ser Lys Lys Leu Ala Ala Gln Arg Arg Tyr Ile Ile Lys Thr Gln
            100                 105                 110

Lys Ile Glu Asn Asp Lys Leu Glu Glu Ile Lys Lys Asn Val Asp Ser
        115                 120                 125

Ser Cys Ser Asn Val Ile Arg Asp Asn Ala Gln Ile Ile Thr Glu Leu
    130                 135                 140

Asn Glu Ser Asn His Lys Ser Lys Thr Asp Thr Asp Glu Gln Leu Leu
145                 150                 155                 160

Thr Asp Ala Glu Met Lys Ser Ile Glu Glu Arg Leu Ile Glu Glu Ile
                165                 170                 175

Lys Lys Val Lys Met Cys Pro Leu Ile Asn Arg Glu Pro Leu Arg Lys
            180                 185                 190

Ile Tyr Lys Asn Lys Lys Ala Thr Glu Val Leu His Leu Ile Asp Asn
        195                 200                 205

Thr Leu Ile Asn Val Leu Glu Lys Val Val Asp Ile Asn Leu Thr Thr
    210                 215                 220

Ile Asn Glu Ile Ile Tyr Ala Ala Gly Val Val Ala Thr Asp Ile Ile
225                 230                 235                 240
```

```
Leu Gly Pro Arg Lys Glu Ala Arg His Lys Gly Met Glu Thr Lys Lys
                245                 250                 255

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

Ile Arg Leu His Ile Ser Leu Val Ser Glu Met Lys Lys Asn Asn Asn
        275                 280                 285

Leu Lys Lys Arg Thr Ile Lys Lys Leu Asp His Leu Lys Arg Ile Tyr
    290                 295                 300

Lys Leu Lys Thr Met Glu Asp Ile Glu Leu Thr Met Glu Thr Leu Lys
305                 310                 315                 320

Gln Lys Val Leu Leu Tyr Ser Gln Arg Ile Arg Arg Tyr Lys Lys Arg
                325                 330                 335

Glu Gln Phe Trp Arg Gln Asn Lys Leu Phe Glu Ser Asp Pro Lys Lys
            340                 345                 350

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

Leu Asn Val Glu Lys Met Ala Asp Phe Trp Ser Asn Ile Trp Glu Lys
    370                 375                 380

Ser His Pro Leu Asn Lys Asn Ser Thr Trp Met Asn Lys Glu Lys Glu
385                 390                 395                 400

Ala His Ala Trp Ile Ala Ser Ser Thr Met Ser Asp Val Arg Met Ala
                405                 410                 415

Asp Leu Glu Thr Cys Leu Lys Asn Thr Ala Asn Trp Lys Ser Pro Gly
            420                 425                 430

Leu Asp Arg Val Gln Asn Phe Trp Ile Lys Asn Phe Thr Ser Thr His
        435                 440                 445
```

```
Lys Tyr Leu Met Val Ser Ile Asn Lys Leu Ile Met Gly Arg Gln Glu
    450                 455                 460

Met Pro Glu Trp Ile Thr Thr Gly Lys Thr Tyr Leu Leu Pro Lys Lys
465                 470                 475                 480

Ser Gly Ala Thr Glu Pro Lys Asp Phe Arg Pro Ile Thr Cys Leu Pro
                485                 490                 495

Thr Met Tyr Lys Ile Ile Thr Ala Ile Ile Ala Glu Lys Ile Tyr Gly
            500                 505                 510

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

Lys Gly Ser Tyr Gly Cys Lys Glu Val Leu Leu Ile Asn Lys Leu Ile
    530                 535                 540

Met Ala Ser Ala Lys Gln Lys Arg Lys Asn Leu Ser Met Ala Trp Ile
545                 550                 555                 560

Asp Tyr Gln Lys Ala Phe Asp Ser Val Pro His Glu Trp Ile Ile Glu
                565                 570                 575

Ala Leu Lys Ile Tyr Lys Val Asp Pro Asn Ile Thr Ala Phe Cys Glu
            580                 585                 590

Lys Ser Met Lys Asn Trp Cys Thr Gln Leu Glu Val Gln Lys Tyr Ser
        595                 600                 605

Ser Arg Lys Ile Phe Ile Lys Arg Gly Ile Phe Gln Gly Asp Ser Leu
    610                 615                 620

Ser Pro Leu Leu Phe Cys Met Ser Leu Ile Pro Leu Ser Arg Gln Leu
625                 630                 635                 640

Asn Ile Lys Asp Gln Gly Tyr Glu Leu Val Pro Gly Gly Arg Lys Ile
                645                 650                 655
```

```
Thr His Met Leu Tyr Met Asp Asp Leu Lys Ile Tyr Ala Lys Asn Glu
            660                 665                 670

Glu Glu Leu Asn Lys Met Leu Arg Thr Val Gln Thr Phe Ser Ser Asp
        675                 680                 685

Ile Asn Met Lys Phe Gly Leu Glu Lys Cys Ala Arg Ile Asn Ile Val
    690                 695                 700

Arg Gly Lys Leu Lys Gln Lys Gln Asn Ile Glu Asp Ser Glu Glu Glu
705                 710                 715                 720

Leu Ile Lys Glu Leu Asp Pro Gly Ser Ser Tyr Lys Tyr Leu Gly Ile
                725                 730                 735

Glu Glu Asn Phe Gly Ile Ala Asn Lys Glu Ile Lys Pro Arg Leu Lys
            740                 745                 750

Lys Glu Tyr Phe Lys Arg Leu Arg Leu Ile Leu Gln Ser Glu Leu Asn
        755                 760                 765

Gly Arg Asn Lys Ile Thr Ala Val Gly Thr Leu Ala Val Pro Val Ile
    770                 775                 780

Glu Tyr Ser Phe Gly Leu Val Asp Trp Thr Lys Glu Glu Ile Thr His
785                 790                 795                 800

Leu Asp Arg Arg Thr Arg Lys Ile Leu Thr Met Asn Gly Ala Leu His
                805                 810                 815

Pro Lys Ala Asp Val Asp Arg Leu Tyr Val Ser Arg Lys Asp Gly Gly
            820                 825                 830

Arg Gly Leu Arg Gln Ile Glu Ala Ala Tyr Gln Asn Ala Ile Ile Gly
        835                 840                 845

Met Gly Lys Tyr Ile Glu Ser His Arg Glu Asp Pro Ile Leu Ala Gln
    850                 855                 860
```

```
Val Ile His Ala Glu Glu Lys Thr Thr Lys Lys Gly Val Leu Lys Arg
865                 870                 875                 880


Ala Lys Gln Ile Val Gln Glu Asn Lys Glu Asn Glu Ile Met Glu Glu
                885                 890                 895


Gly Gln Leu Ala Thr Tyr Asn Ser Lys Ala Gln Ser Gln Lys Lys Leu
            900                 905                 910


Ile Gly Lys Trp Glu Gln Lys Lys Leu His Gly Gln Tyr Leu Lys Arg
        915                 920                 925


Ile Asn Ala Glu Asp Ile Asn Lys Lys Ser Thr His Asn Trp Leu Arg
    930                 935                 940


Arg Gly Lys Leu Lys Ile Glu Thr Glu Ala Phe Ile Thr Ala Ala Gln
945                 950                 955                 960


Asp Gln Ala Leu Arg Thr His Asn Tyr Glu Lys Val Ile Leu Lys Val
                965                 970                 975


Arg Gln Asp Asp Lys Cys Arg Ile Cys Gln Ser Gln Ser Glu Thr Ile
            980                 985                 990


Asp His Leu Ile Ser Gly Cys Pro  Ile Leu Ala Lys His  Glu Tyr Leu
        995                 1000                1005


Glu Arg  His Asn Lys Ile Cys  Gln Tyr Leu His Trp  Ser Ile Cys
    1010                1015                1020


Arg Glu  Tyr Gly Met Asp Gly  Leu Pro Lys Glu Trp  Tyr Asn His
    1025                1030                1035


Ile Pro  Ser Pro Val Thr Thr  Val Gly Pro Cys Thr  Val Leu Tyr
    1040                1045                1050


Asp Gln  Gln Ile His Thr Asp  Arg Thr Val Pro Ala  Asn Lys Pro
    1055                1060                1065
```

Asp Ile Ile Leu Arg His Asn Ala Glu Lys Trp Cys Lys Leu Ile
1070 1075 1080

Glu Val Ser Val Pro Ala Glu Lys Asn Thr Thr Ala Lys Glu Ala
1085 1090 1095

Asp Lys Arg Leu Lys Tyr Arg Asn Leu Glu Ile Glu Ile Thr Arg
1100 1105 1110

Met Trp Gly Thr Lys Thr Glu Thr Ile Pro Val Ile Val Gly Ala
1115 1120 1125

Leu Gly Ala Met Pro Asn Ser Ile Lys Gly Asn Leu Lys Lys Ile
1130 1135 1140

Met Lys Asn Leu Lys Glu Glu Thr Ile Gln Asp Ile Ala Leu Cys
1145 1150 1155

Gly Thr Ala His Ile Leu Arg Lys Ile Leu
1160 1165

<210> 49
<211> 920
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polypeptide

<400> 49
Met Ala His His His His His His Val Gly Thr Val Gly Thr Gly Gly
1 5 10 15

Gly Ser Gly Gly Ala Ser Thr Ala Leu Ser Leu Met Gly Arg Cys Asn
20 25 30

Pro Asp Gly Cys Thr Arg Gly Lys His Val Thr Ala Ala Pro Met Asp
35 40 45

Gly Pro Arg Gly Pro Ser Ser Leu Ala Gly Thr Phe Gly Trp Gly Leu
50 55 60

```
Ala Ile Pro Ala Gly Glu Pro Cys Gly Arg Val Cys Ser Pro Ala Thr
65                  70                  75                  80

Val Gly Phe Phe Pro Val Ala Lys Lys Ser Asn Lys Glu Asn Arg Pro
                85                  90                  95

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

Thr Val Arg Gly Ser Ala Gly Ala Asp Pro Val Gly Gln Asp Ala Pro
        115                 120                 125

Gly Trp Thr Cys Gln Phe Cys Glu Arg Thr Phe Ser Thr Asn Arg Gly
    130                 135                 140

Leu Gly Val His Lys Arg Arg Ala His Pro Val Glu Thr Asn Thr Asp
145                 150                 155                 160

Ala Ala Pro Met Met Val Lys Arg Arg Trp His Gly Glu Glu Ile Asp
                165                 170                 175

Leu Leu Ala Arg Thr Glu Ala Arg Leu Leu Ala Glu Arg Gly Gln Cys
            180                 185                 190

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

Glu Ala Ile Lys Gly Gln Arg Arg Arg Glu Pro Tyr Arg Ala Leu Val
    210                 215                 220

Gln Ala His Leu Ala Arg Phe Gly Ser Gln Pro Gly Pro Ser Ser Gly
225                 230                 235                 240

Gly Cys Ser Ala Glu Pro Asp Phe Arg Arg Ala Ser Gly Ala Glu Glu
                245                 250                 255

Ala Gly Glu Glu Arg Cys Ala Glu Asp Ala Ala Ala Tyr Asp Pro Ser
            260                 265                 270
```

```
Ala Val Gly Gln Met Ser Pro Asp Ala Ala Arg Val Leu Ser Glu Leu
        275                 280                 285

Leu Glu Gly Ala Gly Arg Arg Arg Ala Cys Arg Ala Met Arg Pro Lys
    290                 295                 300

Thr Ala Gly Arg Arg Asn Asp Leu His Asp Asp Arg Thr Ala Ser Ala
305                 310                 315                 320

His Lys Thr Ser Arg Gln Lys Arg Arg Ala Glu Tyr Ala Arg Val Gln
                325                 330                 335

Glu Leu Tyr Lys Lys Cys Arg Ser Arg Ala Ala Ala Glu Val Ile Asp
            340                 345                 350

Gly Ala Cys Gly Gly Val Gly His Ser Leu Glu Glu Met Glu Thr Tyr
        355                 360                 365

Trp Arg Pro Ile Leu Glu Arg Val Ser Asp Ala Pro Gly Pro Thr Pro
    370                 375                 380

Glu Ala Leu His Ala Leu Gly Arg Ala Glu Trp His Gly Gly Asn Arg
385                 390                 395                 400

Asp Tyr Thr Gln Leu Trp Lys Pro Ile Ser Val Glu Glu Ile Lys Ala
                405                 410                 415

Ser Arg Phe Asp Trp Arg Thr Ser Pro Gly Pro Asp Gly Ile Arg Ser
            420                 425                 430

Gly Gln Trp Arg Ala Val Pro Val His Leu Lys Ala Glu Met Phe Asn
        435                 440                 445

Ala Trp Met Ala Arg Gly Glu Ile Pro Glu Ile Leu Arg Gln Cys Arg
    450                 455                 460

Thr Val Phe Val Pro Lys Val Glu Arg Pro Gly Gly Pro Gly Glu Tyr
465                 470                 475                 480
```

```
Arg Pro Ile Ser Ile Ala Ser Ile Pro Leu Arg His Phe His Ser Ile
                485                 490                 495

Leu Ala Arg Arg Leu Leu Ala Cys Cys Pro Pro Asp Ala Arg Gln Arg
            500                 505                 510

Gly Phe Ile Cys Ala Asp Gly Thr Leu Glu Asn Ser Ala Val Leu Asp
        515                 520                 525

Ala Val Leu Gly Asp Ser Arg Lys Lys Leu Arg Glu Cys His Val Ala
    530                 535                 540

Val Leu Asp Phe Ala Lys Ala Phe Asp Thr Val Ser His Glu Ala Leu
545                 550                 555                 560

Val Glu Leu Leu Arg Leu Arg Gly Met Pro Glu Gln Phe Cys Gly Tyr
                565                 570                 575

Ile Ala His Leu Tyr Asp Thr Ala Ser Thr Thr Leu Ala Val Asn Asn
            580                 585                 590

Glu Met Ser Ser Pro Val Lys Val Gly Arg Gly Val Arg Gln Gly Asp
        595                 600                 605

Pro Leu Ser Pro Ile Leu Phe Asn Val Val Met Asp Leu Ile Leu Ala
    610                 615                 620

Ser Leu Pro Glu Arg Val Gly Tyr Arg Leu Glu Met Glu Leu Val Ser
625                 630                 635                 640

Ala Leu Ala Tyr Ala Asp Asp Leu Val Leu Leu Ala Gly Ser Lys Val
                645                 650                 655

Gly Met Gln Glu Ser Ile Ser Ala Val Asp Cys Val Gly Arg Gln Met
            660                 665                 670

Gly Leu Arg Leu Asn Cys Arg Lys Ser Ala Val Leu Ser Met Ile Pro
        675                 680                 685
```

```
Asp Gly His Arg Lys Lys His His Tyr Leu Thr Glu Arg Thr Phe Asn
    690                 695                 700

Ile Gly Gly Lys Pro Leu Arg Gln Val Ser Cys Val Glu Arg Trp Arg
705                 710                 715                 720

Tyr Leu Gly Val Asp Phe Glu Ala Ser Gly Cys Val Thr Leu Glu His
                725                 730                 735

Ser Ile Ser Ser Ala Leu Asn Asn Ile Ser Arg Ala Pro Leu Lys Pro
            740                 745                 750

Gln Gln Arg Leu Glu Ile Leu Arg Ala His Leu Ile Pro Arg Phe Gln
        755                 760                 765

His Gly Phe Val Leu Gly Asn Ile Ser Asp Asp Arg Leu Arg Met Leu
    770                 775                 780

Asp Val Gln Ile Arg Lys Ala Val Gly Gln Trp Leu Arg Leu Pro Ala
785                 790                 795                 800

Asp Val Pro Lys Ala Tyr Tyr His Ala Ala Val Gln Asp Gly Gly Leu
                805                 810                 815

Ala Ile Pro Ser Val Arg Ala Thr Ile Pro Asp Leu Ile Val Arg Arg
            820                 825                 830

Phe Gly Gly Leu Asp Ser Ser Pro Trp Ser Val Ala Arg Ala Ala Ala
        835                 840                 845

Lys Ser Asp Lys Ile Arg Lys Lys Leu Arg Trp Ala Trp Lys Gln Leu
    850                 855                 860

Arg Arg Phe Ser Arg Val Asp Ser Thr Thr Gln Arg Pro Ser Val Arg
865                 870                 875                 880

Leu Phe Trp Arg Glu His Leu His Ala Ser Val Asp Gly Arg Glu Leu
                885                 890                 895
```

Arg Glu Ser Thr Arg Thr Pro Thr Ser Thr Lys Trp Ile Arg Glu Arg
900 905 910

Cys Ala Gln Gly Gly Gly Val Gly
915 920

<210> 50
<211> 854
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polypeptide

<400> 50
Met Ala His His His His His His Val Gly Thr Val Gly Thr Gly Gly
1 5 10 15

Gly Ser Gly Gly Ala Ser Thr Ala Leu Lys Thr Ala Gly Arg Arg Asn
20 25 30

Asp Leu His Asp Asp Arg Thr Ala Ser Ala His Lys Thr Ser Arg Gln
35 40 45

Lys Arg Arg Ala Glu Tyr Ala Arg Val Gln Glu Leu Tyr Lys Lys Cys
50 55 60

Arg Ser Arg Ala Ala Ala Glu Val Ile Asp Gly Ala Cys Gly Gly Val
65 70 75 80

Gly His Ser Leu Glu Glu Met Glu Thr Tyr Trp Arg Pro Ile Leu Glu
85 90 95

Arg Val Ser Asp Ala Pro Gly Pro Thr Pro Glu Ala Leu His Ala Leu
100 105 110

Gly Arg Ala Glu Trp His Gly Gly Asn Arg Asp Tyr Thr Gln Leu Trp
115 120 125

```
Lys Pro Ile Ser Val Glu Glu Ile Lys Ala Ser Arg Phe Asp Trp Arg
    130                 135                 140

Thr Ser Pro Gly Pro Asp Gly Ile Arg Ser Gly Gln Trp Arg Ala Val
145                 150                 155                 160

Pro Val His Leu Lys Ala Glu Met Phe Asn Ala Trp Met Ala Arg Gly
                165                 170                 175

Glu Ile Pro Glu Ile Leu Arg Gln Cys Arg Thr Val Phe Val Pro Lys
            180                 185                 190

Val Glu Arg Pro Gly Gly Pro Gly Glu Tyr Arg Pro Ile Ser Ile Ala
        195                 200                 205

Ser Ile Pro Leu Arg His Phe His Ser Ile Leu Ala Arg Arg Leu Leu
    210                 215                 220

Ala Cys Cys Pro Pro Asp Ala Arg Gln Arg Gly Phe Ile Cys Ala Asp
225                 230                 235                 240

Gly Thr Leu Glu Asn Ser Ala Val Leu Asp Ala Val Leu Gly Asp Ser
                245                 250                 255

Arg Lys Lys Leu Arg Glu Cys His Val Ala Val Leu Asp Phe Ala Lys
            260                 265                 270

Ala Phe Asp Thr Val Ser His Glu Ala Leu Val Glu Leu Leu Arg Leu
        275                 280                 285

Arg Gly Met Pro Glu Gln Phe Cys Gly Tyr Ile Ala His Leu Tyr Asp
    290                 295                 300

Thr Ala Ser Thr Thr Leu Ala Val Asn Asn Glu Met Ser Ser Pro Val
305                 310                 315                 320

Lys Val Gly Arg Gly Val Arg Gln Gly Asp Pro Leu Ser Pro Ile Leu
                325                 330                 335
```

```
Phe Asn Val Val Met Asp Leu Ile Leu Ala Ser Leu Pro Glu Arg Val
            340                 345                 350

Gly Tyr Arg Leu Glu Met Glu Leu Val Ser Ala Leu Ala Tyr Ala Asp
        355                 360                 365

Asp Leu Val Leu Leu Ala Gly Ser Lys Val Gly Met Gln Glu Ser Ile
    370                 375                 380

Ser Ala Val Asp Cys Val Gly Arg Gln Met Gly Leu Arg Leu Asn Cys
385                 390                 395                 400

Arg Lys Ser Ala Val Leu Ser Met Ile Pro Asp Gly His Arg Lys Lys
                405                 410                 415

His His Tyr Leu Thr Glu Arg Thr Phe Asn Ile Gly Gly Lys Pro Leu
            420                 425                 430

Arg Gln Val Ser Cys Val Glu Arg Trp Arg Tyr Leu Gly Val Asp Phe
        435                 440                 445

Glu Ala Ser Gly Cys Val Thr Leu Glu His Ser Ile Ser Ser Ala Leu
    450                 455                 460

Asn Asn Ile Ser Arg Ala Pro Leu Lys Pro Gln Gln Arg Leu Glu Ile
465                 470                 475                 480

Leu Arg Ala His Leu Ile Pro Arg Phe Gln His Gly Phe Val Leu Gly
                485                 490                 495

Asn Ile Ser Asp Asp Arg Leu Arg Met Leu Asp Val Gln Ile Arg Lys
            500                 505                 510

Ala Val Gly Gln Trp Leu Arg Leu Pro Ala Asp Val Pro Lys Ala Tyr
        515                 520                 525

Tyr His Ala Ala Val Gln Asp Gly Gly Leu Ala Ile Pro Ser Val Arg
    530                 535                 540
```

```
Ala Thr Ile Pro Asp Leu Ile Val Arg Arg Phe Gly Gly Leu Asp Ser
545                 550                 555                 560


Ser Pro Trp Ser Val Ala Arg Ala Ala Ala Lys Ser Asp Lys Ile Arg
                565                 570                 575


Lys Lys Leu Arg Trp Ala Trp Lys Gln Leu Arg Arg Phe Ser Arg Val
            580                 585                 590


Asp Ser Thr Thr Gln Arg Pro Ser Val Arg Leu Phe Trp Arg Glu His
        595                 600                 605


Leu His Ala Ser Val Asp Gly Arg Glu Leu Arg Glu Ser Thr Arg Thr
    610                 615                 620


Pro Thr Ser Thr Lys Trp Ile Arg Glu Arg Cys Ala Gln Ile Thr Gly
625                 630                 635                 640


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


Arg Ile Arg Gly Ser Arg Gly Arg Arg Gly Gly Gly Glu Ser Ser Leu
            660                 665                 670


Thr Cys Arg Ala Gly Cys Lys Val Arg Glu Thr Thr Ala His Ile Leu
        675                 680                 685


Gln Gln Cys His Arg Thr His Gly Gly Arg Ile Leu Arg His Asn Lys
    690                 695                 700


Ile Val Ser Phe Val Ala Lys Ala Met Glu Glu Asn Lys Trp Thr Val
705                 710                 715                 720


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


Ile Ile Ala Ser Arg Asp Gly Val Gly Val Ile Val Asp Val Gln Val
            740                 745                 750
```

Val Ser Gly Gln Arg Ser Leu Asp Glu Leu His Arg Glu Lys Arg Asn
        755   760   765

Lys Tyr Gly Asn His Gly Glu Leu Val Glu Leu Val Ala Gly Arg Leu
    770   775   780

Gly Leu Pro Lys Ala Glu Cys Val Arg Ala Thr Ser Cys Thr Ile Ser
785   790   795   800

Trp Arg Gly Val Trp Ser Leu Thr Ser Tyr Lys Glu Leu Arg Ser Ile
                805   810   815

Ile Gly Leu Arg Glu Pro Thr Leu Gln Ile Val Pro Ile Leu Ala Leu
            820   825   830

Arg Gly Ser His Met Asn Trp Thr Arg Phe Asn Gln Met Thr Ser Val
        835   840   845

Met Gly Gly Gly Val Gly
    850

<210> 51
<211> 642
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      polypeptide

<400> 51
Met Ala His His His His His His Val Gly Thr Val Gly Thr Gly Gly
1   5   10   15

Gly Ser Gly Gly Ala Ser Thr Ala Leu Lys Thr Ala Gly Arg Arg Asn
            20   25   30

Asp Leu His Asp Asp Arg Thr Ala Ser Ala His Lys Thr Ser Arg Gln
        35   40   45

Lys Arg Arg Ala Glu Tyr Ala Arg Val Gln Glu Leu Tyr Lys Lys Cys
    50   55   60

```
Arg Ser Arg Ala Ala Ala Glu Val Ile Asp Gly Ala Cys Gly Gly Val
65                  70                  75                  80

Gly His Ser Leu Glu Glu Met Glu Thr Tyr Trp Arg Pro Ile Leu Glu
                85                  90                  95

Arg Val Ser Asp Ala Pro Gly Pro Thr Pro Glu Ala Leu His Ala Leu
            100                 105                 110

Gly Arg Ala Glu Trp His Gly Gly Asn Arg Asp Tyr Thr Gln Leu Trp
        115                 120                 125

Lys Pro Ile Ser Val Glu Glu Ile Lys Ala Ser Arg Phe Asp Trp Arg
    130                 135                 140

Thr Ser Pro Gly Pro Asp Gly Ile Arg Ser Gly Gln Trp Arg Ala Val
145                 150                 155                 160

Pro Val His Leu Lys Ala Glu Met Phe Asn Ala Trp Met Ala Arg Gly
                165                 170                 175

Glu Ile Pro Glu Ile Leu Arg Gln Cys Arg Thr Val Phe Val Pro Lys
            180                 185                 190

Val Glu Arg Pro Gly Gly Pro Gly Glu Tyr Arg Pro Ile Ser Ile Ala
        195                 200                 205

Ser Ile Pro Leu Arg His Phe His Ser Ile Leu Ala Arg Arg Leu Leu
    210                 215                 220

Ala Cys Cys Pro Pro Asp Ala Arg Gln Arg Gly Phe Ile Cys Ala Asp
225                 230                 235                 240

Gly Thr Leu Glu Asn Ser Ala Val Leu Asp Ala Val Leu Gly Asp Ser
                245                 250                 255

Arg Lys Lys Leu Arg Glu Cys His Val Ala Val Leu Asp Phe Ala Lys
            260                 265                 270
```

```
Ala Phe Asp Thr Val Ser His Glu Ala Leu Val Glu Leu Leu Arg Leu
        275                 280                 285

Arg Gly Met Pro Glu Gln Phe Cys Gly Tyr Ile Ala His Leu Tyr Asp
    290                 295                 300

Thr Ala Ser Thr Thr Leu Ala Val Asn Asn Glu Met Ser Ser Pro Val
305                 310                 315                 320

Lys Val Gly Arg Gly Val Arg Gln Gly Asp Pro Leu Ser Pro Ile Leu
                325                 330                 335

Phe Asn Val Val Met Asp Leu Ile Leu Ala Ser Leu Pro Glu Arg Val
            340                 345                 350

Gly Tyr Arg Leu Glu Met Glu Leu Val Ser Ala Leu Ala Tyr Ala Asp
        355                 360                 365

Asp Leu Val Leu Leu Ala Gly Ser Lys Val Gly Met Gln Glu Ser Ile
    370                 375                 380

Ser Ala Val Asp Cys Val Gly Arg Gln Met Gly Leu Arg Leu Asn Cys
385                 390                 395                 400

Arg Lys Ser Ala Val Leu Ser Met Ile Pro Asp Gly His Arg Lys Lys
                405                 410                 415

His His Tyr Leu Thr Glu Arg Thr Phe Asn Ile Gly Gly Lys Pro Leu
            420                 425                 430

Arg Gln Val Ser Cys Val Glu Arg Trp Arg Tyr Leu Gly Val Asp Phe
        435                 440                 445

Glu Ala Ser Gly Cys Val Thr Leu Glu His Ser Ile Ser Ser Ala Leu
    450                 455                 460

Asn Asn Ile Ser Arg Ala Pro Leu Lys Pro Gln Gln Arg Leu Glu Ile
465                 470                 475                 480
```

```
Leu Arg Ala His Leu Ile Pro Arg Phe Gln His Gly Phe Val Leu Gly
                485                 490                 495

Asn Ile Ser Asp Asp Arg Leu Arg Met Leu Asp Val Gln Ile Arg Lys
            500                 505                 510

Ala Val Gly Gln Trp Leu Arg Leu Pro Ala Asp Val Pro Lys Ala Tyr
        515                 520                 525

Tyr His Ala Ala Val Gln Asp Gly Gly Leu Ala Ile Pro Ser Val Arg
    530                 535                 540

Ala Thr Ile Pro Asp Leu Ile Val Arg Arg Phe Gly Gly Leu Asp Ser
545                 550                 555                 560

Ser Pro Trp Ser Val Ala Arg Ala Ala Ala Lys Ser Asp Lys Ile Arg
                565                 570                 575

Lys Lys Leu Arg Trp Ala Trp Lys Gln Leu Arg Arg Phe Ser Arg Val
            580                 585                 590

Asp Ser Thr Thr Gln Arg Pro Ser Val Arg Leu Phe Trp Arg Glu His
        595                 600                 605

Leu His Ala Ser Val Asp Gly Arg Glu Leu Arg Glu Ser Thr Arg Thr
    610                 615                 620

Pro Thr Ser Thr Lys Trp Ile Arg Glu Arg Cys Ala Gln Gly Gly Gly
625                 630                 635                 640

Val Gly
```

<210> 52
<211> 1132
<212> PRT
<213> Bombyx mori

<400> 52

```
Met Ala His His His His His His Val Gly Thr Val Gly Thr Gly Gly
1               5                   10                  15

Gly Ser Gly Gly Ala Ser Thr Ala Leu Ser Leu Met Gly Arg Cys Asn
            20                  25                  30

Pro Asp Gly Cys Thr Arg Gly Lys His Val Thr Ala Ala Pro Met Asp
        35                  40                  45

Gly Pro Arg Gly Pro Ser Ser Leu Ala Gly Thr Phe Gly Trp Gly Leu
    50                  55                  60

Ala Ile Pro Ala Gly Glu Pro Cys Gly Arg Val Cys Ser Pro Ala Thr
65                  70                  75                  80

Val Gly Phe Phe Pro Val Ala Lys Lys Ser Asn Lys Glu Asn Arg Pro
                85                  90                  95

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

Thr Val Arg Gly Ser Ala Gly Ala Asp Pro Val Gly Gln Asp Ala Pro
        115                 120                 125

Gly Trp Thr Cys Gln Phe Cys Glu Arg Thr Phe Ser Thr Asn Arg Gly
    130                 135                 140

Leu Gly Val His Lys Arg Arg Ala His Pro Val Glu Thr Asn Thr Asp
145                 150                 155                 160

Ala Ala Pro Met Met Val Lys Arg Arg Trp His Gly Glu Glu Ile Asp
                165                 170                 175

Leu Leu Ala Arg Thr Glu Ala Arg Leu Leu Ala Glu Arg Gly Gln Cys
            180                 185                 190

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

```
Glu Ala Ile Lys Gly Gln Arg Arg Arg Glu Pro Tyr Arg Ala Leu Val
    210                 215                 220

Gln Ala His Leu Ala Arg Phe Gly Ser Gln Pro Gly Pro Ser Ser Gly
225                 230                 235                 240

Gly Cys Ser Ala Glu Pro Asp Phe Arg Arg Ala Ser Gly Ala Glu Glu
                245                 250                 255

Ala Gly Glu Glu Arg Cys Ala Glu Asp Ala Ala Ala Tyr Asp Pro Ser
            260                 265                 270

Ala Val Gly Gln Met Ser Pro Asp Ala Ala Arg Val Leu Ser Glu Leu
        275                 280                 285

Leu Glu Gly Ala Gly Arg Arg Arg Ala Cys Arg Ala Met Arg Pro Lys
    290                 295                 300

Thr Ala Gly Arg Arg Asn Asp Leu His Asp Asp Arg Thr Ala Ser Ala
305                 310                 315                 320

His Lys Thr Ser Arg Gln Lys Arg Arg Ala Glu Tyr Ala Arg Val Gln
                325                 330                 335

Glu Leu Tyr Lys Lys Cys Arg Ser Arg Ala Ala Ala Glu Val Ile Asp
            340                 345                 350

Gly Ala Cys Gly Gly Val Gly His Ser Leu Glu Glu Met Glu Thr Tyr
        355                 360                 365

Trp Arg Pro Ile Leu Glu Arg Val Ser Asp Ala Pro Gly Pro Thr Pro
    370                 375                 380

Glu Ala Leu His Ala Leu Gly Arg Ala Glu Trp His Gly Gly Asn Arg
385                 390                 395                 400

Asp Tyr Thr Gln Leu Trp Lys Pro Ile Ser Val Glu Glu Ile Lys Ala
                405                 410                 415
```

```
Ser Arg Phe Asp Trp Arg Thr Ser Pro Gly Pro Asp Gly Ile Arg Ser
            420                 425                 430

Gly Gln Trp Arg Ala Val Pro Val His Leu Lys Ala Glu Met Phe Asn
        435                 440                 445

Ala Trp Met Ala Arg Gly Glu Ile Pro Glu Ile Leu Arg Gln Cys Arg
    450                 455                 460

Thr Val Phe Val Pro Lys Val Glu Arg Pro Gly Gly Pro Gly Glu Tyr
465                 470                 475                 480

Arg Pro Ile Ser Ile Ala Ser Ile Pro Leu Arg His Phe His Ser Ile
                485                 490                 495

Leu Ala Arg Arg Leu Leu Ala Cys Cys Pro Pro Asp Ala Arg Gln Arg
            500                 505                 510

Gly Phe Ile Cys Ala Asp Gly Thr Leu Glu Asn Ser Ala Val Leu Asp
        515                 520                 525

Ala Val Leu Gly Asp Ser Arg Lys Lys Leu Arg Glu Cys His Val Ala
    530                 535                 540

Val Leu Asp Phe Ala Lys Ala Phe Asp Thr Val Ser His Glu Ala Leu
545                 550                 555                 560

Val Glu Leu Leu Arg Leu Arg Gly Met Pro Glu Gln Phe Cys Gly Tyr
                565                 570                 575

Ile Ala His Leu Tyr Asp Thr Ala Ser Thr Thr Leu Ala Val Asn Asn
            580                 585                 590

Glu Met Ser Ser Pro Val Lys Val Gly Arg Gly Val Arg Gln Gly Asp
        595                 600                 605

Pro Leu Ser Pro Ile Leu Phe Asn Val Val Met Asp Leu Ile Leu Ala
    610                 615                 620
```

```
Ser Leu Pro Glu Arg Val Gly Tyr Arg Leu Glu Met Glu Leu Val Ser
625                 630                 635                 640


Ala Leu Ala Tyr Ala Asp Asp Leu Val Leu Leu Ala Gly Ser Lys Val
                645                 650                 655


Gly Met Gln Glu Ser Ile Ser Ala Val Asp Cys Val Gly Arg Gln Met
            660                 665                 670


Gly Leu Arg Leu Asn Cys Arg Lys Ser Ala Val Leu Ser Met Ile Pro
        675                 680                 685


Asp Gly His Arg Lys Lys His His Tyr Leu Thr Glu Arg Thr Phe Asn
    690                 695                 700


Ile Gly Gly Lys Pro Leu Arg Gln Val Ser Cys Val Glu Arg Trp Arg
705                 710                 715                 720


Tyr Leu Gly Val Asp Phe Glu Ala Ser Gly Cys Val Thr Leu Glu His
                725                 730                 735


Ser Ile Ser Ser Ala Leu Asn Asn Ile Ser Arg Ala Pro Leu Lys Pro
            740                 745                 750


Gln Gln Arg Leu Glu Ile Leu Arg Ala His Leu Ile Pro Arg Phe Gln
        755                 760                 765


His Gly Phe Val Leu Gly Asn Ile Ser Asp Asp Arg Leu Arg Met Leu
    770                 775                 780


Asp Val Gln Ile Arg Lys Ala Val Gly Gln Trp Leu Arg Leu Pro Ala
785                 790                 795                 800


Asp Val Pro Lys Ala Tyr Tyr His Ala Ala Val Gln Asp Gly Gly Leu
                805                 810                 815


Ala Ile Pro Ser Val Arg Ala Thr Ile Pro Asp Leu Ile Val Arg Arg
            820                 825                 830
```

```
Phe Gly Gly Leu Asp Ser Ser Pro Trp Ser Val Ala Arg Ala Ala Ala
        835                 840                 845

Lys Ser Asp Lys Ile Arg Lys Lys Leu Arg Trp Ala Trp Lys Gln Leu
    850                 855                 860

Arg Arg Phe Ser Arg Val Asp Ser Thr Thr Gln Arg Pro Ser Val Arg
865                 870                 875                 880

Leu Phe Trp Arg Glu His Leu His Ala Ser Val Asp Gly Arg Glu Leu
                885                 890                 895

Arg Glu Ser Thr Arg Thr Pro Thr Ser Thr Lys Trp Ile Arg Glu Arg
            900                 905                 910

Cys Ala Gln Ile Thr Gly Arg Asp Phe Val Gln Phe Val His Thr His
        915                 920                 925

Ile Asn Ala Leu Pro Ser Arg Ile Arg Gly Ser Arg Gly Arg Arg Gly
    930                 935                 940

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

Thr Thr Ala His Ile Leu Gln Gln Cys His Arg Thr His Gly Gly Arg
                965                 970                 975

Ile Leu Arg His Asn Lys Ile Val Ser Phe Val Ala Lys Ala Met Glu
            980                 985                 990

Glu Asn Lys Trp Thr Val Glu Leu  Glu Pro Arg Leu Arg  Thr Ser Val
        995                 1000                1005

Gly Leu  Arg Lys Pro Asp Ile  Ile Ala Ser Arg Asp  Gly Val Gly
    1010                1015                1020

Val Ile  Val Asp Val Gln Val  Val Ser Gly Gln Arg  Ser Leu Asp
    1025                1030                1035
```

Glu Leu His Arg Glu Lys Arg Asn Lys Tyr Gly Asn His Gly Glu
    1040   1045   1050

Leu Val Glu Leu Val Ala Gly Arg Leu Gly Leu Pro Lys Ala Glu
    1055   1060   1065

Cys Val Arg Ala Thr Ser Cys Thr Ile Ser Trp Arg Gly Val Trp
    1070   1075   1080

Ser Leu Thr Ser Tyr Lys Glu Leu Arg Ser Ile Ile Gly Leu Arg
    1085   1090   1095

Glu Pro Thr Leu Gln Ile Val Pro Ile Leu Ala Leu Arg Gly Ser
    1100   1105   1110

His Met Asn Trp Thr Arg Phe Asn Gln Met Thr Ser Val Met Gly
    1115   1120   1125

Gly Gly Val Gly
    1130

<210> 53
<211> 1132
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      polypeptide

<400> 53
Met Ala His His His His His His Val Gly Thr Val Gly Thr Gly Gly
1   5   10   15

Gly Ser Gly Gly Ala Ser Thr Ala Leu Ser Leu Met Gly Arg Cys Asn
            20   25   30

Pro Asp Gly Cys Thr Arg Gly Lys His Val Thr Ala Ala Pro Met Asp
        35   40   45

Gly Pro Arg Gly Pro Ser Ser Leu Ala Gly Thr Phe Gly Trp Gly Leu
    50   55   60

```
Ala Ile Pro Ala Gly Glu Pro Cys Gly Arg Val Cys Ser Pro Ala Thr
65                  70                  75                  80

Val Gly Phe Phe Pro Val Ala Lys Lys Ser Asn Lys Glu Asn Arg Pro
                85                  90                  95

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

Thr Val Arg Gly Ser Ala Gly Ala Asp Pro Val Gly Gln Asp Ala Pro
        115                 120                 125

Gly Trp Thr Cys Gln Phe Cys Glu Arg Thr Phe Ser Thr Asn Arg Gly
    130                 135                 140

Leu Gly Val His Lys Arg Arg Ala His Pro Val Glu Thr Asn Thr Asp
145                 150                 155                 160

Ala Ala Pro Met Met Val Lys Arg Arg Trp His Gly Glu Glu Ile Asp
                165                 170                 175

Leu Leu Ala Arg Thr Glu Ala Arg Leu Leu Ala Glu Arg Gly Gln Cys
            180                 185                 190

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

Glu Ala Ile Lys Gly Gln Arg Arg Arg Glu Pro Tyr Arg Ala Leu Val
    210                 215                 220

Gln Ala His Leu Ala Arg Phe Gly Ser Gln Pro Gly Pro Ser Ser Gly
225                 230                 235                 240

Gly Cys Ser Ala Glu Pro Asp Phe Arg Arg Ala Ser Gly Ala Glu Glu
                245                 250                 255

Ala Gly Glu Glu Arg Cys Ala Glu Asp Ala Ala Ala Tyr Asp Pro Ser
            260                 265                 270
```

```
Ala Val Gly Gln Met Ser Pro Asp Ala Ala Arg Val Leu Ser Glu Leu
        275                 280                 285

Leu Glu Gly Ala Gly Arg Arg Arg Ala Cys Arg Ala Met Arg Pro Lys
    290                 295                 300

Thr Ala Gly Arg Arg Asn Asp Leu His Asp Asp Arg Thr Ala Ser Ala
305                 310                 315                 320

His Lys Thr Ser Arg Gln Lys Arg Arg Ala Glu Tyr Ala Arg Val Gln
                325                 330                 335

Glu Leu Tyr Lys Lys Cys Arg Ser Arg Ala Ala Ala Glu Val Ile Asp
            340                 345                 350

Gly Ala Cys Gly Gly Val Gly His Ser Leu Glu Glu Met Glu Thr Tyr
        355                 360                 365

Trp Arg Pro Ile Leu Glu Arg Val Ser Asp Ala Pro Gly Pro Thr Pro
    370                 375                 380

Glu Ala Leu His Ala Leu Gly Arg Ala Glu Trp His Gly Gly Asn Arg
385                 390                 395                 400

Asp Tyr Thr Gln Leu Trp Lys Pro Ile Ser Val Glu Glu Ile Lys Ala
                405                 410                 415

Ser Arg Phe Asp Trp Arg Thr Ser Pro Gly Pro Asp Gly Ile Arg Ser
            420                 425                 430

Gly Gln Trp Arg Ala Val Pro Val His Leu Lys Ala Glu Met Phe Asn
        435                 440                 445

Ala Trp Met Ala Arg Gly Glu Ile Pro Glu Ile Leu Arg Gln Cys Arg
    450                 455                 460

Thr Val Phe Val Pro Lys Val Glu Arg Pro Gly Gly Pro Gly Glu Tyr
465                 470                 475                 480
```

```
Arg Pro Ile Ser Ile Ala Ser Ile Pro Leu Arg His Phe His Ser Ile
                485                 490                 495

Leu Ala Arg Arg Leu Leu Ala Cys Cys Pro Pro Asp Ala Arg Gln Arg
            500                 505                 510

Gly Phe Ile Cys Ala Asp Gly Thr Leu Glu Asn Ser Ala Val Leu Asp
        515                 520                 525

Ala Val Leu Gly Asp Ser Arg Lys Lys Leu Arg Glu Cys His Val Ala
    530                 535                 540

Val Leu Asp Phe Ala Lys Ala Phe Asp Thr Val Ser His Glu Ala Leu
545                 550                 555                 560

Val Glu Leu Leu Arg Leu Arg Gly Met Pro Glu Gln Phe Cys Gly Tyr
                565                 570                 575

Ile Ala His Leu Tyr Asp Thr Ala Ser Thr Thr Leu Ala Val Asn Asn
            580                 585                 590

Glu Met Ser Ser Pro Val Lys Val Gly Arg Gly Val Arg Gln Gly Asp
        595                 600                 605

Pro Leu Ser Pro Ile Leu Phe Asn Val Val Met Asp Leu Ile Leu Ala
    610                 615                 620

Ser Leu Pro Glu Arg Val Gly Tyr Arg Leu Glu Met Glu Leu Val Ser
625                 630                 635                 640

Ala Leu Ala Tyr Ala Asp Asp Leu Val Leu Leu Ala Gly Ser Lys Val
                645                 650                 655

Gly Met Gln Glu Ser Ile Ser Ala Val Asp Cys Val Gly Arg Gln Met
            660                 665                 670

Gly Leu Arg Leu Asn Cys Arg Lys Ser Ala Val Leu Ser Met Ile Pro
        675                 680                 685
```

```
Asp Gly His Arg Lys Lys His His Tyr Leu Thr Glu Arg Thr Phe Asn
    690                 695                 700

Ile Gly Gly Lys Pro Leu Arg Gln Val Ser Cys Val Glu Arg Trp Arg
705                 710                 715                 720

Tyr Leu Gly Val Asp Phe Glu Ala Ser Gly Cys Val Thr Leu Glu His
                725                 730                 735

Ser Ile Ser Ser Ala Leu Asn Asn Ile Ser Arg Ala Pro Leu Lys Pro
            740                 745                 750

Gln Gln Arg Leu Glu Ile Leu Arg Ala His Leu Ile Pro Arg Phe Gln
        755                 760                 765

His Gly Phe Val Leu Gly Asn Ile Ser Asp Asp Arg Leu Arg Met Leu
    770                 775                 780

Asp Val Gln Ile Arg Lys Ala Val Gly Gln Trp Leu Arg Leu Pro Ala
785                 790                 795                 800

Asp Val Pro Lys Ala Tyr Tyr His Ala Ala Val Gln Asp Gly Gly Leu
                805                 810                 815

Ala Ile Pro Ser Val Arg Ala Thr Ile Pro Asp Leu Ile Val Arg Arg
            820                 825                 830

Phe Gly Gly Leu Asp Ser Ser Pro Trp Ser Val Ala Arg Ala Ala Ala
        835                 840                 845

Lys Ser Asp Lys Ile Arg Lys Lys Leu Arg Trp Ala Trp Lys Gln Leu
    850                 855                 860

Arg Arg Phe Ser Arg Val Asp Ser Thr Thr Gln Arg Pro Ser Val Arg
865                 870                 875                 880

Leu Phe Trp Arg Glu His Leu His Ala Ser Val Asp Gly Arg Glu Leu
                885                 890                 895
```

```
Arg Glu Ser Thr Arg Thr Pro Thr Ser Thr Lys Trp Ile Arg Glu Arg
            900                 905                 910

Cys Ala Gln Ile Thr Gly Arg Asp Phe Val Gln Phe Val His Thr His
        915                 920                 925

Ile Asn Ala Leu Pro Ser Arg Ile Arg Gly Ser Arg Gly Arg Arg Gly
    930                 935                 940

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

Thr Thr Ala His Ile Leu Gln Gln Cys His Arg Thr His Gly Gly Arg
                965                 970                 975

Ile Leu Arg His Asn Lys Ile Val Ser Phe Val Ala Lys Ala Met Glu
            980                 985                 990

Glu Asn Lys Trp Thr Val Glu Leu  Glu Pro Arg Leu Arg  Thr Ser Val
        995                 1000                1005

Gly Leu  Arg Lys Pro Asp Ile  Ile Ala Ser Arg Asp  Gly Val Gly
    1010                1015                1020

Val Ile  Val Asp Val Gln Val  Val Ser Gly Gln Arg  Ser Leu Asp
    1025                1030                1035

Glu Leu  His Arg Glu Lys Arg  Asn Lys Tyr Gly Asn  His Gly Glu
    1040                1045                1050

Leu Val  Glu Leu Val Ala Gly  Arg Leu Gly Leu Pro  Lys Ala Glu
    1055                1060                1065

Cys Val  Arg Ala Thr Ser Cys  Thr Ile Ser Trp Arg  Gly Val Trp
    1070                1075                1080

Ser Leu  Thr Ser Tyr Lys Glu  Leu Arg Ser Ile Ile  Gly Leu Arg
    1085                1090                1095
```

Glu Pro Thr Leu Gln Ile Val Pro Ile Leu Ala Leu Arg Gly Ser
    1100   1105   1110

His Met Asn Trp Thr Arg Phe Asn Gln Met Thr Ser Val Met Gly
    1115   1120   1125

Gly Gly Val Gly
    1130

<210> 54
<211> 1132
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      polypeptide

<400> 54
Met Ala His His His His His His Val Gly Thr Val Gly Thr Gly Gly
1   5   10   15

Gly Ser Gly Gly Ala Ser Thr Ala Leu Ser Leu Met Gly Arg Cys Asn
            20   25   30

Pro Asp Gly Cys Thr Arg Gly Lys His Val Thr Ala Ala Pro Met Asp
        35   40   45

Gly Pro Arg Gly Pro Ser Ser Leu Ala Gly Thr Phe Gly Trp Gly Leu
    50   55   60

Ala Ile Pro Ala Gly Glu Pro Cys Gly Arg Val Cys Ser Pro Ala Thr
65   70   75   80

Val Gly Phe Phe Pro Val Ala Lys Lys Ser Asn Lys Glu Asn Arg Pro
                85   90   95

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

```
Thr Val Arg Gly Ser Ala Gly Ala Asp Pro Val Gly Gln Asp Ala Pro
        115                 120                 125

Gly Trp Thr Cys Gln Phe Cys Glu Arg Thr Phe Ser Thr Asn Arg Gly
    130                 135                 140

Leu Gly Val His Lys Arg Arg Ala His Pro Val Glu Thr Asn Thr Asp
145                 150                 155                 160

Ala Ala Pro Met Met Val Lys Arg Arg Trp His Gly Glu Glu Ile Asp
                165                 170                 175

Leu Leu Ala Arg Thr Glu Ala Arg Leu Leu Ala Glu Arg Gly Gln Cys
            180                 185                 190

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

Glu Ala Ile Lys Gly Gln Arg Arg Arg Glu Pro Tyr Arg Ala Leu Val
    210                 215                 220

Gln Ala His Leu Ala Arg Phe Gly Ser Gln Pro Gly Pro Ser Ser Gly
225                 230                 235                 240

Gly Cys Ser Ala Glu Pro Asp Phe Arg Arg Ala Ser Gly Ala Glu Glu
                245                 250                 255

Ala Gly Glu Glu Arg Cys Ala Glu Asp Ala Ala Ala Tyr Asp Pro Ser
            260                 265                 270

Ala Val Gly Gln Met Ser Pro Asp Ala Ala Arg Val Leu Ser Glu Leu
        275                 280                 285

Leu Glu Gly Ala Gly Arg Arg Arg Ala Cys Arg Ala Met Arg Pro Lys
    290                 295                 300

Thr Ala Gly Arg Arg Asn Asp Leu His Asp Asp Arg Thr Ala Ser Ala
305                 310                 315                 320
```

```
His Lys Thr Ser Arg Gln Lys Arg Arg Ala Glu Tyr Ala Arg Val Gln
                325                 330                 335

Glu Leu Tyr Lys Lys Cys Arg Ser Arg Ala Ala Ala Glu Val Ile Asp
            340                 345                 350

Gly Ala Cys Gly Gly Val Gly His Ser Leu Glu Glu Met Glu Thr Tyr
        355                 360                 365

Trp Arg Pro Ile Leu Glu Arg Val Ser Asp Ala Pro Gly Pro Thr Pro
    370                 375                 380

Glu Ala Leu His Ala Leu Gly Arg Ala Glu Trp His Gly Gly Asn Arg
385                 390                 395                 400

Asp Tyr Thr Gln Leu Trp Lys Pro Ile Ser Val Glu Glu Ile Lys Ala
                405                 410                 415

Ser Arg Phe Asp Trp Arg Thr Ser Pro Gly Pro Asp Gly Ile Arg Ser
            420                 425                 430

Gly Gln Trp Arg Ala Val Pro Val His Leu Lys Ala Glu Met Phe Asn
        435                 440                 445

Ala Trp Met Ala Arg Gly Glu Ile Pro Glu Ile Leu Arg Gln Cys Arg
    450                 455                 460

Thr Val Phe Val Pro Lys Val Glu Arg Pro Gly Gly Pro Gly Glu Tyr
465                 470                 475                 480

Arg Pro Ile Ser Ile Ala Ser Ile Pro Leu Arg His Phe His Ser Ile
                485                 490                 495

Leu Ala Arg Arg Leu Leu Ala Cys Cys Pro Pro Asp Ala Arg Gln Arg
            500                 505                 510

Gly Phe Ile Cys Ala Asp Gly Thr Leu Glu Asn Ser Ala Val Leu Asp
        515                 520                 525
```

```
Ala Val Leu Gly Asp Ser Arg Lys Lys Leu Arg Glu Cys His Val Ala
    530                 535                 540

Val Leu Asp Phe Ala Lys Ala Phe Asp Thr Val Ser His Glu Ala Leu
545                 550                 555                 560

Val Glu Leu Leu Arg Leu Arg Gly Met Pro Glu Gln Phe Cys Gly Tyr
                565                 570                 575

Ile Ala His Leu Tyr Asp Thr Ala Ser Thr Thr Leu Ala Val Asn Asn
            580                 585                 590

Glu Met Ser Ser Pro Val Lys Val Gly Arg Gly Val Arg Gln Gly Asp
        595                 600                 605

Pro Leu Ser Pro Ile Leu Phe Asn Val Val Met Asp Leu Ile Leu Ala
    610                 615                 620

Ser Leu Pro Glu Arg Val Gly Tyr Arg Leu Glu Met Glu Leu Val Ser
625                 630                 635                 640

Ala Leu Ala Tyr Ala Asp Asp Leu Val Leu Leu Ala Gly Ser Lys Val
                645                 650                 655

Gly Met Gln Glu Ser Ile Ser Ala Val Asp Cys Val Gly Arg Gln Met
            660                 665                 670

Gly Leu Arg Leu Asn Cys Arg Lys Ser Ala Val Leu Ser Met Ile Pro
        675                 680                 685

Asp Gly His Arg Lys Lys His His Tyr Leu Thr Glu Arg Thr Phe Asn
    690                 695                 700

Ile Gly Gly Lys Pro Leu Arg Gln Val Ser Cys Val Glu Arg Trp Arg
705                 710                 715                 720

Tyr Leu Gly Val Asp Phe Glu Ala Ser Gly Cys Val Thr Leu Glu His
                725                 730                 735
```

```
Ser Ile Ser Ser Ala Leu Asn Asn Ile Ser Arg Ala Pro Leu Lys Pro
            740                 745                 750

Gln Gln Arg Leu Glu Ile Leu Arg Ala His Leu Ile Pro Arg Phe Gln
        755                 760                 765

His Gly Phe Val Leu Gly Asn Ile Ser Asp Asp Arg Leu Arg Met Leu
    770                 775                 780

Asp Val Gln Ile Arg Lys Ala Val Gly Gln Trp Leu Arg Leu Pro Ala
785                 790                 795                 800

Asp Val Pro Lys Ala Tyr Tyr His Ala Ala Val Gln Asp Gly Gly Leu
                805                 810                 815

Ala Ile Pro Ser Val Arg Ala Thr Ile Pro Asp Leu Ile Val Arg Arg
            820                 825                 830

Phe Gly Gly Leu Asp Ser Ser Pro Trp Ser Val Ala Arg Ala Ala Ala
        835                 840                 845

Lys Ser Asp Lys Ile Arg Lys Lys Leu Arg Trp Ala Trp Lys Gln Leu
    850                 855                 860

Arg Arg Phe Ser Arg Val Asp Ser Thr Thr Gln Arg Pro Ser Val Arg
865                 870                 875                 880

Leu Phe Trp Arg Glu His Leu His Ala Ser Val Asp Gly Arg Glu Leu
                885                 890                 895

Arg Glu Ser Thr Arg Thr Pro Thr Ser Thr Lys Trp Ile Arg Glu Arg
            900                 905                 910

Cys Ala Gln Ile Thr Gly Arg Asp Phe Val Gln Phe Val His Thr His
        915                 920                 925

Ile Asn Ala Leu Pro Ser Arg Ile Arg Gly Ser Arg Gly Arg Arg Gly
    930                 935                 940
```

```
Gly Gly Glu Ser Ser Leu Thr Cys Arg Ala Gly Ser Lys Val Arg Glu
945                 950                 955                 960


Thr Thr Ala His Ile Leu Gln Gln Cys His Arg Thr His Gly Gly Arg
                965                 970                 975


Ile Leu Arg His Asn Lys Ile Val Ser Phe Val Ala Lys Ala Met Glu
            980                 985                 990


Glu Asn Lys Trp Thr Val Glu Leu  Glu Pro Arg Leu Arg  Thr Ser Val
        995                 1000                1005


Gly Leu  Arg Lys Pro Asp Ile  Ile Ala Ser Arg Asp  Gly Val Gly
    1010                1015                1020


Val Ile  Val Asp Val Gln Val  Val Ser Gly Gln Arg  Ser Leu Asp
    1025                1030                1035


Glu Leu  His Arg Glu Lys Arg  Asn Lys Tyr Gly Asn  His Gly Glu
    1040                1045                1050


Leu Val  Glu Leu Val Ala Gly  Arg Leu Gly Leu Pro  Lys Ala Glu
    1055                1060                1065


Cys Val  Arg Ala Thr Ser Cys  Thr Ile Ser Trp Arg  Gly Val Trp
    1070                1075                1080


Ser Leu  Thr Ser Tyr Lys Glu  Leu Arg Ser Ile Ile  Gly Leu Arg
    1085                1090                1095


Glu Pro  Thr Leu Gln Ile Val  Pro Ile Leu Ala Leu  Arg Gly Ser
    1100                1105                1110


His Met  Asn Trp Thr Arg Phe  Asn Gln Met Thr Ser  Val Met Gly
    1115                1120                1125


Gly Gly  Val Gly
    1130
```

<210> 55
<211> 1132
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polypeptide

<400> 55

Met Ala His His His His His His Val Gly Thr Val Gly Thr Gly Gly
1 5 10 15

Gly Ser Gly Gly Ala Ser Thr Ala Leu Ser Leu Met Gly Arg Cys Asn
20 25 30

Pro Asp Gly Cys Thr Arg Gly Lys His Val Thr Ala Ala Pro Met Asp
35 40 45

Gly Pro Arg Gly Pro Ser Ser Leu Ala Gly Thr Phe Gly Trp Gly Leu
50 55 60

Ala Ile Pro Ala Gly Glu Pro Cys Gly Arg Val Cys Ser Pro Ala Thr
65 70 75 80

Val Gly Phe Phe Pro Val Ala Lys Lys Ser Asn Lys Glu Asn Arg Pro
85 90 95

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

Thr Val Arg Gly Ser Ala Gly Ala Asp Pro Val Gly Gln Asp Ala Pro
115 120 125

Gly Trp Thr Cys Gln Phe Cys Glu Arg Thr Phe Ser Thr Asn Arg Gly
130 135 140

Leu Gly Val His Lys Arg Arg Ala His Pro Val Glu Thr Asn Thr Asp
145 150 155 160

Ala Ala Pro Met Met Val Lys Arg Arg Trp His Gly Glu Glu Ile Asp
165 170 175

```
Leu Leu Ala Arg Thr Glu Ala Arg Leu Leu Ala Glu Arg Gly Gln Cys
            180                 185                 190

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

Glu Ala Ile Lys Gly Gln Arg Arg Arg Glu Pro Tyr Arg Ala Leu Val
    210                 215                 220

Gln Ala His Leu Ala Arg Phe Gly Ser Gln Pro Gly Pro Ser Ser Gly
225                 230                 235                 240

Gly Cys Ser Ala Glu Pro Asp Phe Arg Arg Ala Ser Gly Ala Glu Glu
                245                 250                 255

Ala Gly Glu Glu Arg Cys Ala Glu Asp Ala Ala Ala Tyr Asp Pro Ser
            260                 265                 270

Ala Val Gly Gln Met Ser Pro Asp Ala Ala Arg Val Leu Ser Glu Leu
        275                 280                 285

Leu Glu Gly Ala Gly Arg Arg Arg Ala Cys Arg Ala Met Arg Pro Lys
    290                 295                 300

Thr Ala Gly Arg Arg Asn Asp Leu His Asp Asp Arg Thr Ala Ser Ala
305                 310                 315                 320

His Lys Thr Ser Arg Gln Lys Arg Arg Ala Glu Tyr Ala Arg Val Gln
                325                 330                 335

Glu Leu Tyr Lys Lys Cys Arg Ser Arg Ala Ala Ala Glu Val Ile Asp
            340                 345                 350

Gly Ala Cys Gly Gly Val Gly His Ser Leu Glu Glu Met Glu Thr Tyr
        355                 360                 365

Trp Arg Pro Ile Leu Glu Arg Val Ser Asp Ala Pro Gly Pro Thr Pro
    370                 375                 380
```

```
Glu Ala Leu His Ala Leu Gly Arg Ala Glu Trp His Gly Gly Asn Arg
385                 390                 395                 400

Asp Tyr Thr Gln Leu Trp Lys Pro Ile Ser Val Glu Glu Ile Lys Ala
                405                 410                 415

Ser Arg Phe Asp Trp Arg Thr Ser Pro Gly Pro Asp Gly Ile Arg Ser
            420                 425                 430

Gly Gln Trp Arg Ala Val Pro Val His Leu Lys Ala Glu Met Phe Asn
        435                 440                 445

Ala Trp Met Ala Arg Gly Glu Ile Pro Glu Ile Leu Arg Gln Cys Arg
    450                 455                 460

Thr Val Phe Val Pro Lys Val Glu Arg Pro Gly Gly Pro Gly Glu Tyr
465                 470                 475                 480

Arg Pro Ile Ser Ile Ala Ser Ile Pro Leu Arg His Phe His Ser Ile
                485                 490                 495

Leu Ala Arg Arg Leu Leu Ala Cys Cys Pro Pro Asp Ala Arg Gln Arg
            500                 505                 510

Gly Phe Ile Cys Ala Asp Gly Thr Leu Glu Asn Ser Ala Val Leu Asp
        515                 520                 525

Ala Val Leu Gly Asp Ser Arg Lys Lys Leu Arg Glu Cys His Val Ala
    530                 535                 540

Val Leu Asp Phe Ala Lys Ala Phe Asp Thr Val Ser His Glu Ala Leu
545                 550                 555                 560

Val Glu Leu Leu Arg Leu Arg Gly Met Pro Glu Gln Phe Cys Gly Tyr
                565                 570                 575

Ile Ala His Leu Tyr Asp Thr Ala Ser Thr Thr Leu Ala Val Asn Asn
            580                 585                 590
```

```
Glu Met Ser Ser Pro Val Lys Val Gly Arg Gly Val Arg Gln Gly Asp
        595                 600                 605

Pro Leu Ser Pro Ile Leu Phe Asn Val Val Met Asp Leu Ile Leu Ala
    610                 615                 620

Ser Leu Pro Glu Arg Val Gly Tyr Arg Leu Glu Met Glu Leu Val Ser
625                 630                 635                 640

Ala Leu Ala Tyr Ala Asp Asp Leu Val Leu Leu Ala Gly Ser Lys Val
                645                 650                 655

Gly Met Gln Glu Ser Ile Ser Ala Val Asp Cys Val Gly Arg Gln Met
            660                 665                 670

Gly Leu Arg Leu Asn Cys Arg Lys Ser Ala Val Leu Ser Met Ile Pro
        675                 680                 685

Asp Gly His Arg Lys Lys His His Tyr Leu Thr Glu Arg Thr Phe Asn
    690                 695                 700

Ile Gly Gly Lys Pro Leu Arg Gln Val Ser Cys Val Glu Arg Trp Arg
705                 710                 715                 720

Tyr Leu Gly Val Asp Phe Glu Ala Ser Gly Cys Val Thr Leu Glu His
                725                 730                 735

Ser Ile Ser Ser Ala Leu Asn Asn Ile Ser Arg Ala Pro Leu Lys Pro
            740                 745                 750

Gln Gln Arg Leu Glu Ile Leu Arg Ala His Leu Ile Pro Arg Phe Gln
        755                 760                 765

His Gly Phe Val Leu Gly Asn Ile Ser Asp Asp Arg Leu Arg Met Leu
    770                 775                 780

Asp Val Gln Ile Arg Lys Ala Val Gly Gln Trp Leu Arg Leu Pro Ala
785                 790                 795                 800
```

```
Asp Val Pro Lys Ala Tyr Tyr His Ala Ala Val Gln Asp Gly Gly Leu
                805                 810                 815

Ala Ile Pro Ser Val Arg Ala Thr Ile Pro Asp Leu Ile Val Arg Arg
            820                 825                 830

Phe Gly Gly Leu Asp Ser Ser Pro Trp Ser Val Ala Arg Ala Ala Ala
        835                 840                 845

Lys Ser Asp Lys Ile Arg Lys Lys Leu Arg Trp Ala Trp Lys Gln Leu
    850                 855                 860

Arg Arg Phe Ser Arg Val Asp Ser Thr Thr Gln Arg Pro Ser Val Arg
865                 870                 875                 880

Leu Phe Trp Arg Glu His Leu His Ala Ser Val Asp Gly Arg Glu Leu
                885                 890                 895

Arg Glu Ser Thr Arg Thr Pro Thr Ser Thr Lys Trp Ile Arg Glu Arg
            900                 905                 910

Cys Ala Gln Ile Thr Gly Arg Asp Phe Val Gln Phe Val His Thr His
        915                 920                 925

Ile Asn Ala Leu Pro Ser Arg Ile Arg Gly Ser Arg Gly Arg Arg Gly
    930                 935                 940

Gly Gly Glu Ser Ser Leu Thr Ser Arg Ala Gly Ser Lys Val Arg Glu
945                 950                 955                 960

Thr Thr Ala His Ile Leu Gln Gln Cys His Arg Thr His Gly Gly Arg
                965                 970                 975

Ile Leu Arg His Asn Lys Ile Val Ser Phe Val Ala Lys Ala Met Glu
            980                 985                 990

Glu Asn Lys Trp Thr Val Glu Leu  Glu Pro Arg Leu Arg  Thr Ser Val
        995                 1000                1005
```

Gly Leu Arg Lys Pro Asp Ile Ile Ala Ser Arg Asp Gly Val Gly
1010 1015 1020

Val Ile Val Asp Val Gln Val Val Ser Gly Gln Arg Ser Leu Asp
1025 1030 1035

Glu Leu His Arg Glu Lys Arg Asn Lys Tyr Gly Asn His Gly Glu
1040 1045 1050

Leu Val Glu Leu Val Ala Gly Arg Leu Gly Leu Pro Lys Ala Glu
1055 1060 1065

Cys Val Arg Ala Thr Ser Cys Thr Ile Ser Trp Arg Gly Val Trp
1070 1075 1080

Ser Leu Thr Ser Tyr Lys Glu Leu Arg Ser Ile Ile Gly Leu Arg
1085 1090 1095

Glu Pro Thr Leu Gln Ile Val Pro Ile Leu Ala Leu Arg Gly Ser
1100 1105 1110

His Met Asn Trp Thr Arg Phe Asn Gln Met Thr Ser Val Met Gly
1115 1120 1125

Gly Gly Val Gly
1130

<210> 56
<211> 1132
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polypeptide

<400> 56
Met Ala His His His His His His Val Gly Thr Val Gly Thr Gly Gly
1 5 10 15

```
Gly Ser Gly Gly Ala Ser Thr Ala Leu Ser Leu Met Gly Arg Cys Asn
            20                  25                  30

Pro Asp Gly Cys Thr Arg Gly Lys His Val Thr Ala Ala Pro Met Asp
        35                  40                  45

Gly Pro Arg Gly Pro Ser Ser Leu Ala Gly Thr Phe Gly Trp Gly Leu
    50                  55                  60

Ala Ile Pro Ala Gly Glu Pro Cys Gly Arg Val Cys Ser Pro Ala Thr
65                  70                  75                  80

Val Gly Phe Phe Pro Val Ala Lys Lys Ser Asn Lys Glu Asn Arg Pro
                85                  90                  95

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

Thr Val Arg Gly Ser Ala Gly Ala Asp Pro Val Gly Gln Asp Ala Pro
        115                 120                 125

Gly Trp Thr Cys Gln Phe Cys Glu Arg Thr Phe Ser Thr Asn Arg Gly
    130                 135                 140

Leu Gly Val His Lys Arg Arg Ala His Pro Val Glu Thr Asn Thr Asp
145                 150                 155                 160

Ala Ala Pro Met Met Val Lys Arg Arg Trp His Gly Glu Glu Ile Asp
                165                 170                 175

Leu Leu Ala Arg Thr Glu Ala Arg Leu Leu Ala Glu Arg Gly Gln Cys
            180                 185                 190

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

Glu Ala Ile Lys Gly Gln Arg Arg Arg Glu Pro Tyr Arg Ala Leu Val
    210                 215                 220
```

```
Gln Ala His Leu Ala Arg Phe Gly Ser Gln Pro Gly Pro Ser Ser Gly
225                 230                 235                 240

Gly Cys Ser Ala Glu Pro Asp Phe Arg Arg Ala Ser Gly Ala Glu Glu
                245                 250                 255

Ala Gly Glu Glu Arg Cys Ala Glu Asp Ala Ala Ala Tyr Asp Pro Ser
            260                 265                 270

Ala Val Gly Gln Met Ser Pro Asp Ala Ala Arg Val Leu Ser Glu Leu
        275                 280                 285

Leu Glu Gly Ala Gly Arg Arg Arg Ala Cys Arg Ala Met Arg Pro Lys
    290                 295                 300

Thr Ala Gly Arg Arg Asn Asp Leu His Asp Asp Arg Thr Ala Ser Ala
305                 310                 315                 320

His Lys Thr Ser Arg Gln Lys Arg Arg Ala Glu Tyr Ala Arg Val Gln
                325                 330                 335

Glu Leu Tyr Lys Lys Cys Arg Ser Arg Ala Ala Ala Glu Val Ile Asp
            340                 345                 350

Gly Ala Cys Gly Gly Val Gly His Ser Leu Glu Glu Met Glu Thr Tyr
        355                 360                 365

Trp Arg Pro Ile Leu Glu Arg Val Ser Asp Ala Pro Gly Pro Thr Pro
    370                 375                 380

Glu Ala Leu His Ala Leu Gly Arg Ala Glu Trp His Gly Gly Asn Arg
385                 390                 395                 400

Asp Tyr Thr Gln Leu Trp Lys Pro Ile Ser Val Glu Glu Ile Lys Ala
                405                 410                 415

Ser Arg Phe Asp Trp Arg Thr Ser Pro Gly Pro Asp Gly Ile Arg Ser
            420                 425                 430
```

```
Gly Gln Trp Arg Ala Val Pro Val His Leu Lys Ala Glu Met Phe Asn
        435                 440                 445

Ala Trp Met Ala Arg Gly Glu Ile Pro Glu Ile Leu Arg Gln Cys Arg
    450                 455                 460

Thr Val Phe Val Pro Lys Val Glu Arg Pro Gly Gly Pro Gly Glu Tyr
465                 470                 475                 480

Arg Pro Ile Ser Ile Ala Ser Ile Pro Leu Arg His Phe His Ser Ile
                485                 490                 495

Leu Ala Arg Arg Leu Leu Ala Cys Cys Pro Pro Asp Ala Arg Gln Arg
            500                 505                 510

Gly Phe Ile Cys Ala Asp Gly Thr Leu Glu Asn Ser Ala Val Leu Asp
        515                 520                 525

Ala Val Leu Gly Asp Ser Arg Lys Lys Leu Arg Glu Cys His Val Ala
    530                 535                 540

Val Leu Asp Phe Ala Lys Ala Phe Asp Thr Val Ser His Glu Ala Leu
545                 550                 555                 560

Val Glu Leu Leu Arg Leu Arg Gly Met Pro Glu Gln Phe Cys Gly Tyr
                565                 570                 575

Ile Ala His Leu Tyr Asp Thr Ala Ser Thr Thr Leu Ala Val Asn Asn
            580                 585                 590

Glu Met Ser Ser Pro Val Lys Val Gly Arg Gly Val Arg Gln Gly Asp
        595                 600                 605

Pro Leu Ser Pro Ile Leu Phe Asn Val Val Met Asp Leu Ile Leu Ala
    610                 615                 620

Ser Leu Pro Glu Arg Val Gly Tyr Arg Leu Glu Met Glu Leu Val Ser
625                 630                 635                 640
```

```
Ala Leu Ala Tyr Ala Asp Asp Leu Val Leu Leu Ala Gly Ser Lys Val
                645                 650                 655

Gly Met Gln Glu Ser Ile Ser Ala Val Asp Cys Val Gly Arg Gln Met
            660                 665                 670

Gly Leu Arg Leu Asn Cys Arg Lys Ser Ala Val Leu Ser Met Ile Pro
        675                 680                 685

Asp Gly His Arg Lys Lys His His Tyr Leu Thr Glu Arg Thr Phe Asn
    690                 695                 700

Ile Gly Gly Lys Pro Leu Arg Gln Val Ser Cys Val Glu Arg Trp Arg
705                 710                 715                 720

Tyr Leu Gly Val Asp Phe Glu Ala Ser Gly Cys Val Thr Leu Glu His
                725                 730                 735

Ser Ile Ser Ser Ala Leu Asn Asn Ile Ser Arg Ala Pro Leu Lys Pro
            740                 745                 750

Gln Gln Arg Leu Glu Ile Leu Arg Ala His Leu Ile Pro Arg Phe Gln
        755                 760                 765

His Gly Phe Val Leu Gly Asn Ile Ser Asp Asp Arg Leu Arg Met Leu
    770                 775                 780

Asp Val Gln Ile Arg Lys Ala Val Gly Gln Trp Leu Arg Leu Pro Ala
785                 790                 795                 800

Asp Val Pro Lys Ala Tyr Tyr His Ala Ala Val Gln Asp Gly Gly Leu
                805                 810                 815

Ala Ile Pro Ser Val Arg Ala Thr Ile Pro Asp Leu Ile Val Arg Arg
            820                 825                 830

Phe Gly Gly Leu Asp Ser Ser Pro Trp Ser Val Ala Arg Ala Ala Ala
        835                 840                 845
```

```
Lys Ser Asp Lys Ile Arg Lys Lys Leu Arg Trp Ala Trp Lys Gln Leu
    850                 855                 860

Arg Arg Phe Ser Arg Val Asp Ser Thr Thr Gln Arg Pro Ser Val Arg
865                 870                 875                 880

Leu Phe Trp Arg Glu His Leu His Ala Ser Val Asp Gly Arg Glu Leu
                885                 890                 895

Arg Glu Ser Thr Arg Thr Pro Thr Ser Thr Lys Trp Ile Arg Glu Arg
            900                 905                 910

Cys Ala Gln Ile Thr Gly Arg Asp Phe Val Gln Phe Val His Thr His
        915                 920                 925

Ile Asn Ala Leu Pro Ser Arg Ile Arg Gly Ser Arg Gly Arg Arg Gly
    930                 935                 940

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

Thr Thr Ala His Ile Leu Gln Gln Ser His Arg Thr His Gly Gly Arg
                965                 970                 975

Ile Leu Arg His Asn Lys Ile Val Ser Phe Val Ala Lys Ala Met Glu
            980                 985                 990

Glu Asn Lys Trp Thr Val Glu Leu  Glu Pro Arg Leu Arg  Thr Ser Val
        995                 1000                1005

Gly Leu  Arg Lys Pro Asp Ile  Ile Ala Ser Arg Asp  Gly Val Gly
    1010                1015                1020

Val Ile  Val Asp Val Gln Val  Val Ser Gly Gln Arg  Ser Leu Asp
    1025                1030                1035

Glu Leu  His Arg Glu Lys Arg  Asn Lys Tyr Gly Asn  His Gly Glu
    1040                1045                1050
```

Leu Val Glu Leu Val Ala Gly Arg Leu Gly Leu Pro Lys Ala Glu
1055 1060 1065

Cys Val Arg Ala Thr Ser Cys Thr Ile Ser Trp Arg Gly Val Trp
1070 1075 1080

Ser Leu Thr Ser Tyr Lys Glu Leu Arg Ser Ile Ile Gly Leu Arg
1085 1090 1095

Glu Pro Thr Leu Gln Ile Val Pro Ile Leu Ala Leu Arg Gly Ser
1100 1105 1110

His Met Asn Trp Thr Arg Phe Asn Gln Met Thr Ser Val Met Gly
1115 1120 1125

Gly Gly Val Gly
1130

<210> 57
<211> 1132
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polypeptide

<400> 57
Met Ala His His His His His His Val Gly Thr Val Gly Thr Gly Gly
1 5 10 15

Gly Ser Gly Gly Ala Ser Thr Ala Leu Ser Leu Met Gly Arg Cys Asn
20 25 30

Pro Asp Gly Cys Thr Arg Gly Lys His Val Thr Ala Ala Pro Met Asp
35 40 45

Gly Pro Arg Gly Pro Ser Ser Leu Ala Gly Thr Phe Gly Trp Gly Leu
50 55 60

Ala Ile Pro Ala Gly Glu Pro Cys Gly Arg Val Cys Ser Pro Ala Thr
65 70 75 80

```
Val Gly Phe Phe Pro Val Ala Lys Lys Ser Asn Lys Glu Asn Arg Pro
                85                  90                  95

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

Thr Val Arg Gly Ser Ala Gly Ala Asp Pro Val Gly Gln Asp Ala Pro
        115                 120                 125

Gly Trp Thr Cys Gln Phe Cys Glu Arg Thr Phe Ser Thr Asn Arg Gly
    130                 135                 140

Leu Gly Val His Lys Arg Arg Ala His Pro Val Glu Thr Asn Thr Asp
145                 150                 155                 160

Ala Ala Pro Met Met Val Lys Arg Arg Trp His Gly Glu Glu Ile Asp
                165                 170                 175

Leu Leu Ala Arg Thr Glu Ala Arg Leu Leu Ala Glu Arg Gly Gln Cys
            180                 185                 190

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

Glu Ala Ile Lys Gly Gln Arg Arg Arg Glu Pro Tyr Arg Ala Leu Val
    210                 215                 220

Gln Ala His Leu Ala Arg Phe Gly Ser Gln Pro Gly Pro Ser Ser Gly
225                 230                 235                 240

Gly Cys Ser Ala Glu Pro Asp Phe Arg Arg Ala Ser Gly Ala Glu Glu
                245                 250                 255

Ala Gly Glu Glu Arg Cys Ala Glu Asp Ala Ala Ala Tyr Asp Pro Ser
            260                 265                 270

Ala Val Gly Gln Met Ser Pro Asp Ala Ala Arg Val Leu Ser Glu Leu
        275                 280                 285
```

```
Leu Glu Gly Ala Gly Arg Arg Arg Ala Cys Arg Ala Met Arg Pro Lys
    290                 295                 300

Thr Ala Gly Arg Arg Asn Asp Leu His Asp Asp Arg Thr Ala Ser Ala
305                 310                 315                 320

His Lys Thr Ser Arg Gln Lys Arg Arg Ala Glu Tyr Ala Arg Val Gln
                325                 330                 335

Glu Leu Tyr Lys Lys Cys Arg Ser Arg Ala Ala Ala Glu Val Ile Asp
            340                 345                 350

Gly Ala Cys Gly Gly Val Gly His Ser Leu Glu Glu Met Glu Thr Tyr
        355                 360                 365

Trp Arg Pro Ile Leu Glu Arg Val Ser Asp Ala Pro Gly Pro Thr Pro
    370                 375                 380

Glu Ala Leu His Ala Leu Gly Arg Ala Glu Trp His Gly Gly Asn Arg
385                 390                 395                 400

Asp Tyr Thr Gln Leu Trp Lys Pro Ile Ser Val Glu Glu Ile Lys Ala
                405                 410                 415

Ser Arg Phe Asp Trp Arg Thr Ser Pro Gly Pro Asp Gly Ile Arg Ser
            420                 425                 430

Gly Gln Trp Arg Ala Val Pro Val His Leu Lys Ala Glu Met Phe Asn
        435                 440                 445

Ala Trp Met Ala Arg Gly Glu Ile Pro Glu Ile Leu Arg Gln Cys Arg
    450                 455                 460

Thr Val Phe Val Pro Lys Val Glu Arg Pro Gly Gly Pro Gly Glu Tyr
465                 470                 475                 480

Arg Pro Ile Ser Ile Ala Ser Ile Pro Leu Arg His Phe His Ser Ile
                485                 490                 495
```

```
Leu Ala Arg Arg Leu Leu Ala Cys Cys Pro Pro Asp Ala Arg Gln Arg
            500                 505                 510

Gly Phe Ile Cys Ala Asp Gly Thr Leu Glu Asn Ser Ala Val Leu Asp
        515                 520                 525

Ala Val Leu Gly Asp Ser Arg Lys Lys Leu Arg Glu Cys His Val Ala
    530                 535                 540

Val Leu Asp Phe Ala Lys Ala Phe Asp Thr Val Ser His Glu Ala Leu
545                 550                 555                 560

Val Glu Leu Leu Arg Leu Arg Gly Met Pro Glu Gln Phe Cys Gly Tyr
                565                 570                 575

Ile Ala His Leu Tyr Asp Thr Ala Ser Thr Thr Leu Ala Val Asn Asn
            580                 585                 590

Glu Met Ser Ser Pro Val Lys Val Gly Arg Gly Val Arg Gln Gly Asp
        595                 600                 605

Pro Leu Ser Pro Ile Leu Phe Asn Val Val Met Asp Leu Ile Leu Ala
    610                 615                 620

Ser Leu Pro Glu Arg Val Gly Tyr Arg Leu Glu Met Glu Leu Val Ser
625                 630                 635                 640

Ala Leu Ala Tyr Ala Asp Asp Leu Val Leu Leu Ala Gly Ser Lys Val
                645                 650                 655

Gly Met Gln Glu Ser Ile Ser Ala Val Asp Cys Val Gly Arg Gln Met
            660                 665                 670

Gly Leu Arg Leu Asn Cys Arg Lys Ser Ala Val Leu Ser Met Ile Pro
        675                 680                 685

Asp Gly His Arg Lys Lys His His Tyr Leu Thr Glu Arg Thr Phe Asn
    690                 695                 700
```

```
Ile Gly Gly Lys Pro Leu Arg Gln Val Ser Cys Val Glu Arg Trp Arg
705                 710                 715                 720

Tyr Leu Gly Val Asp Phe Glu Ala Ser Gly Cys Val Thr Leu Glu His
                725                 730                 735

Ser Ile Ser Ser Ala Leu Asn Asn Ile Ser Arg Ala Pro Leu Lys Pro
            740                 745                 750

Gln Gln Arg Leu Glu Ile Leu Arg Ala His Leu Ile Pro Arg Phe Gln
        755                 760                 765

His Gly Phe Val Leu Gly Asn Ile Ser Asp Asp Arg Leu Arg Met Leu
    770                 775                 780

Asp Val Gln Ile Arg Lys Ala Val Gly Gln Trp Leu Arg Leu Pro Ala
785                 790                 795                 800

Asp Val Pro Lys Ala Tyr Tyr His Ala Ala Val Gln Asp Gly Gly Leu
                805                 810                 815

Ala Ile Pro Ser Val Arg Ala Thr Ile Pro Asp Leu Ile Val Arg Arg
            820                 825                 830

Phe Gly Gly Leu Asp Ser Ser Pro Trp Ser Val Ala Arg Ala Ala Ala
        835                 840                 845

Lys Ser Asp Lys Ile Arg Lys Lys Leu Arg Trp Ala Trp Lys Gln Leu
    850                 855                 860

Arg Arg Phe Ser Arg Val Asp Ser Thr Thr Gln Arg Pro Ser Val Arg
865                 870                 875                 880

Leu Phe Trp Arg Glu His Leu His Ala Ser Val Asp Gly Arg Glu Leu
                885                 890                 895

Arg Glu Ser Thr Arg Thr Pro Thr Ser Thr Lys Trp Ile Arg Glu Arg
            900                 905                 910
```

```
Cys Ala Gln Ile Thr Gly Arg Asp Phe Val Gln Phe Val His Thr His
        915                 920                 925

Ile Asn Ala Leu Pro Ser Arg Ile Arg Gly Ser Arg Gly Arg Arg Gly
    930                 935                 940

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

Thr Thr Ala His Ile Leu Gln Gln Cys Tyr Arg Thr His Gly Gly Arg
                965                 970                 975

Ile Leu Arg His Asn Lys Ile Val Ser Phe Val Ala Lys Ala Met Glu
            980                 985                 990

Glu Asn Lys Trp Thr Val Glu Leu  Glu Pro Arg Leu Arg  Thr Ser Val
        995                 1000                1005

Gly Leu  Arg Lys Pro Asp Ile  Ile Ala Ser Arg Asp  Gly Val Gly
    1010                1015                1020

Val Ile  Val Asp Val Gln Val  Val Ser Gly Gln Arg  Ser Leu Asp
    1025                1030                1035

Glu Leu  His Arg Glu Lys Arg  Asn Lys Tyr Gly Asn  His Gly Glu
    1040                1045                1050

Leu Val  Glu Leu Val Ala Gly  Arg Leu Gly Leu Pro  Lys Ala Glu
    1055                1060                1065

Cys Val  Arg Ala Thr Ser Cys  Thr Ile Ser Trp Arg  Gly Val Trp
    1070                1075                1080

Ser Leu  Thr Ser Tyr Lys Glu  Leu Arg Ser Ile Ile  Gly Leu Arg
    1085                1090                1095

Glu Pro  Thr Leu Gln Ile Val  Pro Ile Leu Ala Leu  Arg Gly Ser
    1100                1105                1110
```

His Met Asn Trp Thr Arg Phe Asn Gln Met Thr Ser Val Met Gly
    1115   1120   1125

Gly Gly Val Gly
    1130

<210> 58
<211> 1132
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      polypeptide

<400> 58
Met Ala His His His His His His Val Gly Thr Val Gly Thr Gly Gly
1   5   10   15

Gly Ser Gly Gly Ala Ser Thr Ala Leu Ser Leu Met Gly Arg Cys Asn
            20   25   30

Pro Asp Gly Cys Thr Arg Gly Lys His Val Thr Ala Ala Pro Met Asp
        35   40   45

Gly Pro Arg Gly Pro Ser Ser Leu Ala Gly Thr Phe Gly Trp Gly Leu
    50   55   60

Ala Ile Pro Ala Gly Glu Pro Cys Gly Arg Val Cys Ser Pro Ala Thr
65   70   75   80

Val Gly Phe Phe Pro Val Ala Lys Lys Ser Asn Lys Glu Asn Arg Pro
                85   90   95

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

Thr Val Arg Gly Ser Ala Gly Ala Asp Pro Val Gly Gln Asp Ala Pro
        115   120   125

```
Gly Trp Thr Cys Gln Phe Cys Glu Arg Thr Phe Ser Thr Asn Arg Gly
    130                 135                 140

Leu Gly Val His Lys Arg Arg Ala His Pro Val Glu Thr Asn Thr Asp
145                 150                 155                 160

Ala Ala Pro Met Met Val Lys Arg Arg Trp His Gly Glu Glu Ile Asp
                165                 170                 175

Leu Leu Ala Arg Thr Glu Ala Arg Leu Leu Ala Glu Arg Gly Gln Cys
            180                 185                 190

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

Glu Ala Ile Lys Gly Gln Arg Arg Arg Glu Pro Tyr Arg Ala Leu Val
    210                 215                 220

Gln Ala His Leu Ala Arg Phe Gly Ser Gln Pro Gly Pro Ser Ser Gly
225                 230                 235                 240

Gly Cys Ser Ala Glu Pro Asp Phe Arg Arg Ala Ser Gly Ala Glu Glu
                245                 250                 255

Ala Gly Glu Glu Arg Cys Ala Glu Asp Ala Ala Ala Tyr Asp Pro Ser
            260                 265                 270

Ala Val Gly Gln Met Ser Pro Asp Ala Ala Arg Val Leu Ser Glu Leu
        275                 280                 285

Leu Glu Gly Ala Gly Arg Arg Arg Ala Cys Arg Ala Met Arg Pro Lys
    290                 295                 300

Thr Ala Gly Arg Arg Asn Asp Leu His Asp Asp Arg Thr Ala Ser Ala
305                 310                 315                 320

His Lys Thr Ser Arg Gln Lys Arg Arg Ala Glu Tyr Ala Arg Val Gln
                325                 330                 335
```

```
Glu Leu Tyr Lys Lys Cys Arg Ser Arg Ala Ala Ala Glu Val Ile Asp
            340                 345                 350

Gly Ala Cys Gly Gly Val Gly His Ser Leu Glu Glu Met Glu Thr Tyr
        355                 360                 365

Trp Arg Pro Ile Leu Glu Arg Val Ser Asp Ala Pro Gly Pro Thr Pro
    370                 375                 380

Glu Ala Leu His Ala Leu Gly Arg Ala Glu Trp His Gly Gly Asn Arg
385                 390                 395                 400

Asp Tyr Thr Gln Leu Trp Lys Pro Ile Ser Val Glu Glu Ile Lys Ala
                405                 410                 415

Ser Arg Phe Asp Trp Arg Thr Ser Pro Gly Pro Asp Gly Ile Arg Ser
            420                 425                 430

Gly Gln Trp Arg Ala Val Pro Val His Leu Lys Ala Glu Met Phe Asn
        435                 440                 445

Ala Trp Met Ala Arg Gly Glu Ile Pro Glu Ile Leu Arg Gln Cys Arg
    450                 455                 460

Thr Val Phe Val Pro Lys Val Glu Arg Pro Gly Gly Pro Gly Glu Tyr
465                 470                 475                 480

Arg Pro Ile Ser Ile Ala Ser Ile Pro Leu Arg His Phe His Ser Ile
                485                 490                 495

Leu Ala Arg Arg Leu Leu Ala Cys Cys Pro Pro Asp Ala Arg Gln Arg
            500                 505                 510

Gly Phe Ile Cys Ala Asp Gly Thr Leu Glu Asn Ser Ala Val Leu Asp
        515                 520                 525

Ala Val Leu Gly Asp Ser Arg Lys Lys Leu Arg Glu Cys His Val Ala
    530                 535                 540
```

```
Val Leu Asp Phe Ala Lys Ala Phe Asp Thr Val Ser His Glu Ala Leu
545                 550                 555                 560


Val Glu Leu Leu Arg Leu Arg Gly Met Pro Glu Gln Phe Cys Gly Tyr
                565                 570                 575


Ile Ala His Leu Tyr Asp Thr Ala Ser Thr Thr Leu Ala Val Asn Asn
            580                 585                 590


Glu Met Ser Ser Pro Val Lys Val Gly Arg Gly Val Arg Gln Gly Asp
        595                 600                 605


Pro Leu Ser Pro Ile Leu Phe Asn Val Val Met Asp Leu Ile Leu Ala
    610                 615                 620


Ser Leu Pro Glu Arg Val Gly Tyr Arg Leu Glu Met Glu Leu Val Ser
625                 630                 635                 640


Ala Leu Ala Tyr Ala Asp Asp Leu Val Leu Leu Ala Gly Ser Lys Val
                645                 650                 655


Gly Met Gln Glu Ser Ile Ser Ala Val Asp Cys Val Gly Arg Gln Met
            660                 665                 670


Gly Leu Arg Leu Asn Cys Arg Lys Ser Ala Val Leu Ser Met Ile Pro
        675                 680                 685


Asp Gly His Arg Lys Lys His His Tyr Leu Thr Glu Arg Thr Phe Asn
    690                 695                 700


Ile Gly Gly Lys Pro Leu Arg Gln Val Ser Cys Val Glu Arg Trp Arg
705                 710                 715                 720


Tyr Leu Gly Val Asp Phe Glu Ala Ser Gly Cys Val Thr Leu Glu His
                725                 730                 735


Ser Ile Ser Ser Ala Leu Asn Asn Ile Ser Arg Ala Pro Leu Lys Pro
            740                 745                 750
```

```
Gln Gln Arg Leu Glu Ile Leu Arg Ala His Leu Ile Pro Arg Phe Gln
        755                 760                 765

His Gly Phe Val Leu Gly Asn Ile Ser Asp Asp Arg Leu Arg Met Leu
    770                 775                 780

Asp Val Gln Ile Arg Lys Ala Val Gly Gln Trp Leu Arg Leu Pro Ala
785                 790                 795                 800

Asp Val Pro Lys Ala Tyr Tyr His Ala Ala Val Gln Asp Gly Gly Leu
                805                 810                 815

Ala Ile Pro Ser Val Arg Ala Thr Ile Pro Asp Leu Ile Val Arg Arg
            820                 825                 830

Phe Gly Gly Leu Asp Ser Ser Pro Trp Ser Val Ala Arg Ala Ala Ala
        835                 840                 845

Lys Ser Asp Lys Ile Arg Lys Lys Leu Arg Trp Ala Trp Lys Gln Leu
    850                 855                 860

Arg Arg Phe Ser Arg Val Asp Ser Thr Thr Gln Arg Pro Ser Val Arg
865                 870                 875                 880

Leu Phe Trp Arg Glu His Leu His Ala Ser Val Asp Gly Arg Glu Leu
                885                 890                 895

Arg Glu Ser Thr Arg Thr Pro Thr Ser Thr Lys Trp Ile Arg Glu Arg
            900                 905                 910

Cys Ala Gln Ile Thr Gly Arg Asp Phe Val Gln Phe Val His Thr His
        915                 920                 925

Ile Asn Ala Leu Pro Ser Arg Ile Arg Gly Ser Arg Gly Arg Arg Gly
    930                 935                 940

Gly Gly Glu Ser Ser Leu Thr Cys Arg Ala Gly Cys Lys Val Arg Glu
945                 950                 955                 960
```

Thr Thr Ala His Ile Leu Gln Gln Cys His Arg Thr His Gly Gly Arg
965 970 975

Ile Leu Gln His Asn Lys Ile Val Ser Phe Val Ala Lys Ala Met Glu
980 985 990

Glu Asn Lys Trp Thr Val Glu Leu Glu Pro Arg Leu Arg Thr Ser Val
995 1000 1005

Gly Leu Arg Lys Pro Asp Ile Ile Ala Ser Arg Asp Gly Val Gly
1010 1015 1020

Val Ile Val Asp Val Gln Val Val Ser Gly Gln Arg Ser Leu Asp
1025 1030 1035

Glu Leu His Arg Glu Lys Arg Asn Lys Tyr Gly Asn His Gly Glu
1040 1045 1050

Leu Val Glu Leu Val Ala Gly Arg Leu Gly Leu Pro Lys Ala Glu
1055 1060 1065

Cys Val Arg Ala Thr Ser Cys Thr Ile Ser Trp Arg Gly Val Trp
1070 1075 1080

Ser Leu Thr Ser Tyr Lys Glu Leu Arg Ser Ile Ile Gly Leu Arg
1085 1090 1095

Glu Pro Thr Leu Gln Ile Val Pro Ile Leu Ala Leu Arg Gly Ser
1100 1105 1110

His Met Asn Trp Thr Arg Phe Asn Gln Met Thr Ser Val Met Gly
1115 1120 1125

Gly Gly Val Gly
1130

<210> 59
<211> 1132
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
polypeptide

<400> 59
Met Ala His His His His His His Val Gly Thr Val Gly Thr Gly Gly
1 5 10 15

Gly Ser Gly Gly Ala Ser Thr Ala Leu Ser Leu Met Gly Arg Cys Asn
20 25 30

Pro Asp Gly Cys Thr Arg Gly Lys His Val Thr Ala Ala Pro Met Asp
35 40 45

Gly Pro Arg Gly Pro Ser Ser Leu Ala Gly Thr Phe Gly Trp Gly Leu
50 55 60

Ala Ile Pro Ala Gly Glu Pro Cys Gly Arg Val Cys Ser Pro Ala Thr
65 70 75 80

Val Gly Phe Phe Pro Val Ala Lys Lys Ser Asn Lys Glu Asn Arg Pro
85 90 95

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

Thr Val Arg Gly Ser Ala Gly Ala Asp Pro Val Gly Gln Asp Ala Pro
115 120 125

Gly Trp Thr Cys Gln Phe Cys Glu Arg Thr Phe Ser Thr Asn Arg Gly
130 135 140

Leu Gly Val His Lys Arg Arg Ala His Pro Val Glu Thr Asn Thr Asp
145 150 155 160

Ala Ala Pro Met Met Val Lys Arg Arg Trp His Gly Glu Glu Ile Asp
165 170 175

Leu Leu Ala Arg Thr Glu Ala Arg Leu Leu Ala Glu Arg Gly Gln Cys
180 185 190

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

Glu Ala Ile Lys Gly Gln Arg Arg Arg Glu Pro Tyr Arg Ala Leu Val
    210                 215                 220

Gln Ala His Leu Ala Arg Phe Gly Ser Gln Pro Gly Pro Ser Ser Gly
225                 230                 235                 240

Gly Cys Ser Ala Glu Pro Asp Phe Arg Arg Ala Ser Gly Ala Glu Glu
                245                 250                 255

Ala Gly Glu Glu Arg Cys Ala Glu Asp Ala Ala Ala Tyr Asp Pro Ser
            260                 265                 270

Ala Val Gly Gln Met Ser Pro Asp Ala Ala Arg Val Leu Ser Glu Leu
        275                 280                 285

Leu Glu Gly Ala Gly Arg Arg Arg Ala Cys Arg Ala Met Arg Pro Lys
    290                 295                 300

Thr Ala Gly Arg Arg Asn Asp Leu His Asp Asp Arg Thr Ala Ser Ala
305                 310                 315                 320

His Lys Thr Ser Arg Gln Lys Arg Arg Ala Glu Tyr Ala Arg Val Gln
                325                 330                 335

Glu Leu Tyr Lys Lys Cys Arg Ser Arg Ala Ala Ala Glu Val Ile Asp
            340                 345                 350

Gly Ala Cys Gly Gly Val Gly His Ser Leu Glu Glu Met Glu Thr Tyr
        355                 360                 365

Trp Arg Pro Ile Leu Glu Arg Val Ser Asp Ala Pro Gly Pro Thr Pro
    370                 375                 380

Glu Ala Leu His Ala Leu Gly Arg Ala Glu Trp His Gly Gly Asn Arg
385                 390                 395                 400
```

```
Asp Tyr Thr Gln Leu Trp Lys Pro Ile Ser Val Glu Glu Ile Lys Ala
                405                 410                 415

Ser Arg Phe Asp Trp Arg Thr Ser Pro Gly Pro Asp Gly Ile Arg Ser
            420                 425                 430

Gly Gln Trp Arg Ala Val Pro Val His Leu Lys Ala Glu Met Phe Asn
        435                 440                 445

Ala Trp Met Ala Arg Gly Glu Ile Pro Glu Ile Leu Arg Gln Cys Arg
    450                 455                 460

Thr Val Phe Val Pro Lys Val Glu Arg Pro Gly Gly Pro Gly Glu Tyr
465                 470                 475                 480

Arg Pro Ile Ser Ile Ala Ser Ile Pro Leu Arg His Phe His Ser Ile
                485                 490                 495

Leu Ala Arg Arg Leu Leu Ala Cys Cys Pro Pro Asp Ala Arg Gln Arg
            500                 505                 510

Gly Phe Ile Cys Ala Asp Gly Thr Leu Glu Asn Ser Ala Val Leu Asp
        515                 520                 525

Ala Val Leu Gly Asp Ser Arg Lys Lys Leu Arg Glu Cys His Val Ala
    530                 535                 540

Val Leu Asp Phe Ala Lys Ala Phe Asp Thr Val Ser His Glu Ala Leu
545                 550                 555                 560

Val Glu Leu Leu Arg Leu Arg Gly Met Pro Glu Gln Phe Cys Gly Tyr
                565                 570                 575

Ile Ala His Leu Tyr Asp Thr Ala Ser Thr Thr Leu Ala Val Asn Asn
            580                 585                 590

Glu Met Ser Ser Pro Val Lys Val Gly Arg Gly Val Arg Gln Gly Asp
        595                 600                 605
```

```
Pro Leu Ser Pro Ile Leu Phe Asn Val Val Met Asp Leu Ile Leu Ala
    610                 615                 620

Ser Leu Pro Glu Arg Val Gly Tyr Arg Leu Glu Met Glu Leu Val Ser
625                 630                 635                 640

Ala Leu Ala Tyr Ala Asp Asp Leu Val Leu Leu Ala Gly Ser Lys Val
                645                 650                 655

Gly Met Gln Glu Ser Ile Ser Ala Val Asp Cys Val Gly Arg Gln Met
            660                 665                 670

Gly Leu Arg Leu Asn Cys Arg Lys Ser Ala Val Leu Ser Met Ile Pro
        675                 680                 685

Asp Gly His Arg Lys Lys His His Tyr Leu Thr Glu Arg Thr Phe Asn
    690                 695                 700

Ile Gly Gly Lys Pro Leu Arg Gln Val Ser Cys Val Glu Arg Trp Arg
705                 710                 715                 720

Tyr Leu Gly Val Asp Phe Glu Ala Ser Gly Cys Val Thr Leu Glu His
                725                 730                 735

Ser Ile Ser Ser Ala Leu Asn Asn Ile Ser Arg Ala Pro Leu Lys Pro
            740                 745                 750

Gln Gln Arg Leu Glu Ile Leu Arg Ala His Leu Ile Pro Arg Phe Gln
        755                 760                 765

His Gly Phe Val Leu Gly Asn Ile Ser Asp Asp Arg Leu Arg Met Leu
    770                 775                 780

Asp Val Gln Ile Arg Lys Ala Val Gly Gln Trp Leu Arg Leu Pro Ala
785                 790                 795                 800

Asp Val Pro Lys Ala Tyr Tyr His Ala Ala Val Gln Asp Gly Gly Leu
                805                 810                 815
```

```
Ala Ile Pro Ser Val Arg Ala Thr Ile Pro Asp Leu Ile Val Arg Arg
            820                 825                 830

Phe Gly Gly Leu Asp Ser Ser Pro Trp Ser Val Ala Arg Ala Ala Ala
        835                 840                 845

Lys Ser Asp Lys Ile Arg Lys Lys Leu Arg Trp Ala Trp Lys Gln Leu
    850                 855                 860

Arg Arg Phe Ser Arg Val Asp Ser Thr Thr Gln Arg Pro Ser Val Arg
865                 870                 875                 880

Leu Phe Trp Arg Glu His Leu His Ala Ser Val Asp Gly Arg Glu Leu
                885                 890                 895

Arg Glu Ser Thr Arg Thr Pro Thr Ser Thr Lys Trp Ile Arg Glu Arg
            900                 905                 910

Cys Ala Gln Ile Thr Gly Arg Asp Phe Val Gln Phe Val His Thr His
        915                 920                 925

Ile Asn Ala Leu Pro Ser Arg Ile Arg Gly Ser Arg Gly Arg Arg Gly
    930                 935                 940

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

Thr Thr Ala His Ile Leu Gln Gln Cys His Arg Thr His Gly Gly Gln
                965                 970                 975

Ile Leu Arg His Asn Lys Ile Val Ser Phe Val Ala Lys Ala Met Glu
            980                 985                 990

Glu Asn Lys Trp Thr Val Glu Leu  Glu Pro Arg Leu Arg  Thr Ser Val
        995                 1000                1005

Gly Leu  Arg Lys Pro Asp Ile  Ile Ala Ser Arg Asp  Gly Val Gly
    1010                1015                1020
```

Val Ile Val Asp Val Gln Val Val Ser Gly Gln Arg Ser Leu Asp
    1025   1030   1035

Glu Leu His Arg Glu Lys Arg Asn Lys Tyr Gly Asn His Gly Glu
    1040   1045   1050

Leu Val Glu Leu Val Ala Gly Arg Leu Gly Leu Pro Lys Ala Glu
    1055   1060   1065

Cys Val Arg Ala Thr Ser Cys Thr Ile Ser Trp Arg Gly Val Trp
    1070   1075   1080

Ser Leu Thr Ser Tyr Lys Glu Leu Arg Ser Ile Ile Gly Leu Arg
    1085   1090   1095

Glu Pro Thr Leu Gln Ile Val Pro Ile Leu Ala Leu Arg Gly Ser
    1100   1105   1110

His Met Asn Trp Thr Arg Phe Asn Gln Met Thr Ser Val Met Gly
    1115   1120   1125

Gly Gly Val Gly
    1130

<210> 60
<211> 1132
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      polypeptide

<400> 60
Met Ala His His His His His His Val Gly Thr Val Gly Thr Gly Gly
1   5   10   15

Gly Ser Gly Gly Ala Ser Thr Ala Leu Ser Leu Met Gly Arg Cys Asn
            20   25   30

```
Pro Asp Gly Cys Thr Arg Gly Lys His Val Thr Ala Ala Pro Met Asp
        35                  40                  45

Gly Pro Arg Gly Pro Ser Ser Leu Ala Gly Thr Phe Gly Trp Gly Leu
    50                  55                  60

Ala Ile Pro Ala Gly Glu Pro Cys Gly Arg Val Cys Ser Pro Ala Thr
65                  70                  75                  80

Val Gly Phe Phe Pro Val Ala Lys Lys Ser Asn Lys Glu Asn Arg Pro
                85                  90                  95

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

Thr Val Arg Gly Ser Ala Gly Ala Asp Pro Val Gly Gln Asp Ala Pro
        115                 120                 125

Gly Trp Thr Cys Gln Phe Cys Glu Arg Thr Phe Ser Thr Asn Arg Gly
    130                 135                 140

Leu Gly Val His Lys Arg Arg Ala His Pro Val Glu Thr Asn Thr Asp
145                 150                 155                 160

Ala Ala Pro Met Met Val Lys Arg Arg Trp His Gly Glu Glu Ile Asp
                165                 170                 175

Leu Leu Ala Arg Thr Glu Ala Arg Leu Leu Ala Glu Arg Gly Gln Cys
            180                 185                 190

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

Glu Ala Ile Lys Gly Gln Arg Arg Arg Glu Pro Tyr Arg Ala Leu Val
    210                 215                 220

Gln Ala His Leu Ala Arg Phe Gly Ser Gln Pro Gly Pro Ser Ser Gly
225                 230                 235                 240
```

```
Gly Cys Ser Ala Glu Pro Asp Phe Arg Arg Ala Ser Gly Ala Glu Glu
                245                 250                 255

Ala Gly Glu Glu Arg Cys Ala Glu Asp Ala Ala Ala Tyr Asp Pro Ser
            260                 265                 270

Ala Val Gly Gln Met Ser Pro Asp Ala Ala Arg Val Leu Ser Glu Leu
        275                 280                 285

Leu Glu Gly Ala Gly Arg Arg Arg Ala Cys Arg Ala Met Arg Pro Lys
    290                 295                 300

Thr Ala Gly Arg Arg Asn Asp Leu His Asp Asp Arg Thr Ala Ser Ala
305                 310                 315                 320

His Lys Thr Ser Arg Gln Lys Arg Arg Ala Glu Tyr Ala Arg Val Gln
                325                 330                 335

Glu Leu Tyr Lys Lys Cys Arg Ser Arg Ala Ala Ala Glu Val Ile Asp
            340                 345                 350

Gly Ala Cys Gly Gly Val Gly His Ser Leu Glu Glu Met Glu Thr Tyr
        355                 360                 365

Trp Arg Pro Ile Leu Glu Arg Val Ser Asp Ala Pro Gly Pro Thr Pro
    370                 375                 380

Glu Ala Leu His Ala Leu Gly Arg Ala Glu Trp His Gly Gly Asn Arg
385                 390                 395                 400

Asp Tyr Thr Gln Leu Trp Lys Pro Ile Ser Val Glu Glu Ile Lys Ala
                405                 410                 415

Ser Arg Phe Asp Trp Arg Thr Ser Pro Gly Pro Asp Gly Ile Arg Ser
            420                 425                 430

Gly Gln Trp Arg Ala Val Pro Val His Leu Lys Ala Glu Met Phe Asn
        435                 440                 445
```

```
Ala Trp Met Ala Arg Gly Glu Ile Pro Glu Ile Leu Arg Gln Cys Arg
    450                 455                 460

Thr Val Phe Val Pro Lys Val Glu Arg Pro Gly Gly Pro Gly Glu Tyr
465                 470                 475                 480

Arg Pro Ile Ser Ile Ala Ser Ile Pro Leu Arg His Phe His Ser Ile
                485                 490                 495

Leu Ala Arg Arg Leu Leu Ala Cys Cys Pro Pro Asp Ala Arg Gln Arg
            500                 505                 510

Gly Phe Ile Cys Ala Asp Gly Thr Leu Glu Asn Ser Ala Val Leu Asp
        515                 520                 525

Ala Val Leu Gly Asp Ser Arg Lys Lys Leu Arg Glu Cys His Val Ala
    530                 535                 540

Val Leu Asp Phe Ala Lys Ala Phe Asp Thr Val Ser His Glu Ala Leu
545                 550                 555                 560

Val Glu Leu Leu Arg Leu Arg Gly Met Pro Glu Gln Phe Cys Gly Tyr
                565                 570                 575

Ile Ala His Leu Tyr Asp Thr Ala Ser Thr Thr Leu Ala Val Asn Asn
            580                 585                 590

Glu Met Ser Ser Pro Val Lys Val Gly Arg Gly Val Arg Gln Gly Asp
        595                 600                 605

Pro Leu Ser Pro Ile Leu Phe Asn Val Val Met Asp Leu Ile Leu Ala
    610                 615                 620

Ser Leu Pro Glu Arg Val Gly Tyr Arg Leu Glu Met Glu Leu Val Ser
625                 630                 635                 640

Ala Leu Ala Tyr Ala Asp Asp Leu Val Leu Leu Ala Gly Ser Lys Val
                645                 650                 655
```

```
Gly Met Gln Glu Ser Ile Ser Ala Val Asp Cys Val Gly Arg Gln Met
            660                 665                 670

Gly Leu Arg Leu Asn Cys Arg Lys Ser Ala Val Leu Ser Met Ile Pro
        675                 680                 685

Asp Gly His Arg Lys Lys His His Tyr Leu Thr Glu Arg Thr Phe Asn
    690                 695                 700

Ile Gly Gly Lys Pro Leu Arg Gln Val Ser Cys Val Glu Arg Trp Arg
705                 710                 715                 720

Tyr Leu Gly Val Asp Phe Glu Ala Ser Gly Cys Val Thr Leu Glu His
                725                 730                 735

Ser Ile Ser Ser Ala Leu Asn Asn Ile Ser Arg Ala Pro Leu Lys Pro
            740                 745                 750

Gln Gln Arg Leu Glu Ile Leu Arg Ala His Leu Ile Pro Arg Phe Gln
        755                 760                 765

His Gly Phe Val Leu Gly Asn Ile Ser Asp Asp Arg Leu Arg Met Leu
    770                 775                 780

Asp Val Gln Ile Arg Lys Ala Val Gly Gln Trp Leu Arg Leu Pro Ala
785                 790                 795                 800

Asp Val Pro Lys Ala Tyr Tyr His Ala Ala Val Gln Asp Gly Gly Leu
                805                 810                 815

Ala Ile Pro Ser Val Arg Ala Thr Ile Pro Asp Leu Ile Val Arg Arg
            820                 825                 830

Phe Gly Gly Leu Asp Ser Ser Pro Trp Ser Val Ala Arg Ala Ala Ala
        835                 840                 845

Lys Ser Asp Lys Ile Arg Lys Lys Leu Arg Trp Ala Trp Lys Gln Leu
    850                 855                 860
```

```
Arg Arg Phe Ser Arg Val Asp Ser Thr Thr Gln Arg Pro Ser Val Arg
865                 870                 875                 880


Leu Phe Trp Arg Glu His Leu His Ala Ser Val Asp Gly Arg Glu Leu
                885                 890                 895


Arg Glu Ser Thr Arg Thr Pro Thr Ser Thr Lys Trp Ile Arg Glu Arg
            900                 905                 910


Cys Ala Gln Ile Thr Gly Arg Asp Phe Val Gln Phe Val His Thr His
        915                 920                 925


Ile Asn Ala Leu Pro Ser Arg Ile Arg Gly Ser Arg Gly Arg Arg Gly
    930                 935                 940


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


Thr Thr Ala His Ile Leu Gln Gln Cys His Arg Thr His Gly Gly Arg
                965                 970                 975


Ile Leu Arg His Asn Lys Ile Val Ser Phe Val Ala Lys Ala Met Glu
            980                 985                 990


Glu Asn Lys Trp Thr Val Glu Leu  Glu Pro Arg Leu Arg  Thr Ser Val
        995                 1000                1005


Gly Leu  Arg Lys Pro Asp Ile  Ile Ala Ser Arg Asp  Gly Val Gly
    1010                1015                1020


Val Ile  Val Asp Val Gln Val  Val Ser Gly Gln Arg  Ser Leu Asp
    1025                1030                1035


Glu Leu  His Arg Glu Lys Arg  Asn Lys Tyr Gly Asn  His Gly Glu
    1040                1045                1050


Leu Val  Glu Leu Val Ala Gly  Arg Leu Gly Leu Pro  Lys Ala Glu
    1055                1060                1065
```

Cys Val Ser Ala Thr Ser Cys Thr Ile Ser Trp Arg Gly Val Trp
1070 1075 1080

Ser Leu Thr Ser Tyr Lys Glu Leu Arg Ser Ile Ile Gly Leu Arg
1085 1090 1095

Glu Pro Thr Leu Gln Ile Val Pro Ile Leu Ala Leu Arg Gly Ser
1100 1105 1110

His Met Asn Trp Thr Arg Phe Asn Gln Met Thr Ser Val Met Gly
1115 1120 1125

Gly Gly Val Gly
1130

<210> 61
<211> 1132
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polypeptide

<400> 61
Met Ala His His His His His His Val Gly Thr Val Gly Thr Gly Gly
1 5 10 15

Gly Ser Gly Gly Ala Ser Thr Ala Leu Ser Leu Met Gly Arg Cys Asn
20 25 30

Pro Asp Gly Cys Thr Arg Gly Lys His Val Thr Ala Ala Pro Met Asp
35 40 45

Gly Pro Arg Gly Pro Ser Ser Leu Ala Gly Thr Phe Gly Trp Gly Leu
50 55 60

Ala Ile Pro Ala Gly Glu Pro Cys Gly Arg Val Cys Ser Pro Ala Thr
65 70 75 80

Val Gly Phe Phe Pro Val Ala Lys Lys Ser Asn Lys Glu Asn Arg Pro
85 90 95

```
Glu Ala Ser Gly Leu Pro Leu Glu Ser Glu Arg Thr Gly Asp Asn Pro
            100                 105                 110

Thr Val Arg Gly Ser Ala Gly Ala Asp Pro Val Gly Gln Asp Ala Pro
        115                 120                 125

Gly Trp Thr Cys Gln Phe Cys Glu Arg Thr Phe Ser Thr Asn Arg Gly
    130                 135                 140

Leu Gly Val His Lys Arg Arg Ala His Pro Val Glu Thr Asn Thr Asp
145                 150                 155                 160

Ala Ala Pro Met Met Val Lys Arg Arg Trp His Gly Glu Glu Ile Asp
                165                 170                 175

Leu Leu Ala Arg Thr Glu Ala Arg Leu Leu Ala Glu Arg Gly Gln Cys
            180                 185                 190

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

Glu Ala Ile Lys Gly Gln Arg Arg Arg Glu Pro Tyr Arg Ala Leu Val
    210                 215                 220

Gln Ala His Leu Ala Arg Phe Gly Ser Gln Pro Gly Pro Ser Ser Gly
225                 230                 235                 240

Gly Cys Ser Ala Glu Pro Asp Phe Arg Arg Ala Ser Gly Ala Glu Glu
                245                 250                 255

Ala Gly Glu Glu Arg Cys Ala Glu Asp Ala Ala Ala Tyr Asp Pro Ser
            260                 265                 270

Ala Val Gly Gln Met Ser Pro Asp Ala Ala Arg Val Leu Ser Glu Leu
        275                 280                 285

Leu Glu Gly Ala Gly Arg Arg Arg Ala Cys Arg Ala Met Arg Pro Lys
    290                 295                 300
```

```
Thr Ala Gly Arg Arg Asn Asp Leu His Asp Asp Arg Thr Ala Ser Ala
305                 310                 315                 320

His Lys Thr Ser Arg Gln Lys Ala Arg Ala Glu Tyr Ala Arg Val Gln
                325                 330                 335

Glu Leu Tyr Lys Lys Cys Arg Ser Arg Ala Ala Ala Glu Val Ile Asp
            340                 345                 350

Gly Ala Cys Gly Gly Val Gly His Ser Leu Glu Glu Met Glu Thr Tyr
        355                 360                 365

Trp Arg Pro Ile Leu Glu Arg Val Ser Asp Ala Pro Gly Pro Thr Pro
    370                 375                 380

Glu Ala Leu His Ala Leu Gly Arg Ala Glu Trp His Gly Gly Asn Arg
385                 390                 395                 400

Asp Tyr Thr Gln Leu Trp Lys Pro Ile Ser Val Glu Glu Ile Lys Ala
                405                 410                 415

Ser Arg Phe Asp Trp Arg Thr Ser Pro Gly Pro Asp Gly Ile Arg Ser
            420                 425                 430

Gly Gln Trp Arg Ala Val Pro Val His Leu Lys Ala Glu Met Phe Asn
        435                 440                 445

Ala Trp Met Ala Arg Gly Glu Ile Pro Glu Ile Leu Arg Gln Cys Arg
    450                 455                 460

Thr Val Phe Val Pro Lys Val Glu Arg Pro Gly Gly Pro Gly Glu Tyr
465                 470                 475                 480

Arg Pro Ile Ser Ile Ala Ser Ile Pro Leu Arg His Phe His Ser Ile
                485                 490                 495

Leu Ala Arg Arg Leu Leu Ala Cys Cys Pro Pro Asp Ala Arg Gln Arg
            500                 505                 510
```

```
Gly Phe Ile Cys Ala Asp Gly Thr Leu Glu Asn Ser Ala Val Leu Asp
        515                 520                 525

Ala Val Leu Gly Asp Ser Arg Lys Lys Leu Arg Glu Cys His Val Ala
    530                 535                 540

Val Leu Asp Phe Ala Lys Ala Phe Asp Thr Val Ser His Glu Ala Leu
545                 550                 555                 560

Val Glu Leu Leu Arg Leu Arg Gly Met Pro Glu Gln Phe Cys Gly Tyr
                565                 570                 575

Ile Ala His Leu Tyr Asp Thr Ala Ser Thr Thr Leu Ala Val Asn Asn
            580                 585                 590

Glu Met Ser Ser Pro Val Lys Val Gly Arg Gly Val Arg Gln Gly Asp
        595                 600                 605

Pro Leu Ser Pro Ile Leu Phe Asn Val Val Met Asp Leu Ile Leu Ala
    610                 615                 620

Ser Leu Pro Glu Arg Val Gly Tyr Arg Leu Glu Met Glu Leu Val Ser
625                 630                 635                 640

Ala Leu Ala Tyr Ala Asp Asp Leu Val Leu Leu Ala Gly Ser Lys Val
                645                 650                 655

Gly Met Gln Glu Ser Ile Ser Ala Val Asp Cys Val Gly Arg Gln Met
            660                 665                 670

Gly Leu Arg Leu Asn Cys Arg Lys Ser Ala Val Leu Ser Met Ile Pro
        675                 680                 685

Asp Gly His Arg Lys Lys His His Tyr Leu Thr Glu Arg Thr Phe Asn
    690                 695                 700

Ile Gly Gly Lys Pro Leu Arg Gln Val Ser Cys Val Glu Arg Trp Arg
705                 710                 715                 720
```

```
Tyr Leu Gly Val Asp Phe Glu Ala Ser Gly Cys Val Thr Leu Glu His
                725                 730                 735

Ser Ile Ser Ser Ala Leu Asn Asn Ile Ser Arg Ala Pro Leu Lys Pro
            740                 745                 750

Gln Gln Arg Leu Glu Ile Leu Arg Ala His Leu Ile Pro Arg Phe Gln
        755                 760                 765

His Gly Phe Val Leu Gly Asn Ile Ser Asp Asp Arg Leu Arg Met Leu
    770                 775                 780

Asp Val Gln Ile Arg Lys Ala Val Gly Gln Trp Leu Arg Leu Pro Ala
785                 790                 795                 800

Asp Val Pro Lys Ala Tyr Tyr His Ala Ala Val Gln Asp Gly Gly Leu
                805                 810                 815

Ala Ile Pro Ser Val Arg Ala Thr Ile Pro Asp Leu Ile Val Arg Arg
            820                 825                 830

Phe Gly Gly Leu Asp Ser Ser Pro Trp Ser Val Ala Arg Ala Ala Ala
        835                 840                 845

Lys Ser Asp Lys Ile Arg Lys Lys Leu Arg Trp Ala Trp Lys Gln Leu
    850                 855                 860

Arg Arg Phe Ser Arg Val Asp Ser Thr Thr Gln Arg Pro Ser Val Arg
865                 870                 875                 880

Leu Phe Trp Arg Glu His Leu His Ala Ser Val Asp Gly Arg Glu Leu
                885                 890                 895

Arg Glu Ser Thr Arg Thr Pro Thr Ser Thr Lys Trp Ile Arg Glu Arg
            900                 905                 910

Cys Ala Gln Ile Thr Gly Arg Asp Phe Val Gln Phe Val His Thr His
        915                 920                 925
```

```
Ile Asn Ala Leu Pro Ser Arg Ile Arg Gly Ser Arg Gly Arg Arg Gly
    930                 935                 940

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

Thr Thr Ala His Ile Leu Gln Gln Cys His Arg Thr His Gly Gly Arg
                965                 970                 975

Ile Leu Arg His Asn Lys Ile Val Ser Phe Val Ala Lys Ala Met Glu
            980                 985                 990

Glu Asn Lys Trp Thr Val Glu Leu  Glu Pro Arg Leu Arg  Thr Ser Val
        995                 1000                1005

Gly Leu  Arg Lys Pro Asp Ile  Ile Ala Ser Arg Asp  Gly Val Gly
    1010                1015                1020

Val Ile  Val Asp Val Gln Val  Val Ser Gly Gln Arg  Ser Leu Asp
    1025                1030                1035

Glu Leu  His Arg Glu Lys Arg  Asn Lys Tyr Gly Asn  His Gly Glu
    1040                1045                1050

Leu Val  Glu Leu Val Ala Gly  Arg Leu Gly Leu Pro  Lys Ala Glu
    1055                1060                1065

Cys Val  Arg Ala Thr Ser Cys  Thr Ile Ser Trp Arg  Gly Val Trp
    1070                1075                1080

Ser Leu  Thr Ser Tyr Lys Glu  Leu Arg Ser Ile Ile  Gly Leu Arg
    1085                1090                1095

Glu Pro  Thr Leu Gln Ile Val  Pro Ile Leu Ala Leu  Arg Gly Ser
    1100                1105                1110

His Met  Asn Trp Thr Arg Phe  Asn Gln Met Thr Ser  Val Met Gly
    1115                1120                1125
```

Gly Gly Val Gly
    1130

<210> 62
<211> 1132
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      polypeptide

<400> 62
Met Ala His His His His His His Val Gly Thr Val Gly Thr Gly Gly
1   5   10   15

Gly Ser Gly Gly Ala Ser Thr Ala Leu Ser Leu Met Gly Arg Cys Asn
            20   25   30

Pro Asp Gly Cys Thr Arg Gly Lys His Val Thr Ala Ala Pro Met Asp
        35   40   45

Gly Pro Arg Gly Pro Ser Ser Leu Ala Gly Thr Phe Gly Trp Gly Leu
    50   55   60

Ala Ile Pro Ala Gly Glu Pro Cys Gly Arg Val Cys Ser Pro Ala Thr
65   70   75   80

Val Gly Phe Phe Pro Val Ala Lys Lys Ser Asn Lys Glu Asn Arg Pro
                85   90   95

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

Thr Val Arg Gly Ser Ala Gly Ala Asp Pro Val Gly Gln Asp Ala Pro
        115   120   125

Gly Trp Thr Cys Gln Phe Cys Glu Arg Thr Phe Ser Thr Asn Arg Gly
    130   135   140

```
Leu Gly Val His Lys Arg Arg Ala His Pro Val Glu Thr Asn Thr Asp
145                 150                 155                 160

Ala Ala Pro Met Met Val Lys Arg Arg Trp His Gly Glu Glu Ile Asp
                165                 170                 175

Leu Leu Ala Arg Thr Glu Ala Arg Leu Leu Ala Glu Arg Gly Gln Cys
            180                 185                 190

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

Glu Ala Ile Lys Gly Gln Arg Arg Arg Glu Pro Tyr Arg Ala Leu Val
    210                 215                 220

Gln Ala His Leu Ala Arg Phe Gly Ser Gln Pro Gly Pro Ser Ser Gly
225                 230                 235                 240

Gly Cys Ser Ala Glu Pro Asp Phe Arg Arg Ala Ser Gly Ala Glu Glu
                245                 250                 255

Ala Gly Glu Glu Arg Cys Ala Glu Asp Ala Ala Ala Tyr Asp Pro Ser
            260                 265                 270

Ala Val Gly Gln Met Ser Pro Asp Ala Ala Arg Val Leu Ser Glu Leu
        275                 280                 285

Leu Glu Gly Ala Gly Arg Arg Arg Ala Cys Arg Ala Met Arg Pro Lys
    290                 295                 300

Thr Ala Gly Arg Arg Asn Asp Leu His Asp Asp Arg Thr Ala Ser Ala
305                 310                 315                 320

His Lys Thr Ser Arg Gln Lys Arg Ala Ala Glu Tyr Ala Arg Val Gln
                325                 330                 335

Glu Leu Tyr Lys Lys Cys Arg Ser Arg Ala Ala Ala Glu Val Ile Asp
            340                 345                 350
```

```
Gly Ala Cys Gly Gly Val Gly His Ser Leu Glu Glu Met Glu Thr Tyr
        355                 360                 365

Trp Arg Pro Ile Leu Glu Arg Val Ser Asp Ala Pro Gly Pro Thr Pro
    370                 375                 380

Glu Ala Leu His Ala Leu Gly Arg Ala Glu Trp His Gly Gly Asn Arg
385                 390                 395                 400

Asp Tyr Thr Gln Leu Trp Lys Pro Ile Ser Val Glu Glu Ile Lys Ala
                405                 410                 415

Ser Arg Phe Asp Trp Arg Thr Ser Pro Gly Pro Asp Gly Ile Arg Ser
            420                 425                 430

Gly Gln Trp Arg Ala Val Pro Val His Leu Lys Ala Glu Met Phe Asn
        435                 440                 445

Ala Trp Met Ala Arg Gly Glu Ile Pro Glu Ile Leu Arg Gln Cys Arg
    450                 455                 460

Thr Val Phe Val Pro Lys Val Glu Arg Pro Gly Gly Pro Gly Glu Tyr
465                 470                 475                 480

Arg Pro Ile Ser Ile Ala Ser Ile Pro Leu Arg His Phe His Ser Ile
                485                 490                 495

Leu Ala Arg Arg Leu Leu Ala Cys Cys Pro Pro Asp Ala Arg Gln Arg
            500                 505                 510

Gly Phe Ile Cys Ala Asp Gly Thr Leu Glu Asn Ser Ala Val Leu Asp
        515                 520                 525

Ala Val Leu Gly Asp Ser Arg Lys Lys Leu Arg Glu Cys His Val Ala
    530                 535                 540

Val Leu Asp Phe Ala Lys Ala Phe Asp Thr Val Ser His Glu Ala Leu
545                 550                 555                 560
```

```
Val Glu Leu Leu Arg Leu Arg Gly Met Pro Glu Gln Phe Cys Gly Tyr
                565                 570                 575

Ile Ala His Leu Tyr Asp Thr Ala Ser Thr Thr Leu Ala Val Asn Asn
            580                 585                 590

Glu Met Ser Ser Pro Val Lys Val Gly Arg Gly Val Arg Gln Gly Asp
        595                 600                 605

Pro Leu Ser Pro Ile Leu Phe Asn Val Val Met Asp Leu Ile Leu Ala
    610                 615                 620

Ser Leu Pro Glu Arg Val Gly Tyr Arg Leu Glu Met Glu Leu Val Ser
625                 630                 635                 640

Ala Leu Ala Tyr Ala Asp Asp Leu Val Leu Leu Ala Gly Ser Lys Val
                645                 650                 655

Gly Met Gln Glu Ser Ile Ser Ala Val Asp Cys Val Gly Arg Gln Met
            660                 665                 670

Gly Leu Arg Leu Asn Cys Arg Lys Ser Ala Val Leu Ser Met Ile Pro
        675                 680                 685

Asp Gly His Arg Lys Lys His His Tyr Leu Thr Glu Arg Thr Phe Asn
    690                 695                 700

Ile Gly Gly Lys Pro Leu Arg Gln Val Ser Cys Val Glu Arg Trp Arg
705                 710                 715                 720

Tyr Leu Gly Val Asp Phe Glu Ala Ser Gly Cys Val Thr Leu Glu His
                725                 730                 735

Ser Ile Ser Ser Ala Leu Asn Asn Ile Ser Arg Ala Pro Leu Lys Pro
            740                 745                 750

Gln Gln Arg Leu Glu Ile Leu Arg Ala His Leu Ile Pro Arg Phe Gln
        755                 760                 765
```

```
His Gly Phe Val Leu Gly Asn Ile Ser Asp Asp Arg Leu Arg Met Leu
    770                 775                 780

Asp Val Gln Ile Arg Lys Ala Val Gly Gln Trp Leu Arg Leu Pro Ala
785                 790                 795                 800

Asp Val Pro Lys Ala Tyr Tyr His Ala Ala Val Gln Asp Gly Gly Leu
                805                 810                 815

Ala Ile Pro Ser Val Arg Ala Thr Ile Pro Asp Leu Ile Val Arg Arg
            820                 825                 830

Phe Gly Gly Leu Asp Ser Ser Pro Trp Ser Val Ala Arg Ala Ala Ala
        835                 840                 845

Lys Ser Asp Lys Ile Arg Lys Lys Leu Arg Trp Ala Trp Lys Gln Leu
    850                 855                 860

Arg Arg Phe Ser Arg Val Asp Ser Thr Thr Gln Arg Pro Ser Val Arg
865                 870                 875                 880

Leu Phe Trp Arg Glu His Leu His Ala Ser Val Asp Gly Arg Glu Leu
                885                 890                 895

Arg Glu Ser Thr Arg Thr Pro Thr Ser Thr Lys Trp Ile Arg Glu Arg
            900                 905                 910

Cys Ala Gln Ile Thr Gly Arg Asp Phe Val Gln Phe Val His Thr His
        915                 920                 925

Ile Asn Ala Leu Pro Ser Arg Ile Arg Gly Ser Arg Gly Arg Arg Gly
    930                 935                 940

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

Thr Thr Ala His Ile Leu Gln Gln Cys His Arg Thr His Gly Gly Arg
                965                 970                 975
```

```
Ile Leu Arg His Asn Lys Ile Val Ser Phe Val Ala Lys Ala Met Glu
            980                 985                 990


Glu Asn Lys Trp Thr Val Glu Leu  Glu Pro Arg Leu Arg  Thr Ser Val
        995                 1000                1005


Gly Leu  Arg Lys Pro Asp Ile  Ile Ala Ser Arg Asp  Gly Val Gly
    1010                1015                1020


Val Ile  Val Asp Val Gln Val  Val Ser Gly Gln Arg  Ser Leu Asp
    1025                1030                1035


Glu Leu  His Arg Glu Lys Arg  Asn Lys Tyr Gly Asn  His Gly Glu
    1040                1045                1050


Leu Val  Glu Leu Val Ala Gly  Arg Leu Gly Leu Pro  Lys Ala Glu
    1055                1060                1065


Cys Val  Arg Ala Thr Ser Cys  Thr Ile Ser Trp Arg  Gly Val Trp
    1070                1075                1080


Ser Leu  Thr Ser Tyr Lys Glu  Leu Arg Ser Ile Ile  Gly Leu Arg
    1085                1090                1095


Glu Pro  Thr Leu Gln Ile Val  Pro Ile Leu Ala Leu  Arg Gly Ser
    1100                1105                1110


His Met  Asn Trp Thr Arg Phe  Asn Gln Met Thr Ser  Val Met Gly
    1115                1120                1125


Gly Gly  Val Gly
    1130
```

<210> 63
<211> 1132
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
polypeptide

<400> 63
Met Ala His His His His His His Val Gly Thr Val Gly Thr Gly Gly
1   5   10   15

Gly Ser Gly Gly Ala Ser Thr Ala Leu Ser Leu Met Gly Arg Cys Asn
            20   25   30

Pro Asp Gly Cys Thr Arg Gly Lys His Val Thr Ala Ala Pro Met Asp
        35   40   45

Gly Pro Arg Gly Pro Ser Ser Leu Ala Gly Thr Phe Gly Trp Gly Leu
    50   55   60

Ala Ile Pro Ala Gly Glu Pro Cys Gly Arg Val Cys Ser Pro Ala Thr
65   70   75   80

Val Gly Phe Phe Pro Val Ala Lys Lys Ser Asn Lys Glu Asn Arg Pro
                85   90   95

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

Thr Val Arg Gly Ser Ala Gly Ala Asp Pro Val Gly Gln Asp Ala Pro
        115   120   125

Gly Trp Thr Cys Gln Phe Cys Glu Arg Thr Phe Ser Thr Asn Arg Gly
    130   135   140

Leu Gly Val His Lys Arg Arg Ala His Pro Val Glu Thr Asn Thr Asp
145   150   155   160

Ala Ala Pro Met Met Val Lys Arg Arg Trp His Gly Glu Glu Ile Asp
                165   170   175

Leu Leu Ala Arg Thr Glu Ala Arg Leu Leu Ala Glu Arg Gly Gln Cys
            180   185   190

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

```
Glu Ala Ile Lys Gly Gln Arg Arg Arg Glu Pro Tyr Arg Ala Leu Val
    210                 215                 220

Gln Ala His Leu Ala Arg Phe Gly Ser Gln Pro Gly Pro Ser Ser Gly
225                 230                 235                 240

Gly Cys Ser Ala Glu Pro Asp Phe Arg Arg Ala Ser Gly Ala Glu Glu
                245                 250                 255

Ala Gly Glu Glu Arg Cys Ala Glu Asp Ala Ala Ala Tyr Asp Pro Ser
            260                 265                 270

Ala Val Gly Gln Met Ser Pro Asp Ala Ala Arg Val Leu Ser Glu Leu
        275                 280                 285

Leu Glu Gly Ala Gly Arg Arg Arg Ala Cys Arg Ala Met Arg Pro Lys
    290                 295                 300

Thr Ala Gly Arg Arg Asn Asp Leu His Asp Asp Arg Thr Ala Ser Ala
305                 310                 315                 320

His Lys Thr Ser Arg Gln Lys Arg Arg Ala Glu Tyr Ala Arg Val Ala
                325                 330                 335

Glu Leu Tyr Lys Lys Cys Arg Ser Arg Ala Ala Ala Glu Val Ile Asp
            340                 345                 350

Gly Ala Cys Gly Gly Val Gly His Ser Leu Glu Glu Met Glu Thr Tyr
        355                 360                 365

Trp Arg Pro Ile Leu Glu Arg Val Ser Asp Ala Pro Gly Pro Thr Pro
    370                 375                 380

Glu Ala Leu His Ala Leu Gly Arg Ala Glu Trp His Gly Gly Asn Arg
385                 390                 395                 400

Asp Tyr Thr Gln Leu Trp Lys Pro Ile Ser Val Glu Glu Ile Lys Ala
                405                 410                 415
```

```
Ser Arg Phe Asp Trp Arg Thr Ser Pro Gly Pro Asp Gly Ile Arg Ser
            420                 425                 430

Gly Gln Trp Arg Ala Val Pro Val His Leu Lys Ala Glu Met Phe Asn
        435                 440                 445

Ala Trp Met Ala Arg Gly Glu Ile Pro Glu Ile Leu Arg Gln Cys Arg
    450                 455                 460

Thr Val Phe Val Pro Lys Val Glu Arg Pro Gly Gly Pro Gly Glu Tyr
465                 470                 475                 480

Arg Pro Ile Ser Ile Ala Ser Ile Pro Leu Arg His Phe His Ser Ile
                485                 490                 495

Leu Ala Arg Arg Leu Leu Ala Cys Cys Pro Pro Asp Ala Arg Gln Arg
            500                 505                 510

Gly Phe Ile Cys Ala Asp Gly Thr Leu Glu Asn Ser Ala Val Leu Asp
        515                 520                 525

Ala Val Leu Gly Asp Ser Arg Lys Lys Leu Arg Glu Cys His Val Ala
    530                 535                 540

Val Leu Asp Phe Ala Lys Ala Phe Asp Thr Val Ser His Glu Ala Leu
545                 550                 555                 560

Val Glu Leu Leu Arg Leu Arg Gly Met Pro Glu Gln Phe Cys Gly Tyr
                565                 570                 575

Ile Ala His Leu Tyr Asp Thr Ala Ser Thr Thr Leu Ala Val Asn Asn
            580                 585                 590

Glu Met Ser Ser Pro Val Lys Val Gly Arg Gly Val Arg Gln Gly Asp
        595                 600                 605

Pro Leu Ser Pro Ile Leu Phe Asn Val Val Met Asp Leu Ile Leu Ala
    610                 615                 620
```

```
Ser Leu Pro Glu Arg Val Gly Tyr Arg Leu Glu Met Glu Leu Val Ser
625                 630                 635                 640

Ala Leu Ala Tyr Ala Asp Asp Leu Val Leu Leu Ala Gly Ser Lys Val
                645                 650                 655

Gly Met Gln Glu Ser Ile Ser Ala Val Asp Cys Val Gly Arg Gln Met
            660                 665                 670

Gly Leu Arg Leu Asn Cys Arg Lys Ser Ala Val Leu Ser Met Ile Pro
        675                 680                 685

Asp Gly His Arg Lys Lys His His Tyr Leu Thr Glu Arg Thr Phe Asn
    690                 695                 700

Ile Gly Gly Lys Pro Leu Arg Gln Val Ser Cys Val Glu Arg Trp Arg
705                 710                 715                 720

Tyr Leu Gly Val Asp Phe Glu Ala Ser Gly Cys Val Thr Leu Glu His
                725                 730                 735

Ser Ile Ser Ser Ala Leu Asn Asn Ile Ser Arg Ala Pro Leu Lys Pro
            740                 745                 750

Gln Gln Arg Leu Glu Ile Leu Arg Ala His Leu Ile Pro Arg Phe Gln
        755                 760                 765

His Gly Phe Val Leu Gly Asn Ile Ser Asp Asp Arg Leu Arg Met Leu
    770                 775                 780

Asp Val Gln Ile Arg Lys Ala Val Gly Gln Trp Leu Arg Leu Pro Ala
785                 790                 795                 800

Asp Val Pro Lys Ala Tyr Tyr His Ala Ala Val Gln Asp Gly Gly Leu
                805                 810                 815

Ala Ile Pro Ser Val Arg Ala Thr Ile Pro Asp Leu Ile Val Arg Arg
            820                 825                 830
```

```
Phe Gly Gly Leu Asp Ser Ser Pro Trp Ser Val Ala Arg Ala Ala Ala
        835                 840                 845

Lys Ser Asp Lys Ile Arg Lys Lys Leu Arg Trp Ala Trp Lys Gln Leu
    850                 855                 860

Arg Arg Phe Ser Arg Val Asp Ser Thr Thr Gln Arg Pro Ser Val Arg
865                 870                 875                 880

Leu Phe Trp Arg Glu His Leu His Ala Ser Val Asp Gly Arg Glu Leu
                885                 890                 895

Arg Glu Ser Thr Arg Thr Pro Thr Ser Thr Lys Trp Ile Arg Glu Arg
            900                 905                 910

Cys Ala Gln Ile Thr Gly Arg Asp Phe Val Gln Phe Val His Thr His
        915                 920                 925

Ile Asn Ala Leu Pro Ser Arg Ile Arg Gly Ser Arg Gly Arg Arg Gly
    930                 935                 940

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

Thr Thr Ala His Ile Leu Gln Gln Cys His Arg Thr His Gly Gly Arg
                965                 970                 975

Ile Leu Arg His Asn Lys Ile Val Ser Phe Val Ala Lys Ala Met Glu
            980                 985                 990

Glu Asn Lys Trp Thr Val Glu Leu  Glu Pro Arg Leu Arg  Thr Ser Val
        995                 1000                1005

Gly Leu  Arg Lys Pro Asp Ile  Ile Ala Ser Arg Asp  Gly Val Gly
    1010                1015                1020

Val Ile  Val Asp Val Gln Val  Val Ser Gly Gln Arg  Ser Leu Asp
    1025                1030                1035
```

Glu Leu His Arg Glu Lys Arg Asn Lys Tyr Gly Asn His Gly Glu
    1040   1045   1050

Leu Val Glu Leu Val Ala Gly Arg Leu Gly Leu Pro Lys Ala Glu
    1055   1060   1065

Cys Val Arg Ala Thr Ser Cys Thr Ile Ser Trp Arg Gly Val Trp
    1070   1075   1080

Ser Leu Thr Ser Tyr Lys Glu Leu Arg Ser Ile Ile Gly Leu Arg
    1085   1090   1095

Glu Pro Thr Leu Gln Ile Val Pro Ile Leu Ala Leu Arg Gly Ser
    1100   1105   1110

His Met Asn Trp Thr Arg Phe Asn Gln Met Thr Ser Val Met Gly
    1115   1120   1125

Gly Gly Val Gly
    1130

<210> 64
<211> 1132
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      polypeptide

<400> 64
Met Ala His His His His His His Val Gly Thr Val Gly Thr Gly Gly
1   5   10   15

Gly Ser Gly Gly Ala Ser Thr Ala Leu Ser Leu Met Gly Arg Cys Asn
            20   25   30

Pro Asp Gly Cys Thr Arg Gly Lys His Val Thr Ala Ala Pro Met Asp
        35   40   45

```
Gly Pro Arg Gly Pro Ser Ser Leu Ala Gly Thr Phe Gly Trp Gly Leu
    50                  55                  60

Ala Ile Pro Ala Gly Glu Pro Cys Gly Arg Val Cys Ser Pro Ala Thr
65                  70                  75                  80

Val Gly Phe Phe Pro Val Ala Lys Lys Ser Asn Lys Glu Asn Arg Pro
                85                  90                  95

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

Thr Val Arg Gly Ser Ala Gly Ala Asp Pro Val Gly Gln Asp Ala Pro
        115                 120                 125

Gly Trp Thr Cys Gln Phe Cys Glu Arg Thr Phe Ser Thr Asn Arg Gly
    130                 135                 140

Leu Gly Val His Lys Arg Arg Ala His Pro Val Glu Thr Asn Thr Asp
145                 150                 155                 160

Ala Ala Pro Met Met Val Lys Arg Arg Trp His Gly Glu Glu Ile Asp
                165                 170                 175

Leu Leu Ala Arg Thr Glu Ala Arg Leu Leu Ala Glu Arg Gly Gln Cys
            180                 185                 190

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

Glu Ala Ile Lys Gly Gln Arg Arg Arg Glu Pro Tyr Arg Ala Leu Val
    210                 215                 220

Gln Ala His Leu Ala Arg Phe Gly Ser Gln Pro Gly Pro Ser Ser Gly
225                 230                 235                 240

Gly Cys Ser Ala Glu Pro Asp Phe Arg Arg Ala Ser Gly Ala Glu Glu
                245                 250                 255
```

```
Ala Gly Glu Glu Arg Cys Ala Glu Asp Ala Ala Ala Tyr Asp Pro Ser
            260                 265                 270

Ala Val Gly Gln Met Ser Pro Asp Ala Ala Arg Val Leu Ser Glu Leu
        275                 280                 285

Leu Glu Gly Ala Gly Arg Arg Arg Ala Cys Arg Ala Met Arg Pro Lys
    290                 295                 300

Thr Ala Gly Arg Arg Asn Asp Leu His Asp Asp Arg Thr Ala Ser Ala
305                 310                 315                 320

His Lys Thr Ser Arg Gln Lys Ala Ala Ala Glu Tyr Ala Arg Val Ala
                325                 330                 335

Glu Leu Tyr Lys Lys Cys Arg Ser Arg Ala Ala Ala Glu Val Ile Asp
            340                 345                 350

Gly Ala Cys Gly Gly Val Gly His Ser Leu Glu Glu Met Glu Thr Tyr
        355                 360                 365

Trp Arg Pro Ile Leu Glu Arg Val Ser Asp Ala Pro Gly Pro Thr Pro
    370                 375                 380

Glu Ala Leu His Ala Leu Gly Arg Ala Glu Trp His Gly Gly Asn Arg
385                 390                 395                 400

Asp Tyr Thr Gln Leu Trp Lys Pro Ile Ser Val Glu Glu Ile Lys Ala
                405                 410                 415

Ser Arg Phe Asp Trp Arg Thr Ser Pro Gly Pro Asp Gly Ile Arg Ser
            420                 425                 430

Gly Gln Trp Arg Ala Val Pro Val His Leu Lys Ala Glu Met Phe Asn
        435                 440                 445

Ala Trp Met Ala Arg Gly Glu Ile Pro Glu Ile Leu Arg Gln Cys Arg
    450                 455                 460
```

```
Thr Val Phe Val Pro Lys Val Glu Arg Pro Gly Gly Pro Gly Glu Tyr
465                 470                 475                 480


Arg Pro Ile Ser Ile Ala Ser Ile Pro Leu Arg His Phe His Ser Ile
                485                 490                 495


Leu Ala Arg Arg Leu Leu Ala Cys Cys Pro Pro Asp Ala Arg Gln Arg
            500                 505                 510


Gly Phe Ile Cys Ala Asp Gly Thr Leu Glu Asn Ser Ala Val Leu Asp
        515                 520                 525


Ala Val Leu Gly Asp Ser Arg Lys Lys Leu Arg Glu Cys His Val Ala
    530                 535                 540


Val Leu Asp Phe Ala Lys Ala Phe Asp Thr Val Ser His Glu Ala Leu
545                 550                 555                 560


Val Glu Leu Leu Arg Leu Arg Gly Met Pro Glu Gln Phe Cys Gly Tyr
                565                 570                 575


Ile Ala His Leu Tyr Asp Thr Ala Ser Thr Thr Leu Ala Val Asn Asn
            580                 585                 590


Glu Met Ser Ser Pro Val Lys Val Gly Arg Gly Val Arg Gln Gly Asp
        595                 600                 605


Pro Leu Ser Pro Ile Leu Phe Asn Val Val Met Asp Leu Ile Leu Ala
    610                 615                 620


Ser Leu Pro Glu Arg Val Gly Tyr Arg Leu Glu Met Glu Leu Val Ser
625                 630                 635                 640


Ala Leu Ala Tyr Ala Asp Asp Leu Val Leu Leu Ala Gly Ser Lys Val
                645                 650                 655


Gly Met Gln Glu Ser Ile Ser Ala Val Asp Cys Val Gly Arg Gln Met
            660                 665                 670
```

```
Gly Leu Arg Leu Asn Cys Arg Lys Ser Ala Val Leu Ser Met Ile Pro
        675                 680                 685

Asp Gly His Arg Lys Lys His His Tyr Leu Thr Glu Arg Thr Phe Asn
    690                 695                 700

Ile Gly Gly Lys Pro Leu Arg Gln Val Ser Cys Val Glu Arg Trp Arg
705                 710                 715                 720

Tyr Leu Gly Val Asp Phe Glu Ala Ser Gly Cys Val Thr Leu Glu His
                725                 730                 735

Ser Ile Ser Ser Ala Leu Asn Asn Ile Ser Arg Ala Pro Leu Lys Pro
            740                 745                 750

Gln Gln Arg Leu Glu Ile Leu Arg Ala His Leu Ile Pro Arg Phe Gln
        755                 760                 765

His Gly Phe Val Leu Gly Asn Ile Ser Asp Asp Arg Leu Arg Met Leu
    770                 775                 780

Asp Val Gln Ile Arg Lys Ala Val Gly Gln Trp Leu Arg Leu Pro Ala
785                 790                 795                 800

Asp Val Pro Lys Ala Tyr Tyr His Ala Ala Val Gln Asp Gly Gly Leu
                805                 810                 815

Ala Ile Pro Ser Val Arg Ala Thr Ile Pro Asp Leu Ile Val Arg Arg
            820                 825                 830

Phe Gly Gly Leu Asp Ser Ser Pro Trp Ser Val Ala Arg Ala Ala Ala
        835                 840                 845

Lys Ser Asp Lys Ile Arg Lys Lys Leu Arg Trp Ala Trp Lys Gln Leu
    850                 855                 860

Arg Arg Phe Ser Arg Val Asp Ser Thr Thr Gln Arg Pro Ser Val Arg
865                 870                 875                 880
```

```
Leu Phe Trp Arg Glu His Leu His Ala Ser Val Asp Gly Arg Glu Leu
                885                 890                 895

Arg Glu Ser Thr Arg Thr Pro Thr Ser Thr Lys Trp Ile Arg Glu Arg
            900                 905                 910

Cys Ala Gln Ile Thr Gly Arg Asp Phe Val Gln Phe Val His Thr His
        915                 920                 925

Ile Asn Ala Leu Pro Ser Arg Ile Arg Gly Ser Arg Gly Arg Arg Gly
    930                 935                 940

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

Thr Thr Ala His Ile Leu Gln Gln Cys His Arg Thr His Gly Gly Arg
                965                 970                 975

Ile Leu Arg His Asn Lys Ile Val Ser Phe Val Ala Lys Ala Met Glu
            980                 985                 990

Glu Asn Lys Trp Thr Val Glu Leu  Glu Pro Arg Leu Arg  Thr Ser Val
        995                 1000                1005

Gly Leu  Arg Lys Pro Asp Ile  Ile Ala Ser Arg Asp  Gly Val Gly
    1010                1015                1020

Val Ile  Val Asp Val Gln Val  Val Ser Gly Gln Arg  Ser Leu Asp
    1025                1030                1035

Glu Leu  His Arg Glu Lys Arg  Asn Lys Tyr Gly Asn  His Gly Glu
    1040                1045                1050

Leu Val  Glu Leu Val Ala Gly  Arg Leu Gly Leu Pro  Lys Ala Glu
    1055                1060                1065

Cys Val  Arg Ala Thr Ser Cys  Thr Ile Ser Trp Arg  Gly Val Trp
    1070                1075                1080
```

Ser Leu Thr Ser Tyr Lys Glu Leu Arg Ser Ile Ile Gly Leu Arg
1085 1090 1095

Glu Pro Thr Leu Gln Ile Val Pro Ile Leu Ala Leu Arg Gly Ser
1100 1105 1110

His Met Asn Trp Thr Arg Phe Asn Gln Met Thr Ser Val Met Gly
1115 1120 1125

Gly Gly Val Gly
1130

<210> 65
<211> 1132
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polypeptide

<400> 65
Met Ala His His His His His His Val Gly Thr Val Gly Thr Gly Gly
1 5 10 15

Gly Ser Gly Gly Ala Ser Thr Ala Leu Ser Leu Met Gly Arg Cys Asn
20 25 30

Pro Asp Gly Cys Thr Arg Gly Lys His Val Thr Ala Ala Pro Met Asp
35 40 45

Gly Pro Arg Gly Pro Ser Ser Leu Ala Gly Thr Phe Gly Trp Gly Leu
50 55 60

Ala Ile Pro Ala Gly Glu Pro Cys Gly Arg Val Cys Ser Pro Ala Thr
65 70 75 80

Val Gly Phe Phe Pro Val Ala Lys Lys Ser Asn Lys Glu Asn Arg Pro
85 90 95

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

```
Thr Val Arg Gly Ser Ala Gly Ala Asp Pro Val Gly Gln Asp Ala Pro
        115                 120                 125

Gly Trp Thr Cys Gln Phe Cys Glu Arg Thr Phe Ser Thr Asn Arg Gly
    130                 135                 140

Leu Gly Val His Lys Arg Arg Ala His Pro Val Glu Thr Asn Thr Asp
145                 150                 155                 160

Ala Ala Pro Met Met Val Lys Arg Arg Trp His Gly Glu Glu Ile Asp
                165                 170                 175

Leu Leu Ala Arg Thr Glu Ala Arg Leu Leu Ala Glu Arg Gly Gln Cys
            180                 185                 190

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

Glu Ala Ile Lys Gly Gln Arg Arg Arg Glu Pro Tyr Arg Ala Leu Val
    210                 215                 220

Gln Ala His Leu Ala Arg Phe Gly Ser Gln Pro Gly Pro Ser Ser Gly
225                 230                 235                 240

Gly Cys Ser Ala Glu Pro Asp Phe Arg Arg Ala Ser Gly Ala Glu Glu
                245                 250                 255

Ala Gly Glu Glu Arg Cys Ala Glu Asp Ala Ala Ala Tyr Asp Pro Ser
            260                 265                 270

Ala Val Gly Gln Met Ser Pro Asp Ala Ala Arg Val Leu Ser Glu Leu
        275                 280                 285

Leu Glu Gly Ala Gly Arg Arg Arg Ala Cys Arg Ala Met Arg Pro Lys
    290                 295                 300

Thr Ala Gly Arg Arg Asn Asp Leu His Asp Asp Arg Thr Ala Ser Ala
305                 310                 315                 320
```

```
His Lys Thr Ser Arg Gln Lys Arg Arg Ala Glu Tyr Ala Arg Val Gln
               325                 330                 335

Glu Leu Tyr Lys Lys Cys Arg Ser Arg Ala Ala Ala Glu Val Ile Asp
            340                 345                 350

Gly Ala Cys Gly Gly Val Gly His Ser Leu Glu Glu Met Glu Thr Tyr
        355                 360                 365

Trp Arg Pro Ile Leu Glu Arg Val Ser Asp Ala Pro Gly Pro Thr Pro
    370                 375                 380

Glu Ala Leu His Ala Leu Gly Arg Ala Glu Trp His Gly Gly Asn Arg
385                 390                 395                 400

Asp Tyr Thr Gln Leu Trp Lys Pro Ile Ser Val Glu Glu Ile Lys Ala
               405                 410                 415

Ser Arg Phe Asp Trp Arg Thr Ser Pro Ala Pro Asp Gly Ile Arg Ser
            420                 425                 430

Gly Gln Trp Arg Ala Val Pro Val His Leu Lys Ala Glu Met Phe Asn
        435                 440                 445

Ala Trp Met Ala Arg Gly Glu Ile Pro Glu Ile Leu Arg Gln Cys Arg
    450                 455                 460

Thr Val Phe Val Pro Lys Val Glu Arg Pro Gly Gly Pro Gly Glu Tyr
465                 470                 475                 480

Arg Pro Ile Ser Ile Ala Ser Ile Pro Leu Arg His Phe His Ser Ile
               485                 490                 495

Leu Ala Arg Arg Leu Leu Ala Cys Cys Pro Pro Asp Ala Arg Gln Arg
            500                 505                 510

Gly Phe Ile Cys Ala Asp Gly Thr Leu Glu Asn Ser Ala Val Leu Asp
        515                 520                 525
```

```
Ala Val Leu Gly Asp Ser Arg Lys Lys Leu Arg Glu Cys His Val Ala
    530                 535                 540

Val Leu Asp Phe Ala Lys Ala Phe Asp Thr Val Ser His Glu Ala Leu
545                 550                 555                 560

Val Glu Leu Leu Arg Leu Arg Gly Met Pro Glu Gln Phe Cys Gly Tyr
                565                 570                 575

Ile Ala His Leu Tyr Asp Thr Ala Ser Thr Thr Leu Ala Val Asn Asn
            580                 585                 590

Glu Met Ser Ser Pro Val Lys Val Gly Arg Gly Val Arg Gln Gly Asp
        595                 600                 605

Pro Leu Ser Pro Ile Leu Phe Asn Val Val Met Asp Leu Ile Leu Ala
    610                 615                 620

Ser Leu Pro Glu Arg Val Gly Tyr Arg Leu Glu Met Glu Leu Val Ser
625                 630                 635                 640

Ala Leu Ala Tyr Ala Asp Asp Leu Val Leu Leu Ala Gly Ser Lys Val
                645                 650                 655

Gly Met Gln Glu Ser Ile Ser Ala Val Asp Cys Val Gly Arg Gln Met
            660                 665                 670

Gly Leu Arg Leu Asn Cys Arg Lys Ser Ala Val Leu Ser Met Ile Pro
        675                 680                 685

Asp Gly His Arg Lys Lys His His Tyr Leu Thr Glu Arg Thr Phe Asn
    690                 695                 700

Ile Gly Gly Lys Pro Leu Arg Gln Val Ser Cys Val Glu Arg Trp Arg
705                 710                 715                 720

Tyr Leu Gly Val Asp Phe Glu Ala Ser Gly Cys Val Thr Leu Glu His
                725                 730                 735
```

```
Ser Ile Ser Ser Ala Leu Asn Asn Ile Ser Arg Ala Pro Leu Lys Pro
            740                 745                 750

Gln Gln Arg Leu Glu Ile Leu Arg Ala His Leu Ile Pro Arg Phe Gln
        755                 760                 765

His Gly Phe Val Leu Gly Asn Ile Ser Asp Asp Arg Leu Arg Met Leu
    770                 775                 780

Asp Val Gln Ile Arg Lys Ala Val Gly Gln Trp Leu Arg Leu Pro Ala
785                 790                 795                 800

Asp Val Pro Lys Ala Tyr Tyr His Ala Ala Val Gln Asp Gly Gly Leu
                805                 810                 815

Ala Ile Pro Ser Val Arg Ala Thr Ile Pro Asp Leu Ile Val Arg Arg
            820                 825                 830

Phe Gly Gly Leu Asp Ser Ser Pro Trp Ser Val Ala Arg Ala Ala Ala
        835                 840                 845

Lys Ser Asp Lys Ile Arg Lys Lys Leu Arg Trp Ala Trp Lys Gln Leu
    850                 855                 860

Arg Arg Phe Ser Arg Val Asp Ser Thr Thr Gln Arg Pro Ser Val Arg
865                 870                 875                 880

Leu Phe Trp Arg Glu His Leu His Ala Ser Val Asp Gly Arg Glu Leu
                885                 890                 895

Arg Glu Ser Thr Arg Thr Pro Thr Ser Thr Lys Trp Ile Arg Glu Arg
            900                 905                 910

Cys Ala Gln Ile Thr Gly Arg Asp Phe Val Gln Phe Val His Thr His
        915                 920                 925

Ile Asn Ala Leu Pro Ser Arg Ile Arg Gly Ser Arg Gly Arg Arg Gly
    930                 935                 940
```

```
Gly Gly Glu Ser Ser Leu Thr Cys Arg Ala Gly Cys Lys Val Arg Glu
945                 950                 955                 960


Thr Thr Ala His Ile Leu Gln Gln Cys His Arg Thr His Gly Gly Arg
                965                 970                 975


Ile Leu Arg His Asn Lys Ile Val Ser Phe Val Ala Lys Ala Met Glu
            980                 985                 990


Glu Asn Lys Trp Thr Val Glu Leu  Glu Pro Arg Leu Arg  Thr Ser Val
        995                 1000                1005


Gly Leu  Arg Lys Pro Asp Ile  Ile Ala Ser Arg Asp  Gly Val Gly
    1010                1015                1020


Val Ile  Val Asp Val Gln Val  Val Ser Gly Gln Arg  Ser Leu Asp
    1025                1030                1035


Glu Leu  His Arg Glu Lys Arg  Asn Lys Tyr Gly Asn  His Gly Glu
    1040                1045                1050


Leu Val  Glu Leu Val Ala Gly  Arg Leu Gly Leu Pro  Lys Ala Glu
    1055                1060                1065


Cys Val  Arg Ala Thr Ser Cys  Thr Ile Ser Trp Arg  Gly Val Trp
    1070                1075                1080


Ser Leu  Thr Ser Tyr Lys Glu  Leu Arg Ser Ile Ile  Gly Leu Arg
    1085                1090                1095


Glu Pro  Thr Leu Gln Ile Val  Pro Ile Leu Ala Leu  Arg Gly Ser
    1100                1105                1110


His Met  Asn Trp Thr Arg Phe  Asn Gln Met Thr Ser  Val Met Gly
    1115                1120                1125


Gly Gly  Val Gly
    1130
```

<210> 66
<211> 1132
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
polypeptide

<400> 66
Met Ala His His His His His His Val Gly Thr Val Gly Thr Gly Gly
1 5 10 15

Gly Ser Gly Gly Ala Ser Thr Ala Leu Ser Leu Met Gly Arg Cys Asn
20 25 30

Pro Asp Gly Cys Thr Arg Gly Lys His Val Thr Ala Ala Pro Met Asp
35 40 45

Gly Pro Arg Gly Pro Ser Ser Leu Ala Gly Thr Phe Gly Trp Gly Leu
50 55 60

Ala Ile Pro Ala Gly Glu Pro Cys Gly Arg Val Cys Ser Pro Ala Thr
65 70 75 80

Val Gly Phe Phe Pro Val Ala Lys Lys Ser Asn Lys Glu Asn Arg Pro
85 90 95

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

Thr Val Arg Gly Ser Ala Gly Ala Asp Pro Val Gly Gln Asp Ala Pro
115 120 125

Gly Trp Thr Cys Gln Phe Cys Glu Arg Thr Phe Ser Thr Asn Arg Gly
130 135 140

Leu Gly Val His Lys Arg Arg Ala His Pro Val Glu Thr Asn Thr Asp
145 150 155 160

```
Ala Ala Pro Met Met Val Lys Arg Arg Trp His Gly Glu Glu Ile Asp
                165                 170                 175

Leu Leu Ala Arg Thr Glu Ala Arg Leu Leu Ala Glu Arg Gly Gln Cys
            180                 185                 190

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

Glu Ala Ile Lys Gly Gln Arg Arg Arg Glu Pro Tyr Arg Ala Leu Val
    210                 215                 220

Gln Ala His Leu Ala Arg Phe Gly Ser Gln Pro Gly Pro Ser Ser Gly
225                 230                 235                 240

Gly Cys Ser Ala Glu Pro Asp Phe Arg Arg Ala Ser Gly Ala Glu Glu
                245                 250                 255

Ala Gly Glu Glu Arg Cys Ala Glu Asp Ala Ala Ala Tyr Asp Pro Ser
            260                 265                 270

Ala Val Gly Gln Met Ser Pro Asp Ala Ala Arg Val Leu Ser Glu Leu
        275                 280                 285

Leu Glu Gly Ala Gly Arg Arg Arg Ala Cys Arg Ala Met Arg Pro Lys
    290                 295                 300

Thr Ala Gly Arg Arg Asn Asp Leu His Asp Asp Arg Thr Ala Ser Ala
305                 310                 315                 320

His Lys Thr Ser Arg Gln Lys Arg Arg Ala Glu Tyr Ala Arg Val Gln
                325                 330                 335

Glu Leu Tyr Lys Lys Cys Arg Ser Arg Ala Ala Ala Glu Val Ile Asp
            340                 345                 350

Gly Ala Cys Gly Gly Val Gly His Ser Leu Glu Glu Met Glu Thr Tyr
        355                 360                 365
```

```
Trp Arg Pro Ile Leu Glu Arg Val Ser Asp Ala Pro Gly Pro Thr Pro
    370                 375                 380

Glu Ala Leu His Ala Leu Gly Arg Ala Glu Trp His Gly Gly Asn Arg
385                 390                 395                 400

Asp Tyr Thr Gln Leu Trp Lys Pro Ile Ser Val Glu Glu Ile Lys Ala
                405                 410                 415

Ser Arg Phe Asp Trp Arg Thr Ser Pro Gly Pro Ala Gly Ile Arg Ser
            420                 425                 430

Gly Gln Trp Arg Ala Val Pro Val His Leu Lys Ala Glu Met Phe Asn
        435                 440                 445

Ala Trp Met Ala Arg Gly Glu Ile Pro Glu Ile Leu Arg Gln Cys Arg
    450                 455                 460

Thr Val Phe Val Pro Lys Val Glu Arg Pro Gly Gly Pro Gly Glu Tyr
465                 470                 475                 480

Arg Pro Ile Ser Ile Ala Ser Ile Pro Leu Arg His Phe His Ser Ile
                485                 490                 495

Leu Ala Arg Arg Leu Leu Ala Cys Cys Pro Pro Asp Ala Arg Gln Arg
            500                 505                 510

Gly Phe Ile Cys Ala Asp Gly Thr Leu Glu Asn Ser Ala Val Leu Asp
        515                 520                 525

Ala Val Leu Gly Asp Ser Arg Lys Lys Leu Arg Glu Cys His Val Ala
    530                 535                 540

Val Leu Asp Phe Ala Lys Ala Phe Asp Thr Val Ser His Glu Ala Leu
545                 550                 555                 560

Val Glu Leu Leu Arg Leu Arg Gly Met Pro Glu Gln Phe Cys Gly Tyr
                565                 570                 575
```

```
Ile Ala His Leu Tyr Asp Thr Ala Ser Thr Thr Leu Ala Val Asn Asn
            580                 585                 590

Glu Met Ser Ser Pro Val Lys Val Gly Arg Gly Val Arg Gln Gly Asp
        595                 600                 605

Pro Leu Ser Pro Ile Leu Phe Asn Val Val Met Asp Leu Ile Leu Ala
    610                 615                 620

Ser Leu Pro Glu Arg Val Gly Tyr Arg Leu Glu Met Glu Leu Val Ser
625                 630                 635                 640

Ala Leu Ala Tyr Ala Asp Asp Leu Val Leu Leu Ala Gly Ser Lys Val
                645                 650                 655

Gly Met Gln Glu Ser Ile Ser Ala Val Asp Cys Val Gly Arg Gln Met
            660                 665                 670

Gly Leu Arg Leu Asn Cys Arg Lys Ser Ala Val Leu Ser Met Ile Pro
        675                 680                 685

Asp Gly His Arg Lys Lys His His Tyr Leu Thr Glu Arg Thr Phe Asn
    690                 695                 700

Ile Gly Gly Lys Pro Leu Arg Gln Val Ser Cys Val Glu Arg Trp Arg
705                 710                 715                 720

Tyr Leu Gly Val Asp Phe Glu Ala Ser Gly Cys Val Thr Leu Glu His
                725                 730                 735

Ser Ile Ser Ser Ala Leu Asn Asn Ile Ser Arg Ala Pro Leu Lys Pro
            740                 745                 750

Gln Gln Arg Leu Glu Ile Leu Arg Ala His Leu Ile Pro Arg Phe Gln
        755                 760                 765

His Gly Phe Val Leu Gly Asn Ile Ser Asp Asp Arg Leu Arg Met Leu
    770                 775                 780
```

```
Asp Val Gln Ile Arg Lys Ala Val Gly Gln Trp Leu Arg Leu Pro Ala
785                 790                 795                 800

Asp Val Pro Lys Ala Tyr Tyr His Ala Ala Val Gln Asp Gly Gly Leu
                805                 810                 815

Ala Ile Pro Ser Val Arg Ala Thr Ile Pro Asp Leu Ile Val Arg Arg
            820                 825                 830

Phe Gly Gly Leu Asp Ser Ser Pro Trp Ser Val Ala Arg Ala Ala Ala
        835                 840                 845

Lys Ser Asp Lys Ile Arg Lys Lys Leu Arg Trp Ala Trp Lys Gln Leu
    850                 855                 860

Arg Arg Phe Ser Arg Val Asp Ser Thr Thr Gln Arg Pro Ser Val Arg
865                 870                 875                 880

Leu Phe Trp Arg Glu His Leu His Ala Ser Val Asp Gly Arg Glu Leu
                885                 890                 895

Arg Glu Ser Thr Arg Thr Pro Thr Ser Thr Lys Trp Ile Arg Glu Arg
            900                 905                 910

Cys Ala Gln Ile Thr Gly Arg Asp Phe Val Gln Phe Val His Thr His
        915                 920                 925

Ile Asn Ala Leu Pro Ser Arg Ile Arg Gly Ser Arg Gly Arg Arg Gly
    930                 935                 940

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

Thr Thr Ala His Ile Leu Gln Gln Cys His Arg Thr His Gly Gly Arg
                965                 970                 975

Ile Leu Arg His Asn Lys Ile Val Ser Phe Val Ala Lys Ala Met Glu
            980                 985                 990
```

Glu Asn Lys Trp Thr Val Glu Leu Glu Pro Arg Leu Arg Thr Ser Val
        995   1000   1005

Gly Leu Arg Lys Pro Asp Ile Ile Ala Ser Arg Asp Gly Val Gly
    1010   1015   1020

Val Ile Val Asp Val Gln Val Val Ser Gly Gln Arg Ser Leu Asp
    1025   1030   1035

Glu Leu His Arg Glu Lys Arg Asn Lys Tyr Gly Asn His Gly Glu
    1040   1045   1050

Leu Val Glu Leu Val Ala Gly Arg Leu Gly Leu Pro Lys Ala Glu
    1055   1060   1065

Cys Val Arg Ala Thr Ser Cys Thr Ile Ser Trp Arg Gly Val Trp
    1070   1075   1080

Ser Leu Thr Ser Tyr Lys Glu Leu Arg Ser Ile Ile Gly Leu Arg
    1085   1090   1095

Glu Pro Thr Leu Gln Ile Val Pro Ile Leu Ala Leu Arg Gly Ser
    1100   1105   1110

His Met Asn Trp Thr Arg Phe Asn Gln Met Thr Ser Val Met Gly
    1115   1120   1125

Gly Gly Val Gly
    1130

<210> 67
<211> 1132
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      polypeptide

<400> 67
Met Ala His His His His His His Val Gly Thr Val Gly Thr Gly Gly
1   5   10   15

```
Gly Ser Gly Gly Ala Ser Thr Ala Leu Ser Leu Met Gly Arg Cys Asn
            20                  25                  30

Pro Asp Gly Cys Thr Arg Gly Lys His Val Thr Ala Ala Pro Met Asp
        35                  40                  45

Gly Pro Arg Gly Pro Ser Ser Leu Ala Gly Thr Phe Gly Trp Gly Leu
    50                  55                  60

Ala Ile Pro Ala Gly Glu Pro Cys Gly Arg Val Cys Ser Pro Ala Thr
65                  70                  75                  80

Val Gly Phe Phe Pro Val Ala Lys Lys Ser Asn Lys Glu Asn Arg Pro
                85                  90                  95

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

Thr Val Arg Gly Ser Ala Gly Ala Asp Pro Val Gly Gln Asp Ala Pro
        115                 120                 125

Gly Trp Thr Cys Gln Phe Cys Glu Arg Thr Phe Ser Thr Asn Arg Gly
    130                 135                 140

Leu Gly Val His Lys Arg Arg Ala His Pro Val Glu Thr Asn Thr Asp
145                 150                 155                 160

Ala Ala Pro Met Met Val Lys Arg Arg Trp His Gly Glu Glu Ile Asp
                165                 170                 175

Leu Leu Ala Arg Thr Glu Ala Arg Leu Leu Ala Glu Arg Gly Gln Cys
            180                 185                 190

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

Glu Ala Ile Lys Gly Gln Arg Arg Arg Glu Pro Tyr Arg Ala Leu Val
    210                 215                 220
```

```
Gln Ala His Leu Ala Arg Phe Gly Ser Gln Pro Gly Pro Ser Ser Gly
225                 230                 235                 240

Gly Cys Ser Ala Glu Pro Asp Phe Arg Arg Ala Ser Gly Ala Glu Glu
                245                 250                 255

Ala Gly Glu Glu Arg Cys Ala Glu Asp Ala Ala Ala Tyr Asp Pro Ser
            260                 265                 270

Ala Val Gly Gln Met Ser Pro Asp Ala Ala Arg Val Leu Ser Glu Leu
        275                 280                 285

Leu Glu Gly Ala Gly Arg Arg Arg Ala Cys Arg Ala Met Arg Pro Lys
    290                 295                 300

Thr Ala Gly Arg Arg Asn Asp Leu His Asp Asp Arg Thr Ala Ser Ala
305                 310                 315                 320

His Lys Thr Ser Arg Gln Lys Arg Arg Ala Glu Tyr Ala Arg Val Gln
                325                 330                 335

Glu Leu Tyr Lys Lys Cys Arg Ser Arg Ala Ala Ala Glu Val Ile Asp
            340                 345                 350

Gly Ala Cys Gly Gly Val Gly His Ser Leu Glu Glu Met Glu Thr Tyr
        355                 360                 365

Trp Arg Pro Ile Leu Glu Arg Val Ser Asp Ala Pro Gly Pro Thr Pro
    370                 375                 380

Glu Ala Leu His Ala Leu Gly Arg Ala Glu Trp His Gly Gly Asn Arg
385                 390                 395                 400

Asp Tyr Thr Gln Leu Trp Lys Pro Ile Ser Val Glu Glu Ile Lys Ala
                405                 410                 415

Ser Arg Phe Asp Trp Arg Thr Ser Pro Ala Pro Ala Gly Ile Arg Ser
            420                 425                 430
```

```
Gly Gln Trp Arg Ala Val Pro Val His Leu Lys Ala Glu Met Phe Asn
        435                 440                 445

Ala Trp Met Ala Arg Gly Glu Ile Pro Glu Ile Leu Arg Gln Cys Arg
    450                 455                 460

Thr Val Phe Val Pro Lys Val Glu Arg Pro Gly Gly Pro Gly Glu Tyr
465                 470                 475                 480

Arg Pro Ile Ser Ile Ala Ser Ile Pro Leu Arg His Phe His Ser Ile
                485                 490                 495

Leu Ala Arg Arg Leu Leu Ala Cys Cys Pro Pro Asp Ala Arg Gln Arg
            500                 505                 510

Gly Phe Ile Cys Ala Asp Gly Thr Leu Glu Asn Ser Ala Val Leu Asp
        515                 520                 525

Ala Val Leu Gly Asp Ser Arg Lys Lys Leu Arg Glu Cys His Val Ala
    530                 535                 540

Val Leu Asp Phe Ala Lys Ala Phe Asp Thr Val Ser His Glu Ala Leu
545                 550                 555                 560

Val Glu Leu Leu Arg Leu Arg Gly Met Pro Glu Gln Phe Cys Gly Tyr
                565                 570                 575

Ile Ala His Leu Tyr Asp Thr Ala Ser Thr Thr Leu Ala Val Asn Asn
            580                 585                 590

Glu Met Ser Ser Pro Val Lys Val Gly Arg Gly Val Arg Gln Gly Asp
        595                 600                 605

Pro Leu Ser Pro Ile Leu Phe Asn Val Val Met Asp Leu Ile Leu Ala
    610                 615                 620

Ser Leu Pro Glu Arg Val Gly Tyr Arg Leu Glu Met Glu Leu Val Ser
625                 630                 635                 640
```

```
Ala Leu Ala Tyr Ala Asp Asp Leu Val Leu Leu Ala Gly Ser Lys Val
                645                 650                 655

Gly Met Gln Glu Ser Ile Ser Ala Val Asp Cys Val Gly Arg Gln Met
            660                 665                 670

Gly Leu Arg Leu Asn Cys Arg Lys Ser Ala Val Leu Ser Met Ile Pro
        675                 680                 685

Asp Gly His Arg Lys Lys His His Tyr Leu Thr Glu Arg Thr Phe Asn
    690                 695                 700

Ile Gly Gly Lys Pro Leu Arg Gln Val Ser Cys Val Glu Arg Trp Arg
705                 710                 715                 720

Tyr Leu Gly Val Asp Phe Glu Ala Ser Gly Cys Val Thr Leu Glu His
                725                 730                 735

Ser Ile Ser Ser Ala Leu Asn Asn Ile Ser Arg Ala Pro Leu Lys Pro
            740                 745                 750

Gln Gln Arg Leu Glu Ile Leu Arg Ala His Leu Ile Pro Arg Phe Gln
        755                 760                 765

His Gly Phe Val Leu Gly Asn Ile Ser Asp Asp Arg Leu Arg Met Leu
    770                 775                 780

Asp Val Gln Ile Arg Lys Ala Val Gly Gln Trp Leu Arg Leu Pro Ala
785                 790                 795                 800

Asp Val Pro Lys Ala Tyr Tyr His Ala Ala Val Gln Asp Gly Gly Leu
                805                 810                 815

Ala Ile Pro Ser Val Arg Ala Thr Ile Pro Asp Leu Ile Val Arg Arg
            820                 825                 830

Phe Gly Gly Leu Asp Ser Ser Pro Trp Ser Val Ala Arg Ala Ala Ala
        835                 840                 845
```

```
Lys Ser Asp Lys Ile Arg Lys Lys Leu Arg Trp Ala Trp Lys Gln Leu
    850                 855                 860

Arg Arg Phe Ser Arg Val Asp Ser Thr Thr Gln Arg Pro Ser Val Arg
865                 870                 875                 880

Leu Phe Trp Arg Glu His Leu His Ala Ser Val Asp Gly Arg Glu Leu
                885                 890                 895

Arg Glu Ser Thr Arg Thr Pro Thr Ser Thr Lys Trp Ile Arg Glu Arg
            900                 905                 910

Cys Ala Gln Ile Thr Gly Arg Asp Phe Val Gln Phe Val His Thr His
        915                 920                 925

Ile Asn Ala Leu Pro Ser Arg Ile Arg Gly Ser Arg Gly Arg Arg Gly
    930                 935                 940

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

Thr Thr Ala His Ile Leu Gln Gln Cys His Arg Thr His Gly Gly Arg
                965                 970                 975

Ile Leu Arg His Asn Lys Ile Val Ser Phe Val Ala Lys Ala Met Glu
            980                 985                 990

Glu Asn Lys Trp Thr Val Glu Leu  Glu Pro Arg Leu Arg  Thr Ser Val
        995                 1000                1005

Gly Leu  Arg Lys Pro Asp Ile  Ile Ala Ser Arg Asp  Gly Val Gly
    1010                1015                1020

Val Ile  Val Asp Val Gln Val  Val Ser Gly Gln Arg  Ser Leu Asp
    1025                1030                1035

Glu Leu  His Arg Glu Lys Arg  Asn Lys Tyr Gly Asn  His Gly Glu
    1040                1045                1050
```

Leu Val Glu Leu Val Ala Gly Arg Leu Gly Leu Pro Lys Ala Glu
1055 1060 1065

Cys Val Arg Ala Thr Ser Cys Thr Ile Ser Trp Arg Gly Val Trp
1070 1075 1080

Ser Leu Thr Ser Tyr Lys Glu Leu Arg Ser Ile Ile Gly Leu Arg
1085 1090 1095

Glu Pro Thr Leu Gln Ile Val Pro Ile Leu Ala Leu Arg Gly Ser
1100 1105 1110

His Met Asn Trp Thr Arg Phe Asn Gln Met Thr Ser Val Met Gly
1115 1120 1125

Gly Gly Val Gly
1130

<210> 68
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 68
tgatgacgag gcatttggc 19

<210> 69
<211> 25
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 69
Met Ala His His His His His His Val Gly Thr Val Gly Thr Gly Gly
1 5 10 15

Gly Ser Gly Gly Ala Ser Thr Ala Leu
20 25

<210> 70
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
6xHis tag

<400> 70
His His His His His His
1 5

<210> 71
<211> 69
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
polypeptide

<400> 71
Met Pro Ser Val Gln Glu Val Glu Lys Leu Leu His Val Leu Asp Arg
1 5 10 15

Asn Gly Asp Gly Lys Val Ser Ala Glu Glu Leu Lys Ala Phe Ala Asp
20 25 30

Asp Ser Lys Cys Pro Leu Asp Ser Asn Lys Ile Lys Ala Phe Ile Lys
35 40 45

Glu His Asp Lys Asn Lys Asp Gly Lys Leu Asp Leu Lys Glu Leu Val
50 55 60

Ser Ile Leu Ser Ser
65

<210> 72
<211> 210
<212> DNA

<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
polynucleotide

<400> 72
atgccgtctg ttcaggaagt tgaaaaactg ctgcacgttc tggaccgtaa cggtgacggt 60

aaagtttctg cggaagaact gaaagcgttc gcggacgact ctaaatgccc gctggactct 120

aacaaaatca aagcgttcat caaagaacac gacaaaaaca aagacggtaa actggacctg 180

aaagaactgg tttctatcct gtcttcttag 210

<210> 73
<211> 854
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
polypeptide

<400> 73
Met Ala His His His His His His Val Gly Thr Val Gly Thr Gly Gly
1 5 10 15

Gly Ser Gly Gly Ala Ser Thr Ala Leu Lys Thr Ala Gly Arg Arg Asn
20 25 30

Asp Leu His Asp Asp Arg Thr Ala Ser Ala His Lys Thr Ser Arg Gln
35 40 45

Lys Arg Arg Ala Glu Tyr Ala Arg Val Gln Glu Leu Tyr Lys Lys Cys
50 55 60

Arg Ser Arg Ala Ala Ala Glu Val Ile Asp Gly Ala Cys Gly Gly Val
65 70 75 80

Gly His Ser Leu Glu Glu Met Glu Thr Tyr Trp Arg Pro Ile Leu Glu
85 90 95

Arg Val Ser Asp Ala Pro Gly Pro Thr Pro Glu Ala Leu His Ala Leu
100 105 110

```
Gly Arg Ala Glu Trp His Gly Gly Asn Arg Asp Tyr Thr Gln Leu Trp
        115                 120                 125

Lys Pro Ile Ser Val Glu Glu Ile Lys Ala Ser Arg Phe Asp Trp Arg
    130                 135                 140

Thr Ser Pro Gly Pro Asp Gly Ile Arg Ser Gly Gln Trp Arg Ala Val
145                 150                 155                 160

Pro Val His Leu Lys Ala Glu Met Phe Asn Ala Trp Met Ala Arg Gly
                165                 170                 175

Glu Ile Pro Glu Ile Leu Arg Gln Cys Arg Thr Val Phe Val Pro Lys
            180                 185                 190

Val Glu Arg Pro Gly Gly Pro Gly Glu Tyr Arg Pro Ile Ser Ile Ala
        195                 200                 205

Ser Ile Pro Leu Arg His Phe His Ser Ile Leu Ala Arg Arg Leu Leu
    210                 215                 220

Ala Cys Cys Pro Pro Asp Ala Arg Gln Arg Gly Phe Ile Cys Ala Asp
225                 230                 235                 240

Gly Thr Leu Glu Asn Ser Ala Val Leu Asp Ala Val Leu Gly Asp Ser
                245                 250                 255

Arg Lys Lys Leu Arg Glu Cys His Val Ala Val Leu Asp Phe Ala Lys
            260                 265                 270

Ala Phe Asp Thr Val Ser His Glu Ala Leu Val Glu Leu Leu Arg Leu
        275                 280                 285

Arg Gly Met Pro Glu Gln Phe Cys Gly Tyr Ile Ala His Leu Tyr Asp
    290                 295                 300

Thr Ala Ser Thr Thr Leu Ala Val Asn Asn Glu Met Ser Ser Pro Val
305                 310                 315                 320
```

```
Lys Val Gly Arg Gly Val Arg Gln Gly Asp Pro Leu Ser Pro Ile Leu
                325                 330                 335

Phe Asn Val Val Met Asp Leu Ile Leu Ala Ser Leu Pro Glu Arg Val
            340                 345                 350

Gly Tyr Arg Leu Glu Met Glu Leu Val Ser Ala Leu Ala Tyr Ala Asp
        355                 360                 365

Asp Leu Val Leu Leu Ala Gly Ser Lys Val Gly Met Gln Glu Ser Ile
    370                 375                 380

Ser Ala Val Asp Cys Val Gly Arg Gln Met Gly Leu Arg Leu Asn Cys
385                 390                 395                 400

Arg Lys Ser Ala Val Leu Ser Met Ile Pro Asp Gly His Arg Lys Lys
                405                 410                 415

His His Tyr Leu Thr Glu Arg Thr Phe Asn Ile Gly Gly Lys Pro Leu
            420                 425                 430

Arg Gln Val Ser Cys Val Glu Arg Trp Arg Tyr Leu Gly Val Asp Phe
        435                 440                 445

Glu Ala Ser Gly Cys Val Thr Leu Glu His Ser Ile Ser Ser Ala Leu
    450                 455                 460

Asn Asn Ile Ser Arg Ala Pro Leu Lys Pro Gln Gln Arg Leu Glu Ile
465                 470                 475                 480

Leu Arg Ala His Leu Ile Pro Arg Phe Gln His Gly Phe Val Leu Gly
                485                 490                 495

Asn Ile Ser Asp Asp Arg Leu Arg Met Leu Asp Val Gln Ile Arg Lys
            500                 505                 510

Ala Val Gly Gln Trp Leu Arg Leu Pro Ala Asp Val Pro Lys Ala Tyr
        515                 520                 525
```

```
Tyr His Ala Ala Val Gln Asp Gly Gly Leu Ala Ile Pro Ser Val Arg
    530                 535                 540

Ala Thr Ile Pro Asp Leu Ile Val Arg Arg Phe Gly Gly Leu Asp Ser
545                 550                 555                 560

Ser Pro Trp Ser Val Ala Arg Ala Ala Ala Lys Ser Asp Lys Ile Arg
                565                 570                 575

Lys Lys Leu Arg Trp Ala Trp Lys Gln Leu Arg Arg Phe Ser Arg Val
            580                 585                 590

Asp Ser Thr Thr Gln Arg Pro Ser Val Arg Leu Phe Trp Arg Glu His
        595                 600                 605

Leu His Ala Ser Val Asp Gly Arg Glu Leu Arg Glu Ser Thr Arg Thr
    610                 615                 620

Pro Thr Ser Thr Lys Trp Ile Arg Glu Arg Cys Ala Gln Ile Thr Gly
625                 630                 635                 640

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

Arg Ile Arg Gly Ser Arg Gly Arg Arg Gly Gly Gly Glu Ser Ser Leu
            660                 665                 670

Thr Cys Arg Ala Gly Cys Lys Val Arg Glu Thr Thr Ala His Ile Leu
        675                 680                 685

Gln Gln Cys His Arg Thr His Gly Gly Arg Ile Leu Arg His Asn Lys
    690                 695                 700

Ile Val Ser Phe Val Ala Lys Ala Met Glu Glu Asn Lys Trp Thr Val
705                 710                 715                 720

Glu Leu Glu Pro Arg Leu Arg Thr Ser Val Gly Leu Arg Lys Pro Ala
                725                 730                 735
```

Ile Ile Ala Ser Arg Asp Gly Val Gly Val Ile Val Asp Val Gln Val
740 745 750

Val Ser Gly Gln Arg Ser Leu Asp Glu Leu His Arg Glu Lys Arg Asn
755 760 765

Lys Tyr Gly Asn His Gly Glu Leu Val Glu Leu Val Ala Gly Arg Leu
770 775 780

Gly Leu Pro Lys Ala Glu Cys Val Arg Ala Thr Ser Cys Thr Ile Ser
785 790 795 800

Trp Arg Gly Val Trp Ser Leu Thr Ser Tyr Lys Glu Leu Arg Ser Ile
805 810 815

Ile Gly Leu Arg Glu Pro Thr Leu Gln Ile Val Pro Ile Leu Ala Leu
820 825 830

Arg Gly Ser His Met Asn Trp Thr Arg Phe Asn Gln Met Thr Ser Val
835 840 845

Met Gly Gly Gly Val Gly
850

<210> 74
<211> 38
<212> RNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 74
cagucaguca gucagucagu gccaaaugcc ucgucauc 38

<210> 75
<211> 45
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 75
ctgcagtaat acgactcact ataggatcct ctagagtcga cctgc 45

<210> 76
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 76
gccattcgcc attcaggctg c 21

<210> 77
<211> 204
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polynucleotide

<400> 77
acggccagtg aattgtaata cgactcacta tagggcgaat tgggtaccgc ctcgaggtcg 60

acggtatcga taagcttgat atcgaattcc tgcagcggat ccactagttc tagagcggcc 120

gccaccgcgg tggagctcca gcttttgttc cctttagtga gggttaattt cgagcttggc 180

gtaatcatgg tcatagctgt ttcc 204

<210> 78
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 78
acggccagtg aattgtaata cgac 24

<210> 79
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 79
ggaaacagct atgaccatg 19

<210> 80
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 80
cagggttatt gtctcatgag cg 22

<210> 81
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<220>
<223> Description of Combined DNA/RNA Molecule: Synthetic oligonucleotide

<400> 81
gttaataacg aaatgagcag ccggg 25

<210> 82
<211> 196
<212> RNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polynucleotide

<400> 82
ggauccucua gagucgaccu gcaggcaugc aagcuuggca cuggccgucg uuuucaacgu 60

cgugacuggg aaaacccugg cguuacccaa cuuaaucgcc uugcagcaca ucccccuuuc 120

gccagcuggc guaauagcga agaggcccgc accgaucgcc cuucccaaca guugcgcagc 180

cugaauggcg aauggc 196

<210> 83
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 83
cagtcagtca gtcagtcagt gcca 24

<210> 84
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 84
cacgacgttg taaaacgacg gc 22

<210> 85
<211> 600
<212> RNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polynucleotide

<400> 85
ggauccucua gagucgaccu gcaggcaugc aagcuuggca cuggccgucg uuuuacaacg 60

ucgugacugg gaaaacccug gcguuaccca acuuaaucgc cuugcagcac auccccuuu 120

cgccagcugg cguaauagcg aagaggcccg caccgaucgc ccuucccaac aguugcgcag 180

ccugaauggc gaauggcgcc ugaugcggua uuuucuccuu acgcaucugu gcgguauuuc 240

acaccgcaua uggugcacuc ucaguacaau cugcucugau gccgcauagu uaagccagcc 300

ccgacacccg ccaacacccg cugacgcgcc cugacgggcu ugucugcucc cggcauccgc 360

uuacagacaa gcugugaccg ucuccgggag cugcaugugu cagagguuuu caccgucauc 420

accgaaacgc gcgagacgaa agggccucgu gauacgccua uuuuuauagg uuaaugucau 480

gauaauaaug guuucuuaga cgucaggugg cacuuuucgg ggaaaugugc gcggaacccc 540

uauuuguuua uuuuucuaaa uacauucaaa uauguauccg cucaugagac aauaacccug 600

<210> 86
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 86
gttaataacg aaatgagcag cc 22

<210> 87
<211> 197
<212> RNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polynucleotide

<400> 87
ggauccucua gagucgaccu gcaggcaugc aagcuuggca cuggccgucg uuuuacaacg 60

ucgugacugg gaaaacccug gcguuaccca acuuaaucgc cuugcagcac auccccuuu 120

cgccagcugg cguaauagcg aagaggcccg caccgaucgc ccuucccaac aguugcgcag 180

ccugaauggc gaauggc 197

<210> 88
<211> 1956
<212> RNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
polynucleotide

<400> 88
ggauccucua gagucgaccu gcaggcaugc aagcuuggca cuggccgucg uuuuacaacg 60

ucgugacugg gaaaacccug gcguuaccca acuuaaucgc cuugcagcac auccccccuuu 120

cgccagcugg cguaauagcg aagaggcccg caccgaucgc ccuucccaac aguugcgcag 180

ccugaauggc gaauggcgcc ugaugcggua uuuucuccuu acgcaucugu gcgguauuuc 240

acaccgcaua uggugcacuc ucaguacaau cugcucugau gccgcauagu uaagccagcc 300

ccgacacccg ccaacacccg cugacgcgcc cugacgggcu ugucugcucc cggcauccgc 360

uuacagacaa gcugugaccg ucuccgggag cugcaugugu cagagguuuu caccgucauc 420

accgaaacgc gcgagacgaa agggccucgu gauacgccua uuuuuauagg uuaaugucau 480

gauaauaaug guuucuuaga cgucaggugg cacuuuucgg ggaaaugugc gcggaacccc 540

uauuuguuua uuuuucuaaa uacauucaaa uauguauccg cucaugagac aauaacccug 600

auaaaugcuu caauaauauu gaaaaaggaa gaguaugagu auucaacauu uccgugucgc 660

ccuuauuccc uuuuuugcgg cauuuugccu uccuguuuuu gcucacccag aaacgcuggu 720

gaaaguaaaa gaugcugaag aucaguuggg ugcacgagug gguuacaucg aacuggaucu 780

caacagcggu aagauccuug agaguuuucg ccccgaagaa cguuuuccaa ugaugagcac 840

uuuuaaaguu cugcuaugug gcgcgguauu aucccguauu gacgccgggc aagagcaacu 900

cggucgccgc auacacuauu cucagaauga cuugguugag uacucaccag ucacagaaaa 960

gcaucuuacg gauggcauga caguaagaga auuaugcagu gcugccauaa ccaugaguga 1020

uaacacugcg gccaacuuac uucugacaac gaucggagga ccgaaggagc uaaccgcuuu 1080

uuugcacaac augggggauc auguaacucg ccuugaucgu ugggaaccgg agcugaauga 1140

agccauacca aacgacgagc gugacaccac gaugccugua gcaauggcaa caacguugcg 1200

caaacuauua acuggcgaac uacuuacucu agcuucccgg caacaauuaa uagacuggau 1260

ggaggcggau aaaguugcag gaccacuucu gcgcucggcc cuuccggcug gcugguuuau 1320

ugcugauaaa ucuggagccg gugagcgugg gucucgcggu aucauugcag cacuggggcc 1380

agaugguaag cccucccgua ucguaguuau cuacacgacg gggagucagg caacuaugga 1440

ugaacgaaau agacagaucg cugagauagg ugccucacug auuaagcauu gguaacuguc 1500

agaccaaguu uacucauaua uacuuuagau ugauuuaaaa cuucauuuuu aauuuaaaag 1560

gaucuaggug aagauccuuu uugauaaucu caugaccaaa aucccuuaac gugaguuuuc 1620

guuccacuga gcgucagacc ccguagaaaa gaucaaagga ucuucuugag auccuuuuuu 1680

ucugcgcgua aucugcugcu ugcaaacaaa aaaaccaccg cuaccagcgg ugguuuguuu 1740

gccggaucaa gagcuaccaa cucuuuuucc gaagguaacu ggcuucagca gagcgcagau 1800

accaaauacu guccuucuag uguagccgua guuaggccac cacuucaaga acucuguagc 1860

accgccuaca uaccucgcuc ugcuaauccu guuaccagug gcugcugcca guggcgauaa 1920

gucgugucuu accggguugg acucaagacg auaguu 1956

<210> 89
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 89
tcgtcttgag tccaacccgg t 21

<210> 90
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 90
gaacacagca ttagcagctc gtcttgagtc caacccggt 39

<210> 91
<211> 58
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 91
aatgatacgg cgaccaccga gatctacact ctttccctac acgacgctct tccgatct 58

<210> 92
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 92
agatcggaag agcgtcgtgt ag 22

<210> 93
<211> 220
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
polynucleotide

<400> 93
ctgcagtaat acgactcact ataggatcct ctagagtcga cctgcaggca tgcaagcttg 60

gcactggccg tcgttttaca acgtcgtgac tgggaaaacc ctggcgttac ccaacttaat 120

cgccttgcag cacatccccc tttcgccagc tggcgtaata gcgaagaggc ccgcaccgat 180

cgcccttccc aacagttgcg cagcctgaat ggcgaatggc 220

<210> 94
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 94
acactctttc cctacacgac gct 23

<210> 95
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 95
gcgtcgtgta gggaaagagt gt 22

<210> 96
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 96
cactctttcc ctacacgacg ct 22

<210> 97
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 97
agcgtcgtgt agggaaagag tgt 23

<210> 98
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 98
acactttatg cttccggctc 20

<210> 99
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 99
taagttgggt aacgccagg 19

<210> 100
<211> 11
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 100
acactctttc c 11

<210> 101
<211> 9
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 101
agcgtcgtg 9

<210> 102
<211> 44
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<220>
<223> Description of Combined DNA/RNA Molecule: Synthetic primer

<400> 102
ttccaatgat acggcgacca ccgauacugu cauagctagc tcct 44

<210> 103
<211> 43
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 103
ggagctagct atgacagtat cggtggtcgc cgtatcatta ctt 43

<210> 104
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 104
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaa 35

<210> 105
<211> 61
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<220>
<221> modified_base
<222> (37)..(44)
<223> a, c, t, g, unknown or other

<400> 105
ccgtgactgg agttcagacg tgtgctcttc cgatctnnnn nnnnttttttt ttttttttttt 60

t 61

<210> 106
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 106
acactctttc cctacacgac gctcttccga tctc 34

<210> 107
<211> 59
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 107
aatgatacgg cgaccaccga gatctacacg tactgacaca ctctttccct acacgacgc 59

<210> 108
<211> 53
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 108
caagcagaag acggcatacg agatattact cggtgactgg agttcagacg tgt 53

<210> 109
<211> 38
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 109
acactctttc cctacacgac gctcttccga tctagggc 38

<210> 110
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 110
acactctttc cctacacgac gctcttccga tctcagggc 39

<210> 111
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 111
acactctttc cctacacgac gctcttccga tcttctgggc 40

<210> 112
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 112
acactctttc cctacacgac gctcttccga tctgc 35

<210> 113
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<220>
<223> Description of Combined DNA/RNA Molecule: Synthetic
oligonucleotide

<400> 113
acactctttc cctacacgac gctcttccga tctgggc 37

<210> 114
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<220>
<223> Description of Combined DNA/RNA Molecule: Synthetic oligonucleotide

<400> 114
acactctttc cctacacgac gctcttccga tctggg 36

<210> 115
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<220>
<221> modified_base
<222> (34)..(34)
<223> a, c, t, g, unknown or other

<400> 115
acactctttc cctacacgac gctcttccga tctnc 35

<210> 116
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<220>
<221> modified_base

<222> (34)..(35)
<223> a, c, t, g, unknown or other

<400> 116
acactctttc cctacacgac gctcttccga tctnnc 36

<210> 117
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<220>
<221> modified_base
<222> (34)..(34)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (35)..(35)
<223> ideoxyI

<400> 117
acactctttc cctacacgac gctcttccga tctnnc 36

<210> 118
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 118
ccgtgactgg agttcagacg tgtgctcttc cgatctc 37

<210> 119
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<220>
<221> CDS
<222> (1)..(27)

<400> 119
ggc tcc ggc ggc gct tct acc gca ttg 27
Gly Ser Gly Gly Ala Ser Thr Ala Leu
1 5

<210> 120
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 120
Gly Ser Gly Gly Ala Ser Thr Ala Leu
1 5

<210> 121
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<220>
<221> CDS
<222> (1)..(21)

<400> 121
aag acc gcg ggt cgt cgt aac 21
Lys Thr Ala Gly Arg Arg Asn
1 5

<210> 122
<211> 7
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
peptide

<400> 122
Lys Thr Ala Gly Arg Arg Asn
1 5

<210> 123
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<220>
<221> CDS
<222> (1)..(18)

<400> 123
cgt gaa cgt tgc gct caa 18
Arg Glu Arg Cys Ala Gln
1 5

<210> 124
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<400> 124
Arg Glu Arg Cys Ala Gln
1 5

<210> 125
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<220>
<221> CDS
<222> (1)..(15)

<400> 125
ggc ggc ggt gtt ggt taa 18
Gly Gly Gly Val Gly
1 5

<210> 126
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 126
Gly Gly Gly Val Gly
1 5

<210> 127
<211> 166
<212> PRT
<213> Schistosoma mansoni

<400> 127
Ser Ser Leu Leu Ala Phe Leu Gln Asn Glu Ser Thr Leu Met Asp Glu
1 5 10 15

Glu His Val Ser Thr Phe Leu Asn Ser His Ala Glu Phe Val Phe Pro
20 25 30

Arg Thr Trp Thr Pro Ser Arg Pro Lys His Pro Ser His Ala Pro Ala
35 40 45

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

Arg Leu Phe His His Arg Pro Lys Asp Ala Ser Asn Thr Val Leu Asp
65 70 75 80

Gly Arg Trp Arg Asn Pro Tyr Val Ala Asn His Ser Met Ile Pro Asp
85 90 95

Phe Asp Cys Phe Trp Thr Thr Val Phe Thr Lys Thr Asn Ser Pro Asp
100 105 110

Ser Arg Glu Ile Thr Pro Ile Ile Pro Met Thr Pro Ser Leu Ile Asp
115 120 125

Pro Ile Leu Pro Ser Asp Val Thr Trp Ala Leu Lys Glu Met His Gly
130 135 140

Thr Ala Gly Gly Ile Asp Arg Leu Thr Ser Tyr Asp Leu Met Arg Phe
145 150 155 160

Gly Lys Asn Gly Leu Ala
165

<210> 128
<211> 169
<212> PRT
<213> Opisthorchis viverrini

<400> 128
Ser Val Asp Leu Leu Ala Phe Ala Arg Gly Leu Gln Ser Gly Ile Met
1 5 10 15

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

Phe Pro His Thr Trp Lys Thr Val Ser Arg Arg Arg Arg Gln Leu Ala
35 40 45

His Arg Ile Pro Val Asn Arg Lys Gln Ile Arg Arg Ala Asn Phe Ala
50 55 60

Ala Ile Gln Thr Leu Phe His Gln Arg Arg Lys Asp Ser Ala Ser Ala
65 70 75 80

Val Leu Asp Gly Ser Trp Arg Asp Leu Tyr Lys Gly Asn Cys Gly Leu
85 90 95

Pro Thr Asn Ala Glu Arg Pro Trp Lys Gln Val Leu Ser Ala Pro Lys
100 105 110

Arg Ala Gly Ser Arg Pro Ser Arg Ile Val Val Pro Ser Asp Trp Ser
115 120 125

Leu Val Glu Pro Ile Thr Gly Glu Glu Val Gly Arg Thr Ile Arg Leu
130 135 140

Met Gly Asn Ser Ser Pro Gly Leu Asp Lys Leu Thr Pro Arg Thr Leu
145 150 155 160

Arg Arg Phe Asn Ala Asn Val Leu Ala
165

<210> 129
<211> 162
<212> PRT
<213> Ciona intestinalis

<400> 129
Pro Leu Ser Gln Phe Glu Pro Gly Lys Pro Ser Ser Ser Thr Lys Glu
1 5 10 15

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

Gly Ala Ala His Arg Glu Arg Arg Ala Asn Pro Pro Ser Thr Lys Leu
35 40 45

Asn Ala Arg Ala Thr Arg Arg Leu Gln Tyr Ser Arg Ile Gln Asn Leu
50 55 60

Tyr Lys Leu Asn Arg Ser Ala Cys Ala Gln Glu Val Leu Ser Gly Ala
65 70 75 80

Trp Lys Val Gln Ser Gly Glu Leu Asn Leu Lys Glu Val Gln Pro Phe
85 90 95

Trp Glu Lys Met Phe Arg Lys Glu Ser Ala Lys Asp Arg Arg Lys Pro
100 105 110

```
Lys Pro Thr Gly Glu Val Leu Trp Gly Leu Met Glu Pro Leu Thr Ile
        115                 120                 125


Ala Glu Val Gly Ser Thr Leu Lys Ser Thr Thr Pro Ser Ala Pro Gly
    130                 135                 140


Pro Asp Lys Leu Thr Leu Asp Gly Val Lys Arg Ile Pro Ile Ala Glu
145                 150                 155                 160


Leu Val
```

<210> 130
<211> 159
<212> PRT
<213> Ciona intestinalis

<400> 130

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Asp Met Thr Ala Val Asn Pro Gly His Pro Asp Pro Val Ile Arg Glu
1               5                   10                  15


Glu Ile Asp Arg Glu Phe Leu Arg Trp Leu Glu Pro Asn Arg Arg Arg
            20                  25                  30


Arg Gly Tyr Ala Lys Ala Thr Arg Ile Ala Leu Asn Ala Pro Gly Lys
        35                  40                  45


Val Arg Arg Arg Ala Glu Tyr Ala Ala Met Gln Arg Gln Trp Lys Thr
    50                  55                  60


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


Pro Ala Arg Thr Val Ser Leu Ser Asp Gln Glu Ala Phe Trp Arg Pro
                85                  90                  95


Leu Met Glu Ser Gln Ser Lys Asn Asp Leu Arg Glu Pro Ala Lys Val
            100                 105                 110
```

Gly Glu Thr Leu Trp Gly Leu Leu Asp Pro Ile Thr Pro Asp Glu Val
115 120 125

Arg Gln Ile Leu Gly Ser Met Ser Ser Lys Ala Pro Gly Pro Asp Gly
130 135 140

His Arg Leu Ser Asp Leu Arg Ser Ile Pro Ile Asp Gln Ile Cys
145 150 155

<210> 131
<211> 130
<212> PRT
<213> Ciona intestinalis

<400> 131
Lys Phe Lys Gln Ser Lys Val Lys His Asn Gln Lys Glu Asn Lys Ser
1 5 10 15

Lys Arg Gln Ile Arg Arg Ala Gln Tyr Ala Arg Thr Gln Ile Asn Tyr
20 25 30

Lys Arg Asn Arg Gln Gln Ala Ile Asn Ser Ile Leu Ser Lys Gln Trp
35 40 45

Arg Glu Leu Asp Asp Arg Gly Pro Pro Leu Glu His Val Leu Pro Phe
50 55 60

Trp Gln Lys Leu Leu Glu Lys Ser Ser Glu His Asp Thr Arg Gln Pro
65 70 75 80

Glu Pro Val Ser Gly Pro Ile Trp Glu Leu Val Glu Pro Ile Val Ala
85 90 95

Glu Glu Val Arg Leu Val Arg Lys Ser Met Pro Thr Ser Ala Pro Gly
100 105 110

Pro Asp Gly Ile Arg His Lys Asp Phe Met Ala Val Gln Pro Gln Ile
115 120 125

Leu Ala
130

<210> 132
<211> 163
<212> PRT
<213> Bombyx mori

<400> 132
Ala Arg Val Leu Ser Glu Leu Leu Glu Gly Ala Gly Arg Arg Arg Ala
1   5   10   15

Cys Arg Ala Met Arg Pro Lys Thr Ala Gly Arg Arg Asn Asp Leu His
            20   25   30

Asp Asp Arg Thr Ala Ser Ala His Lys Thr Ser Arg Gln Lys Arg Arg
        35   40   45

Ala Glu Tyr Ala Arg Val Gln Glu Leu Tyr Lys Lys Cys Arg Ser Arg
    50   55   60

Ala Ala Ala Glu Val Ile Asp Gly Ala Cys Gly Gly Val Gly His Ser
65   70   75   80

Leu Glu Glu Met Glu Thr Tyr Trp Arg Pro Ile Leu Glu Arg Val Ser
                85   90   95

Asp Ala Pro Gly Pro Thr Pro Glu Ala Leu His Ala Leu Gly Arg Ala
            100   105   110

Glu Trp His Gly Gly Asn Arg Asp Tyr Thr Gln Leu Trp Lys Pro Ile
        115   120   125

Ser Val Glu Glu Ile Lys Ala Ser Arg Phe Asp Trp Arg Thr Ser Pro
    130   135   140

Gly Pro Asp Gly Ile Arg Ser Gly Gln Trp Arg Ala Val Pro Val His
145   150   155   160

Leu Lys Ala

<210> 133
<211> 161
<212> PRT
<213> Lasius niger

<400> 133
Arg Thr Ala Ile Arg Arg Leu Glu Glu Gly Gln Ser Pro Glu Gly Ala
1 5 10 15

Leu Asp Asp Trp Trp Asn Asn Val Phe Ser Asp Leu Glu Val Thr Gly
            20 25 30

Arg Lys Arg Val Ala Arg Gly Pro Arg Ala Ile Pro Val Leu Ser Lys
        35 40 45

Arg Lys Ala Arg Arg Ile Glu Tyr Arg Arg Met Gln Gln Leu Trp Arg
    50 55 60

Thr Asn Met Thr Lys Ala Ala His Lys Val Leu Asp Gly Asp Ala Gly
65 70 75 80

Ser Leu Pro His Pro Thr Leu Ala Ala Gln Leu Gly Phe Trp Lys Pro
                85 90 95

Val Leu Glu Ala Glu Ser Val Asp Leu Ala Trp Pro Phe Ala Val Gly
            100 105 110

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

Glu Val Ile Asn Ile Arg Leu Pro Arg Thr Ser Ser Pro Gly Leu Asp
    130 135 140

Gly Leu Thr Val His Arg Trp Phe Thr Glu Val Pro Ala Ile Leu Arg
145 150 155 160

Ala

<210> 134
<211> 161

<212> PRT
<213> Lasius niger

<400> 134
Arg Ala Ala Val Cys Arg Leu Arg Glu Gly Cys Leu Pro Asp Ala Ala
1   5   10   15

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

Ser Gly Arg Ile Ser Arg Gly Pro Arg Val Ala Pro Val Leu Ser Lys
        35   40   45

Arg Arg Ala Arg Arg Val Glu Tyr Arg Arg Met Gln Gln Leu Trp Lys
    50   55   60

Val Asn Met Thr Lys Ala Ala His Lys Val Leu Asp Gly Asp Thr Asp
65   70   75   80

Ser Leu Pro His Pro Thr Leu Ala Glu Gln Leu Asp Phe Trp Arg Pro
                85   90   95

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

Lys Val Val Asp Gly Leu Glu Ser Val Trp Ser Pro Ile Thr Glu Gly
        115   120   125

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

Gly Leu Thr Val Asn Arg Trp Phe Ala Glu Val Pro Ala Ile Leu Arg
145   150   155   160

Ala

<210> 135
<211> 159
<212> PRT
<213> Nasonia vitripennis

<400> 135
Arg Thr Ala Ile Glu Met Ala Leu Ala Gly Gln Ser Pro Leu Asp Val
1   5   10   15

Cys Thr Val Gly Cys Tyr Gln Tyr Thr Met Thr Asn Leu Pro Leu Val
            20   25   30

Pro Val Arg Leu Gly Gly Pro Ile Tyr Trp Cys Asn Ala Gln Ser Arg
        35   40   45

Ser Asn Pro Gly Glu Thr Gln Arg Arg Gln Thr Ile Lys Glu Ser Asn
    50   55   60

Asn Ser Trp Lys Lys Asn Met Ser Lys Ala Ala His Ile Val Leu Asp
65   70   75   80

Gly Asp Thr Asp Ala Cys Pro Ala Gly Leu Glu Gly Thr Glu Ala Ser
                85   90   95

Gly Ala Ile Met Arg Ala Gly Cys Pro Thr Thr Arg His Leu Arg Ser
            100   105   110

Arg Met Gln Gly Glu Ile Lys Asn Leu Trp Arg Pro Ile Ser Asn Asp
        115   120   125

Glu Ile Lys Glu Val Glu Ala Cys Lys Arg Thr Ala Ala Gly Pro Asp
    130   135   140

Gly Met Thr Thr Thr Ala Trp Asn Ser Ile Asp Glu Cys Ile Lys
145   150   155

<210> 136
<211> 156
<212> PRT
<213> Rhynchosciara americana

<400> 136
Glu Ala Ala Leu Cys Gly Lys Met Leu Asn Glu Glu Gln Leu Ile His
1   5   10   15

```
Cys Ile Lys Ser Met Phe Asn Thr Ala Lys Cys Pro Lys Gly Pro Arg
            20                  25                  30

Phe Arg Lys Thr Ala Thr His Ser Gly Thr Asn Lys Gln Gln Arg Gln
        35                  40                  45

Gln Arg Tyr Ala Arg Val Gln Lys Leu Tyr Lys Met Asn Arg Lys Val
    50                  55                  60

Ala Ala Lys Met Val Leu Glu Glu Thr Asp Lys Ile Gln Ile Lys Leu
65                  70                  75                  80

Pro Asp His Asp Pro Met Phe Lys Phe Trp Glu Ser Glu Phe Lys Glu
                85                  90                  95

Gly Glu Gly Met Pro Glu Arg Met Pro Lys Asp Leu Lys Glu Ser Pro
            100                 105                 110

Asp Leu Lys Ala Ile Trp Asp Pro Val Thr Glu Glu Glu Val Arg Lys
        115                 120                 125

Ala Lys Val Ala Asn Asn Thr Ala Ala Gly Pro Asp Gly Ile Gln Pro
    130                 135                 140

Lys Ser Trp Asn Arg Ile Ser Leu Lys Tyr Lys Thr
145                 150                 155
```

<210> 137
<211> 156
<212> PRT
<213> Bradysia coprophila

```
<400> 137
Lys Val Ala Leu Leu Asn Gln Pro Met Asp Glu Gly Arg Ile Met Ser
1               5                   10                  15

Trp Leu Ser Asp Arg Phe Pro Asp Thr Gln Lys Pro Lys Gly Pro Ile
            20                  25                  30

Tyr Ser Lys Thr Thr Ile Tyr His Gly Thr Asn Lys Gln Lys Arg Lys
        35                  40                  45
```

```
Gln Arg Tyr Ala Leu Val Gln Ser Leu Tyr Lys Lys Asp Ile Ser Ala
    50                  55                  60

Ala Ala Arg Val Val Leu Asp Glu Asn Asp Lys Ile Ala Thr Lys Ile
65                  70                  75                  80

Pro Pro Val Arg His Met Phe Asp Tyr Trp Lys Asp Val Phe Ala Thr
                85                  90                  95

Gly Gly Gly Ser Ala Ala Thr Asn Ile Asn Arg Ala Pro Pro Ala Pro
            100                 105                 110

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

Ala Arg Ala Ser Asn Glu Lys Gly Ala Gly Pro Asp Gly Val Thr Pro
    130                 135                 140

Arg Ser Trp Asn Ala Leu Asp Asp Arg Tyr Lys Arg
145                 150                 155
```

<210> 138
<211> 167
<212> PRT
<213> Tribolium castaneum

<400> 138

```
Gly Asp Arg Leu Cys Asp Ile Ala Arg Arg Ala Cys Asp Gly Glu Asp
1               5                   10                  15

Val Ser Gly Gln Leu Leu Gly Trp Leu Arg Asp Val Phe Pro Val Lys
            20                  25                  30

Arg Val Ser Thr Arg Gly Asp Gln Ser Asp Leu Asp Val Asp Gly Ala
        35                  40                  45

Ser Val Ser Arg Arg Thr Ala Arg Arg Arg Glu Tyr Ala Arg Val Gln
    50                  55                  60
```

Glu Leu Tyr Arg Lys Asp Pro Lys Ala Cys Leu Ala Arg Ile Leu Gly
65 70 75 80

Asp Arg Arg Glu Gly Ala Asn Arg Ala Pro Asn Arg Asp Pro Ala Phe
85 90 95

Ile Asp Phe Trp Arg Gly Val Phe Ser Glu Ala Ser Ala Glu Val Glu
100 105 110

Gly Trp Ala Glu Glu Val Ser Asp His Gly Glu Leu Ala Arg Arg Val
115 120 125

Trp Asp Pro Ile Ser Val Glu Glu Val Gly Arg Ser Arg Val Arg Asn
130 135 140

Gly Ala Ala Pro Gly Pro Asp Gly Ile Ala Val Ser Val Trp Asn Lys
145 150 155 160

Leu Pro Pro Glu Ala Ala Ala
165

<210> 139
<211> 153
<212> PRT
<213> Tribolium castaneum

<400> 139
Gly Asp Arg Leu Cys Asn Ile Ala Arg Arg Ala Cys Asp Gly Gly Asp
1 5 10 15

Val Ser Gly Gln Leu Leu Gly Trp Leu Arg Asp Val Phe Pro Val Lys
20 25 30

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

Leu Val Ser Arg His Thr Ala Arg Thr Arg Glu Tyr Ala Arg Val Gln
50 55 60

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

```
Asp Arg Arg Glu Gly Ala Asn Arg Ala Pro Asn Arg Asp Pro Ala Phe
                85                  90                  95


Ile Asp Phe Trp Arg Gly Val Phe Ser Glu Ala Ser Ala Glu Val Glu
            100                 105                 110


Gly Cys Ala Glu Glu Val Ser Asp His Gly Gly Gly Lys Val Ser Gly
        115                 120                 125


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


Glu Gln Leu Pro Pro Glu Ala Ala Ala
145                 150


<210> 140
<211> 162
<212> PRT
<213> Nuttalliella namaqua

<400> 140
Gly Glu Arg Leu Trp Glu Ile Ala Arg Lys Ala Ile Arg Gly Glu Asp
1               5                   10                  15


Ile Tyr Arg Asp Leu Asn Asp Tyr Val Val Asp Thr Phe Val Val Ala
            20                  25                  30


Thr Lys Pro His Pro Gln Ala Lys Gly Lys Ser Tyr Thr Thr Ala Pro
        35                  40                  45


Pro Ser Ser Arg Arg Lys Arg Arg Arg Arg Leu Tyr Gly Arg Met Gln
    50                  55                  60


Glu Met Met Arg Arg Lys Pro Ala Asp Cys Ala Lys Ile Val Leu Asp
65                  70                  75                  80


Gly Glu Arg Val Ala Ser Lys Ile Asn Ser Glu Glu Phe Phe Asp Tyr
                85                  90                  95
```

Trp Glu Lys Leu Thr Thr Lys Glu Pro Ser Asn Trp Pro Leu Ser Ser
100 105 110

Asp Thr Ala Gln Arg Glu Asn Leu Lys Asp Pro Met Phe Pro Val Thr
115 120 125

Leu Arg Glu Ile Lys Glu Asn Leu Pro Ser Pro His Ser Ala Pro Gly
130 135 140

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

Leu Gln

<210> 141
<211> 159
<212> PRT
<213> Drosophila melanogaster

<400> 141
Gln Glu Leu Gln Thr Ile Ile Asp Arg Ala His Leu Glu Gly Lys Glu
1 5 10 15

Thr Thr Leu Gln Cys Leu Ser Leu Tyr Leu Leu Gly Ile Phe Pro Ala
20 25 30

Gln Gly Val Arg His Thr Leu Thr Arg Pro Pro Arg Arg Pro Arg Asn
35 40 45

Arg Arg Glu Ser Arg Arg Gln Gln Tyr Ala Val Val Gln Arg Asn Trp
50 55 60

Asp Lys His Lys Gly Arg Cys Ile Lys Ser Leu Leu Asn Gly Thr Asp
65 70 75 80

Glu Ser Val Met Pro Ser Gln Glu Ile Met Val Pro Tyr Trp Arg Glu
85 90 95

Val Met Thr Gln Pro Ser Pro Ser Ser Cys Ser Gly Glu Val Ile Gln
100 105 110

Met Asp His Ser Leu Glu Arg Val Trp Ser Ala Ile Thr Glu Gln Asp
        115   120   125

Leu Arg Ala Ser Arg Val Ser Leu Ser Ser Ser Pro Gly Pro Asp Gly
    130   135   140

Ile Thr Pro Lys Ser Ala Arg Glu Val Pro Ser Gly Ile Met Leu
145   150   155

<210> 142
<211> 149
<212> PRT
<213> Drosophila mercatorum

<400> 142
Glu Val Leu Gln Ser Ile Ile Asp Arg Ala His Ile Ser Gly Lys Glu
1   5   10   15

Ala Thr Leu Gln Cys Leu Ser Asn Tyr Leu Leu Glu Ile Phe Pro Asn
            20   25   30

Arg Asn Asp Arg Pro Ser Ser Ala Thr Val Pro Ala Arg Arg Pro Arg
        35   40   45

Asn Arg Arg Ile Ser Arg Arg Gln Gln Tyr Ala Arg Cys Ile Lys Ser
    50   55   60

Leu Leu Asp Gly Thr Asp Glu Ser Ala Leu Pro Asn Gln Ser Ile Met
65   70   75   80

Glu Pro Tyr Trp Arg Gln Val Met Thr Gln Pro Ser Pro Ser Leu Cys
                85   90   95

Ser Asn Thr Val Pro Arg Lys Gly Asn Met Gln Glu Gly Val Trp Ser
            100   105   110

Pro Ile Thr Ser Arg Asp Leu Gln Val His Lys Val Pro Leu Thr Ser
        115   120   125

Ser Pro Gly Pro Asp Gly Ile Thr Ser Gln Thr Ala Arg Ser Ile Pro
130 135 140

Ile Gly Ile Met Leu
145

<210> 143
<211> 160
<212> PRT
<213> Forficula auricularia

<400> 143
Asp Glu Leu Glu Ala Leu Cys Asp Asn Ile Cys Ile Trp Pro Thr Arg
1 5 10 15

Leu Leu Ile Thr Thr Val Glu Ser Tyr Ile Arg Lys Leu Phe Lys Thr
20 25 30

Thr Ser Thr Leu Lys Pro Ala Gln Lys Leu His Asn Pro Ser Asn Arg
35 40 45

Asn Leu Pro Lys Arg Gln Leu Arg Arg Met Glu Tyr Gly Lys Thr Gln
50 55 60

Lys Leu Trp Lys Lys Asn Pro Cys Arg Ala Ile Lys Thr Ile Ile Asp
65 70 75 80

Asp Lys Asp Cys Lys Ser Pro Pro Glu Arg Glu Ala Met Thr Gln Tyr
85 90 95

Trp Lys Thr Thr Phe Ser Ser Lys Lys Arg Thr Cys Pro Gln Tyr Glu
100 105 110

Pro Arg Glu Ser Thr Lys Thr Gln Leu Trp Glu Pro Val Thr Ile Glu
115 120 125

Glu Leu His Cys Cys His Leu Glu Met Thr Thr Ser Pro Gly Pro Asp
130 135 140

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

<210> 144
<211> 159
<212> PRT
<213> Lasius niger

<400> 144
Thr Arg Leu His Asn Ile Ala Met Glu Ala Arg Thr Ser Gly Lys Asp
1   5   10   15

Ala Thr Leu Gln Lys Ile Ala Leu Tyr Leu Arg Glu Val Phe Pro Ala
            20   25   30

Pro Pro Pro Arg Arg Glu Arg Arg Arg Lys Lys Thr Pro Asn Pro Ala
        35   40   45

Pro Met Arg Lys Arg Glu Ala Arg Arg Cys Glu Tyr Gly Ala Ala Gln
    50   55   60

Ser Leu Trp Lys Arg Asp Arg Arg His Cys Ile Thr Asn Ile Leu Asn
65   70   75   80

Glu Met Gly Pro Val Asn Gln Pro Pro Arg Glu Thr Met Glu Pro Tyr
                85   90   95

Trp Thr Arg Met Met Thr Thr Asp Gly Arg Thr Ser Pro Pro Ser Asp
            100   105   110

Lys Val Pro Ile Lys Glu Asp Ile Trp Thr Pro Ile Thr Gly Asn Asp
        115   120   125

Ile Lys Arg Ser Arg Ile Pro Arg Ala Ser Ala Pro Gly Pro Asp Gly
    130   135   140

Ile Ser Ala Arg Leu Tyr Arg Ser Ile Pro Thr Thr Val Ile Ile
145   150   155

<210> 145
<211> 159
<212> PRT
<213> Bacillus rossius

<220>
<221> MOD_RES
<222> (92)..(92)
<223> Any amino acid

<400> 145
Asp Arg Leu Arg Leu Ile Val Arg Ser Val Asp Asp Trp Ser Arg Ala
1   5   10   15

Arg Leu His Gln Glu Ile Gly Trp Phe Leu Arg Asp Leu Phe Trp Lys
            20   25   30

Pro Leu Thr Pro Asn Leu Ala Arg Val Ser Leu Pro Ser Lys Asp Lys
        35   40   45

Val Ser Arg Arg Arg Leu Arg Arg Ala Asp Tyr Gly Arg Val Gln Arg
    50   55   60

Ala Trp Lys Arg Asn Arg Asn Thr Cys Leu Arg Asp Leu Leu Arg Asp
65   70   75   80

Lys Arg Thr Glu Ser Ala Pro Pro Glu Glu Leu Xaa Val Pro Tyr Trp
                85   90   95

Glu Ser Val Leu Arg Ser Gly Ser Ser Cys Thr Pro Gly Gln Arg Gly
            100   105   110

Arg Thr Ala Glu Arg Thr Glu Leu Trp Asp Pro Val Ser Ser Lys Glu
        115   120   125

Val Glu Gln Ala Leu Pro Pro Leu Gly Thr Ala Pro Gly Pro Asp Ser
    130   135   140

Phe Thr Pro Lys Asp Phe Arg Ala Val Pro Ser Ala Val Trp Ala
145   150   155

<210> 146
<211> 170
<212> PRT
<213> Eyprepocnemis plorans

<400> 146
Lys Leu Val Asp Asp Ile Val Ala Leu Gly Pro Asn Thr Ser Arg Asp
1   5   10   15

Ile Val Arg Ser Met Leu Pro Ser Ala Leu Asp Ala Val Gly Ser Lys
            20   25   30

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

Asp Lys Lys Arg Ala Arg Arg Arg Trp Glu Tyr Ala Ala Val Gln Arg
    50   55   60

Ala Phe Arg Lys Asn Ala Ala Arg Cys Val Asn Gly Leu Leu Asp Gly
65   70   75   80

Thr Leu Leu His Gln Pro Pro Ser Ile Pro Gly Leu Val Glu Phe Trp
                85   90   95

Lys Asp Leu Phe Thr Ala Pro Cys Ala Ser Ser Arg Pro Arg Ser Lys
            100   105   110

Glu Gly Leu Ser Pro Met Leu Leu Ala Ser Ser Gln Pro Val Ser Phe
        115   120   125

Arg Asp Leu Trp Ala Pro Ile Thr Ser Glu Glu Ala Ala Ala Ala Leu
    130   135   140

Pro Pro Arg Asn Ser Ala Ala Gly Pro Asp Ala Leu Thr Pro Ala Gln
145   150   155   160

Leu Arg Arg Leu Pro His Pro Val Phe Leu
                165   170

<210> 147
<211> 153
<212> PRT
<213> Lepidurus couesii

<400> 147

```
Asp Arg Leu Ile Ser Asp Ala Leu Arg Gly Val Asp Val Leu Glu Asn
1               5                   10                  15


Leu Asp Ala Tyr Leu Leu Glu Val Phe Ala Lys Pro Met Ala Gln Asn
            20                  25                  30


Pro Cys Pro Lys Pro Pro Pro Pro Ala Lys Asn Ser Arg Glu Arg Arg
        35                  40                  45


Asp Arg Glu Tyr Ser Arg Val Gln Asn Phe Tyr Lys Lys Asn Arg Ser
    50                  55                  60


Ala Cys Ile Asn Ser Ile Leu Asp Gly Asn Thr Arg Ser Gln Asn Val
65                  70                  75                  80


Ile Pro Gly Leu Thr Lys Phe Trp Thr Glu Thr Phe Glu Lys Asn Ser
                85                  90                  95


Pro Pro Asp Asp Glu Ala Pro Asp Gln Phe Val Ala Asp Glu Pro Arg
            100                 105                 110


Asp Met Tyr Lys Trp Ile Thr Phe Tyr Glu Met Ser Gln Asp Tyr Leu
        115                 120                 125


Asp Ser Ser Thr Ala Pro Gly Val Asp Gly Phe Ser Ala Lys Gln Leu
    130                 135                 140


Arg Ser Met Ser Pro Arg Val Leu Asn
145                 150


<210> 148
<211> 153
<212> PRT
<213> Lepidurus apus lubbocki

<400> 148
Asp Arg Leu Ile Thr Asp Ala Leu Gln Gly Asp Asp Val Leu Leu Asn
1               5                   10                  15


Leu Asp Ala Tyr Leu Leu Glu Val Phe Ala Lys Pro Met Ala Pro Asn
            20                  25                  30
```

```
Pro Cys Pro Lys Pro Leu Pro Pro Val Lys Asn Ser Arg Glu Lys Arg
        35                  40                  45

Asp Arg Glu Tyr Ser Arg Val Gln Asn Phe Tyr Lys Lys Asn Arg Ser
    50                  55                  60

Ala Cys Ile Asn Ser Ile Leu Asp Gly Asn Thr Arg Ser Gln Asn Val
65                  70                  75                  80

Ile Pro Asp Leu Met Lys Phe Trp Thr Glu Thr Phe Glu Lys Val Ser
                85                  90                  95

Pro Ala Asp Asp Lys Ala Pro Asp Gln Phe Val Val Asp Glu Pro Arg
            100                 105                 110

Asp Met Tyr Lys Trp Ile Thr Phe Tyr Glu Met Ser Gln Asn Tyr Leu
        115                 120                 125

Asp Pro Ser Thr Ala Pro Gly Val Asp Gly Phe Ser Ala Lys Gln Leu
    130                 135                 140

Arg Ser Met Thr Pro Arg Val Leu Asn
145                 150
```

<210> 149
<211> 154
<212> PRT
<213> Lepidurus couesii

<400> 149

```
Asp Gln Leu Ile Arg Thr Ala Gln Glu Gly Thr Pro Val Leu Asn Asp
1               5                   10                  15

Leu Asp Leu Tyr Leu Arg Glu Val Leu Val Gln Pro Thr Arg Gln Gly
            20                  25                  30

Glu Arg Gln Ala Lys Pro Leu Pro Pro Pro Lys Ser Ser Arg Glu Lys
        35                  40                  45
```

Arg Asp Arg Glu Tyr Ala Arg Val Gln Asn Phe Tyr Arg Lys Asn Lys
50 55 60

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

Lys Ile Pro Asp Ile Asp Glu Phe Trp Lys Ala Ile Phe Glu Ser Gln
85 90 95

Ser Pro Pro Asp Ala Glu Pro Val Ser Tyr Val Val Asp Glu Glu Pro
100 105 110

Lys Asn Ile Trp Ser Trp Ile Ser Phe Phe Glu Met Asn Arg Asn Tyr
115 120 125

Pro Asp Thr Ser Thr Ser Pro Gly Pro Asp Gly Val Thr Ala Arg Met
130 135 140

Leu Arg Ser Ile Pro Ala Arg Val Leu Asn
145 150

<210> 150
<211> 177
<212> PRT
<213> Triops cancriformis

<400> 150
Asp Asn Ile Ile Val Gln Ala Leu Lys Glu Asp Val Asn Ser Asp Gln
1 5 10 15

Val Phe Asn Asp Leu Asn Ser Tyr Leu Lys Leu Ile Leu Glu Pro Ser
20 25 30

Gly Arg Ala Lys Ser Val Pro Gly Glu Ile Ile His Gly Asp Pro Ser
35 40 45

Gly Ser Ala Lys Thr Ser Val Thr Lys Ala Pro Lys Pro Ala Thr Val
50 55 60

Ser Ser Ser Arg Lys Lys Arg Arg Asp Ala Glu Phe Ala Arg Ile Gln
65 70 75 80

```
Arg Leu Tyr Arg Lys Asn Arg Thr Ser Cys Ile Asn Thr Ile Leu Asp
                85                  90                  95

Gly Asn Thr Arg Glu His Glu Ala Pro Lys Asn Met Glu Gly Phe Trp
            100                 105                 110

Arg Glu Ile Phe Glu Arg Glu Ser Pro Asp Asp Pro Asp Asp Pro Asp
        115                 120                 125

Ile Phe Leu Glu Glu Glu Ala Ser Asp Ile Trp Lys Tyr Ile Ser Phe
    130                 135                 140

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

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

Asn
```

<210> 151
<211> 161
<212> PRT
<213> Trichinella murrelli

<400> 151

```
Val Met Ser Cys Asp Leu Ile Lys Glu Ala Thr Gly Met Ala Met Val
1               5                   10                  15

Asp Val Asn Glu Leu Gln Ser Asn Ile Arg Lys Leu Phe Ser Ser Gly
            20                  25                  30

Arg Lys Leu Pro Met Lys Leu Arg Gly Ala Arg Glu Ala Val Gln Lys
        35                  40                  45

Lys Met Ala Asn Pro Arg Val Ala Lys Phe Lys Arg Phe Gln Arg Leu
    50                  55                  60
```

Phe Arg Ser Asn Arg Arg Lys Leu Ala Asn His Ile Phe Asp Lys Ala
65 70 75 80

Ser Leu Glu Gln Phe Gly Gly Ser Ile Asp Glu Ala Ser Asp His Leu
85 90 95

Glu Arg Phe Leu Ser Arg Pro Arg Leu Glu Ser Asp Ser Tyr Ser Val
100 105 110

Ile Ser Gly Asp Lys Ser Ile Gly Val Ala His Pro Ile Leu Ala Glu
115 120 125

Glu Val Glu Leu Glu Leu Lys Ala Ser Arg Pro Thr Ala Val Gly Pro
130 135 140

Asp Gly Ile Gly Leu Glu Asp Ile Lys Lys Leu Asn Ser Tyr Asp Leu
145 150 155 160

Ala

<210> 152
<211> 161
<212> PRT
<213> Trichinella sp.

<400> 152
Val Met Ser Cys Asp Leu Ile Lys Gln Ala Thr Gly Met Ala Ile Val
1 5 10 15

Asp Ile Asn Glu Leu Gln Asn Asn Leu Arg Lys Val Phe Ser Ser Gly
20 25 30

Arg Asn Leu Pro Ala Lys Ser His Gly Val Arg Glu Ser Val Pro Lys
35 40 45

Lys Met Ala Asn Pro Arg Val Ala Lys Phe Lys Arg Phe Gln Arg Leu
50 55 60

Phe Arg Ser Asn Arg Arg Lys Leu Ala Ser His Ile Phe Asp Lys Ala
65 70 75 80

```
Ser Leu Glu Gln Phe Gly Gly Ser Ile Asp Glu Ala Ser Asp His Leu
                85                  90                  95


Glu Lys Phe Leu Ser His Pro Arg Leu Glu Ser Asp Leu Tyr Ser Ala
            100                 105                 110


Ile Ser Gly Asp Asn Ser Ile Gly Ile Ala His Pro Ile Leu Ala Glu
        115                 120                 125


Glu Val Glu Leu Glu Leu Lys Ala Thr Arg Pro Thr Ala Val Gly Pro
    130                 135                 140


Asp Gly Ile Ala Leu Glu Asp Ile Lys Arg Leu Asn Pro Tyr Asp Ile
145                 150                 155                 160


Ala
```

```
<210> 153
<211> 161
<212> PRT
<213> Trichinella britovi

<400> 153
Val Met Ser Cys Asp Leu Ile Lys Glu Ala Thr Gly Met Ala Met Val
1               5                   10                  15


Asp Ile Asn Glu Leu Gln Ser Asn Ile Arg Lys Val Phe Ser Ser Gly
            20                  25                  30


Arg Lys Leu Pro Val Lys Ser Arg Gly Ala Arg Glu Thr Val Gln Lys
        35                  40                  45


Lys Met Ala Asn Pro Arg Val Ala Lys Tyr Lys Arg Phe Gln Arg Leu
    50                  55                  60


Phe Arg Ser Asn Arg Arg Lys Leu Ala Ser His Ile Phe Asp Lys Ala
65                  70                  75                  80
```

Ser Leu Glu Gln Phe Gly Gly Ser Ile Asp Glu Ala Ser Asp His Leu
85 90 95

Glu Lys Phe Leu Ser Arg Pro Arg Leu Glu Ser Asp Ser Tyr Ser Val
100 105 110

Ile Asn Gly Asn Lys Ser Ile Gly Val Ala His Pro Ile Leu Ala Glu
115 120 125

Glu Val Glu Leu Glu Leu Lys Ala Ser Arg Pro Thr Ala Val Gly Pro
130 135 140

Asp Gly Ile Ala Leu Glu Asp Ile Lys Lys Leu Asn Ser Tyr Asp Leu
145 150 155 160

Ala

<210> 154
<211> 188
<212> PRT
<213> Trichinella nelsoni

<400> 154
Arg Asp Leu Arg His His Leu Glu Asp Ser Leu Thr Ser Cys Asn Ser
1 5 10 15

Glu Leu Glu Gly Leu Leu Asn Phe Leu Thr Asn Lys Ile Leu Asn Ser
20 25 30

Lys Pro Glu Asp Arg Asn Lys Tyr Val Asp Asp Val Ile Ser Ile Val
35 40 45

Thr Glu Phe Val Cys Lys Pro Asn Gly His Gln Pro Pro Pro Ala Pro
50 55 60

Lys Lys Arg Thr Lys Glu Glu Pro Lys Asn Arg Arg Gln Lys Ile Arg
65 70 75 80

Ser Lys Tyr Ala Lys Met Gln Ser Leu Phe Lys Arg Asp Pro Lys Arg
85 90 95

Ile Ala Ala His Leu Ile Lys Asn Gln Pro Leu Cys Asn Val Ser Cys
100 105 110

Pro Ile Asp Ala Ala Glu Ser Ala Leu Arg Gln Arg Leu Ser Gln Arg
115 120 125

Pro Ser Val Asp Ala Ala Pro Phe Thr Ser Lys Cys Pro Pro Asn Ser
130 135 140

Lys Asn Ile Leu Asp Pro Ile Ser Pro Glu Glu Val Thr Leu His Leu
145 150 155 160

Gln Arg Met Lys Ile His Thr Ser Ala Gly Pro Asp Gly Ile Gln Val
165 170 175

Ser His Leu Arg Ser Cys Asp Pro Val Cys Leu Ala
180 185

<210> 155
<211> 194
<212> PRT
<213> Schistosoma mansoni

<400> 155
Thr Glu Ile Ser Cys Ala Pro Leu Lys Pro Gln Gln Arg Met Lys Ile
1 5 10 15

Leu Lys Asp Asn Leu Leu Pro Arg Leu Leu Tyr Pro Leu Thr Leu Gly
20 25 30

Ile Val His Leu Lys Thr Leu Lys Ser Met Asp Arg Asn Ile His Thr
35 40 45

Ala Ile Arg Lys Trp Leu Arg Leu Pro Ser Asp Thr Pro Leu Ala Tyr
50 55 60

Phe His Ser Pro Val Ala Ala Gly Gly Leu Gly Ile Leu His Leu Ser
65 70 75 80

Ser Ser Val Pro Phe His Arg Arg Lys Arg Leu Glu Thr Leu Leu Ser
85 90 95

Ser Pro Asn Arg Leu Leu His Lys Leu Pro Thr Ser Pro Thr Leu Ala
100 105 110

Ser Tyr Ser His Leu Ser Gln Leu Pro Val Arg Ile Gly His Glu Thr
115 120 125

Val Thr Ser Arg Glu Glu Ala Ser Asn Ser Trp Val Arg Arg Leu His
130 135 140

Ser Ser Cys Asp Gly Lys Gly Leu Leu Leu Ala Pro Leu Ser Thr Glu
145 150 155 160

Ser His Ala Trp Leu Arg Tyr Pro Gln Ser Ile Phe Pro Ser Val Tyr
165 170 175

Ile Asn Ala Val Lys Leu Arg Gly Gly Leu Leu Ser Thr Lys Val Arg
180 185 190

Arg Ser

<210> 156
<211> 194
<212> PRT
<213> Opisthorchis viverrini

<400> 156
Glu Glu Val Thr Arg Ala Pro Leu Lys Pro His Gln Arg Met Asp Ile
1 5 10 15

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

Gln Val His Arg Asn Thr Leu Lys Arg Leu Asp Asn Tyr Ile Arg Gln
35 40 45

Tyr Ile Arg Gly Trp Leu Arg Leu Pro Lys Asp Thr Pro Ile Ser Tyr
50 55 60

```
Ile His Ala Gly Lys Gln His Gly Gly Leu Gly Ile Pro Ser Leu Ser
65                  70                  75                  80

Ala Thr Ile Pro Met Gln Arg Lys Thr Arg Met Glu Lys Leu Leu Ser
                85                  90                  95

Thr Gln Cys Arg Val Leu Arg Asn Val Val Asn Asp Ser Ala Phe Gly
            100                 105                 110

Lys Ile Val Arg Asp Leu Ser Leu Pro Ile Arg Val His Gly Ala Cys
        115                 120                 125

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

Asn Ser Ala Asp Gly Arg Gly Leu Arg Glu Leu Val Thr Ser Pro Leu
145                 150                 155                 160

Ser Asn Arg Trp Leu Val Phe Pro Glu Arg Val Phe Pro Arg Ile Phe
                165                 170                 175

Ile Arg Gly Ile Gln Leu Arg Cys Asn Leu Leu Arg Thr Arg Val Arg
            180                 185                 190

Ser Ala
```

<210> 157
<211> 195
<212> PRT
<213> Ciona intestinalis

<400> 157

```
Ala Glu Leu Ser Arg Ala Pro Leu Lys Pro Gln Gln Arg Leu Tyr Leu
1               5                   10                  15

Leu Arg Val His Leu Leu Pro Lys Leu Gln His Gly Leu Val Leu Ser
            20                  25                  30
```

```
Ser Cys Ala Lys Arg Ala Leu Thr Tyr Leu Asp Lys Ser Val Arg Ser
        35                  40                  45

Ala Ile Arg Arg Trp Leu Thr Leu Pro Lys Asp Thr Pro Thr Ala Phe
    50                  55                  60

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

His Thr Ile Pro Ile Leu Lys Arg Asn Arg Met Met Lys Leu Thr Leu
                85                  90                  95

Ser Glu Asp Pro Val Ile Met Glu Leu Val Lys Leu Thr Tyr Phe Thr
            100                 105                 110

Asn Leu Leu His Lys Tyr Ser Asn Val Lys Leu Leu Asn Ser Trp Pro
        115                 120                 125

Val Thr Asp Lys Asp Ser Leu Ala Arg Ala Glu Ala Ser Met Leu His
    130                 135                 140

Thr Ser Val Asp Gly Arg Gly Leu Ser Asn Cys Ser Asp Val Pro Arg
145                 150                 155                 160

Gln Ser Asp Trp Val Thr Asn Gly Ala Ser Leu Leu Ser Gly Arg Asp
                165                 170                 175

Phe Ile Gly Ala Ile Lys Val Arg Gly Asn Leu Leu Pro Thr Lys Val
            180                 185                 190

Ser Ala Ala
        195
```

<210> 158
<211> 197
<212> PRT
<213> Ciona intestinalis

<400> 158

```
Ala Asn Leu Ser Arg Ala Pro Leu Lys Pro Gln Gln Arg Leu Tyr Ile
1               5                   10                  15
```

```
Leu Cys Thr His Leu Leu Pro Ser Ile Tyr His Gln Leu Val Leu Ser
            20                  25                  30

Ser Thr Ser Lys Lys Phe Leu Lys Tyr Leu Asp Arg Cys Val Arg Val
        35                  40                  45

Ala Val Arg Arg Trp Leu Arg Leu Pro Lys Asp Thr Pro Lys Ala Tyr
    50                  55                  60

Phe His Ala Lys Cys Asn Asp Gly Gly Leu Gly Val Pro Glu Leu Gln
65                  70                  75                  80

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

Ser Gln Asp Pro Val Val Gln Ala Ala Val Gly Leu Glu Tyr Phe Gln
            100                 105                 110

Lys Leu Leu Glu Arg Trp Ser Thr Pro Glu Leu Tyr Gln Trp Gly Gly
        115                 120                 125

Gly Gly Ile Thr Thr Ser Gly His Leu Ala Val Ala Gln Ala Arg Ser
    130                 135                 140

Leu Tyr Ser Ser Val Asn Gly Arg Gly Leu Arg Gln Ser Gly Leu Val
145                 150                 155                 160

Ser Thr Gln Phe Asp Trp Val Arg Ser Gly Cys Ser Leu Leu Ser Gly
                165                 170                 175

Arg Asn Phe Ile Gly Ala Met Gln Leu Arg Gly Asn Leu Leu Ala Thr
            180                 185                 190

Lys Leu Arg Ala Ser
        195
```

<210> 159
<211> 195

<212> PRT
<213> Ciona intestinalis

<400> 159
Lys Glu Thr Thr Glu Ala Pro Leu Lys Pro Gln Gln Arg Ile Phe Ile
1   5   10   15

Leu Arg Asn Tyr Ile Leu Pro Arg Ser Leu His Ile Leu Thr Phe Thr
            20   25   30

Asn Thr Thr Ala Arg Leu Leu Lys Gln Leu Asp Ser Ala Ile Arg Ile
        35   40   45

His Val Arg Arg Trp Leu Lys Leu Pro Lys Asp Thr Pro Leu Gly Tyr
    50   55   60

Leu Tyr Ser Asp Tyr Lys Asp Gly Gly Leu Gly Val Pro Arg Leu Leu
65   70   75   80

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

Ser Glu Asp Pro Thr Thr Val Ala Leu Arg Ser Cys His Thr Phe Thr
            100   105   110

Ser Ala Ala Val Lys Trp Ala Met Pro Pro Lys Ile Ser Asn Val Val
        115   120   125

Ile Ser Asp Lys Arg Lys Glu Arg Asp Phe His Arg Ser Glu Leu Ala
    130   135   140

Thr Ser Ile Asp Gly Ser Gly Leu Ser Cys Ala Asn Thr Thr Pro Arg
145   150   155   160

Ala His Gln Trp Val Val Asn Gly Thr Gly Leu Leu Ser Gly Lys Asn
                165   170   175

Tyr Ile Gly Ala Ile Asn Ala Arg Gly Asn Leu Leu His Thr Ala Ser
            180   185   190

Arg Ala Ala
195

<210> 160
<211> 197
<212> PRT
<213> Bombyx mori

<400> 160
Asn Asn Ile Ser Arg Ala Pro Leu Lys Pro Gln Gln Arg Leu Glu Ile
1 5 10 15

Leu Arg Ala His Leu Ile Pro Arg Phe Gln His Gly Phe Val Leu Gly
20 25 30

Asn Ile Ser Asp Asp Arg Leu Arg Met Leu Asp Val Gln Ile Arg Lys
35 40 45

Ala Val Gly Gln Trp Leu Arg Leu Pro Ala Asp Val Pro Lys Ala Tyr
50 55 60

Tyr His Ala Ala Val Gln Asp Gly Gly Leu Ala Ile Pro Ser Val Arg
65 70 75 80

Ala Thr Ile Pro Asp Leu Ile Val Arg Arg Phe Gly Gly Leu Asp Ser
85 90 95

Ser Pro Trp Ser Val Ala Arg Ala Ala Ala Lys Ser Asp Lys Ile Arg
100 105 110

Lys Lys Leu Arg Trp Ala Trp Lys Gln Leu Arg Arg Phe Ser Arg Val
115 120 125

Asp Ser Thr Thr Gln Arg Pro Ser Val Arg Leu Phe Trp Arg Glu His
130 135 140

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

Pro Thr Ser Thr Lys Trp Ile Arg Glu Arg Cys Ala Gln Ile Thr Gly
165 170 175

```
Arg Asp Phe Val Gln Phe Val His Thr His Ile Asn Ala Leu Pro Ser
            180                 185                 190


Arg Ile Arg Gly Ser
        195


<210> 161
<211> 184
<212> PRT
<213> Lasius niger

<400> 161
Glu Arg Ile Thr Arg Ala Pro Leu Lys Pro Gln Gln Arg Leu Lys Ile
1               5                   10                  15


Leu Arg Thr Tyr Leu Ile Pro Arg Tyr Thr His Asn Leu Val Leu Gly
            20                  25                  30


Arg Val Ser Tyr Ser Met Leu Arg Lys Leu Asp Lys Gln Thr Arg Ala
        35                  40                  45


Ala Val Arg Arg Trp Leu Val Leu Pro Asp Asp Val Pro Val Ala Phe
    50                  55                  60


Phe His Cys Pro Ile Lys Gln Gly Gly Leu Gly Ile Gln Ser Phe Glu
65                  70                  75                  80


Thr Ala Ile Pro Arg Leu Thr Leu Leu Arg Leu Asn Arg Leu Lys Asp
                85                  90                  95


Ser Gln Tyr Glu Met Ala Arg Val Val Gly Ser Ser Ala Trp Ala Asp
            100                 105                 110


Arg Arg Met Arg Trp Cys Arg Phe Ala Arg Arg Arg Asp Glu Asp Trp
        115                 120                 125


Pro Ser Glu Leu His Ala Lys Val Asp Gly Phe Glu Leu Arg Glu Ala
    130                 135                 140
```

```
Gly Asn Val Ser Val Ser Thr Arg Trp Leu Asp Asp Ala Met Val His
145                 150                 155                 160


Ile Pro Ser Ser Asp Trp Leu Gln Tyr Val Lys Val Trp Ile Asn Ala
                165                 170                 175


Leu Pro Thr Arg Ile Arg Thr Thr
            180
```

<210> 162
<211> 184
<212> PRT
<213> Lasius niger

<400> 162

```
Asp Arg Ile Thr Arg Ala Pro Leu Lys Pro Gln Gln Arg Leu Lys Ile
1               5                   10                  15


Leu Lys Thr Phe Leu Ile Pro Arg Phe Ile His Ile Leu Val Leu Gly
            20                  25                  30


Arg Thr Ser Tyr Gly Leu Leu Arg Lys Leu Asp Arg Gln Ile Arg Ala
        35                  40                  45


Ala Val Arg Arg Trp Leu Arg Leu Pro Glu Asp Ile Pro Lys Ala Phe
    50                  55                  60


Phe His Ser Pro Ile Ala Ser Gly Gly Leu Gly Ile Leu Ser Tyr Glu
65                  70                  75                  80


Thr Ala Ile Pro Arg Leu Val Leu Ala Arg Leu Asp Arg Leu Asp Lys
                85                  90                  95


Ser Gln Tyr Asp Ala Ala Arg Met Val Gly Ser Ser Ala Trp Ala Val
            100                 105                 110


Arg Lys Arg Arg Trp Cys Gly Leu Ala Lys Arg Val Glu Glu Asn Trp
        115                 120                 125


Pro Ala Glu Phe Tyr Gly Met Val Asp Gly Phe Glu Leu Arg Glu Ala
    130                 135                 140
```

```
Gly Asn Val Thr Ala Ser Thr Asn Trp Leu Asp Asp Pro Met Ile Arg
145                 150                 155                 160

Val Pro Ser Ser Glu Trp Leu Glu Tyr Val Lys Val Trp Ile Asn Ala
                165                 170                 175

Leu Pro Thr Arg Ile Arg Thr Thr
            180
```

<210> 163
<211> 184
<212> PRT
<213> Nasonia vitripennis

<400> 163

```
Gln Arg Val Thr Ala Ala Pro Leu Lys Pro Gln Gln Arg Met Ala Ile
1               5                   10                  15

Leu Gly Met Phe Leu Ile Pro Arg Phe Ile His Lys Leu Val Leu Gly
            20                  25                  30

Arg Thr Ser Asn Ala Asp Val Arg Lys Gly Asp Lys Ile Ile Arg Lys
        35                  40                  45

Thr Val Arg Gly Trp Leu Arg Leu Pro His Asp Thr Pro Ile Gly Tyr
    50                  55                  60

Phe His Ala Pro Ile Lys Glu Gly Gly Leu Gly Ile Pro Ala Phe Glu
65                  70                  75                  80

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

Ser Asn Met Gln Thr Ala Arg Ser Leu Leu Gly Gly Asp Trp Val Ala
            100                 105                 110

Glu Arg Lys Lys Trp Ile Asn Thr Gln Lys Ile Lys Asn Ser Glu Trp
        115                 120                 125
```

Ala Gln Lys Leu His Leu Thr Thr Asp Gly Lys Asp Leu Arg Asp Thr
130 135 140

Arg Lys Ala Glu Ala Ser Tyr Ser Trp Ile Arg Asp Ile His Val Ala
145 150 155 160

Ile Pro Ala Ser Val Trp Ile Lys Tyr His His Thr Arg Ile Asn Ala
165 170 175

Leu Pro Thr Leu Met Arg Met Ser
180

<210> 164
<211> 194
<212> PRT
<213> Rhynchosciara americana

<400> 164
Glu Arg Leu Thr Lys Ala Pro Leu Lys Pro Gln Gln Arg Ile His Met
1 5 10 15

Leu Asn Ala Tyr Val Ile Pro Lys Tyr Gln Asp Lys Leu Val Leu Ser
20 25 30

Lys Thr Thr Ala Lys Gly Leu Lys Arg Thr Asp Arg Gln Ile Arg Gln
35 40 45

Tyr Val Arg Arg Trp Leu Lys Leu Pro His Asp Val Pro Ile Ala Tyr
50 55 60

Leu His Ala Pro Val Lys Ser Gly Gly Leu Asn Ile Pro Cys Leu Gln
65 70 75 80

Tyr Trp Ile Pro Leu Leu Arg Val Asn Arg Val Asn Lys Ile Thr Glu
85 90 95

Ser Gln Arg Ser Val Leu Ala Ala Val Gly Lys Thr Ala Leu Leu Thr
100 105 110

Ser Thr Val Tyr Lys Cys Asn Gln Ser Leu Ala Thr Leu Gly Gly Asn
115 120 125

```
Pro Thr Met Leu Ala Tyr Arg Thr Tyr Trp Glu Lys Glu Leu Tyr Ala
    130                 135                 140

Lys Val Asp Gly Lys Asp Leu Gln Asn Ala Arg Asp Asp Lys Ala Ser
145                 150                 155                 160

Thr Arg Trp Asn Gly Met Leu His Ser Asp Ile Ser Gly Glu Asp Tyr
                165                 170                 175

Leu Asn Tyr His Lys Leu Arg Thr Asn Ser Val Pro Thr Lys Val Arg
            180                 185                 190

Thr Ala
```

<210> 165
<211> 196
<212> PRT
<213> Bradysia coprophila

<400> 165

```
Ser Lys Leu Thr Lys Gly Pro Leu Lys Pro Gln Gln Arg Ile His Leu
1               5                   10                  15

Leu Lys Thr Phe Val Ile Pro Lys His Leu Asn Arg Leu Val Leu Ser
            20                  25                  30

Arg Thr Thr Ala Thr Gly Leu Cys Lys Met Asp Leu Leu Ile Arg Lys
        35                  40                  45

Tyr Val Arg Arg Trp Leu Arg Leu Pro Gly Asp Val Pro Val Ala Phe
    50                  55                  60

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

Gln Trp Ile Pro Leu Met Arg Phe Leu Arg Leu Asn Lys Ala Lys Arg
                85                  90                  95
```

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

Ser Ile Ser His Ser Cys Lys Thr Gly Pro Val Ser Val Gly Leu Trp
115 120 125

Arg Ser Thr Asn Thr Gly Gly Leu Ser Ala Tyr Trp Arg Arg Ile Leu
130 135 140

Ile Gly Met Val Asp Gly Lys Asp Leu Lys Ser Ala Gln Asn His Ser
145 150 155 160

Ser Ala Thr Ser Phe Asn Ser Ile Arg Met Asn Asp Ile Ser Gly Glu
165 170 175

Asp Tyr Ile His Tyr Asn Gln Leu Arg Thr Asn Ser Ile Pro Thr Arg
180 185 190

Lys Arg Thr Ala
195

<210> 166
<211> 196
<212> PRT
<213> Tribolium castaneum

<400> 166
Lys Arg Ile Thr Cys Ala Pro Leu Lys Pro Gln Gln Arg Met His Leu
1 5 10 15

Leu Arg Val Phe Phe Leu Pro Lys Phe Tyr His Ala Trp Thr Phe Gly
20 25 30

Arg Leu Asn Ala Gly Val Leu Arg Arg Leu Asp Val Val Val Arg Thr
35 40 45

Tyr Val Arg Thr Trp Leu Arg Phe Pro His Asp Ile Pro Val Gly Tyr
50 55 60

Phe His Ala Pro Thr Lys Ser Gly Gly Leu Gly Ile Pro Gln Leu Ser
65 70 75 80

```
Arg Phe Ile Pro Phe Leu Arg Leu Lys Arg Phe Asp Arg Leu Gly Arg
                85                  90                  95

Ser Ala Val Asp Tyr Val Arg Glu Cys Ala Phe Thr Asp Ile Ala Asp
            100                 105                 110

Arg Lys Ile Arg Trp Cys Arg Glu Arg Leu Ser Gly Ile Val Asp Gln
        115                 120                 125

Val Ala Gly Gly Arg Asp Ala Leu Asp Ala Tyr Trp Thr Ala Gln Leu
    130                 135                 140

His Gln Ser Val Asp Gly Arg Ala Leu Arg Glu Ser Ala Ser Val Ala
145                 150                 155                 160

Ser Ser Thr Gln Trp Leu Arg Cys Ser Thr Arg Ala Ile Pro Ala Ser
                165                 170                 175

Asp Trp Leu His Tyr Thr Ala Val His Ile Gly Ala Leu Pro Ser Arg
            180                 185                 190

Val Arg Thr Ser
        195


<210> 167
<211> 196
<212> PRT
<213> Tribolium castaneum

<400> 167
Lys Arg Asn Thr Cys Ala Pro Leu Lys Pro Gln Gln Arg Met His Leu
1               5                   10                  15

Leu Arg Val Phe Phe Leu Pro Lys Phe Tyr His Ala Trp Thr Phe Gly
            20                  25                  30

Arg Leu Asn Ala Gly Val Leu Arg Arg Leu Asn Val Val Val Arg Thr
        35                  40                  45
```

```
Ser Val Arg Thr Trp Leu Arg Leu Pro His Asp Ile Pro Val Gly Lys
    50                  55                  60

Phe His Ala Pro Thr Lys Ser Gly Gly Leu Gly Ile Pro Gln Leu Ser
65                  70                  75                  80

Arg Leu Ile Pro Phe Leu Arg Leu Lys Arg Phe Asp Arg Leu Gly Arg
                85                  90                  95

Ser Ala Val Asp Tyr Val Arg Glu Cys Ala Phe Thr Asp Ile Ala Asp
            100                 105                 110

Gln Lys Ile Arg Trp Cys Arg Glu Arg Leu Ser Gly Ile Val Asp Gln
        115                 120                 125

Val Ala Gly Gly Arg Asp Ala Leu Asp Ala Tyr Trp Thr Ala Gln Leu
    130                 135                 140

His Gln Ser Val Asp Gly Arg Ala Leu Arg Glu Ser Ala Ser Val Ala
145                 150                 155                 160

Ser Ser Thr Gln Trp Leu Arg Cys Ser Thr Arg Ala Ile Pro Ala Ser
                165                 170                 175

Asp Trp Leu His Tyr Thr Ala Val His Ile Gly Ala Leu Pro Ser Arg
            180                 185                 190

Val Arg Thr Ser
        195
```

<210> 168
<211> 195
<212> PRT
<213> Nuttalliella namaqua

```
<400> 168
Asp Arg Ile Ser Ser Ala Pro Leu Lys Pro Gln Gln Arg Leu Tyr Ile
1               5                   10                  15

Leu Arg Gly Phe Leu Val Pro Arg Leu Ile Tyr Arg Leu Val Leu Gly
            20                  25                  30
```

```
Arg Trp Thr Ala Gly Thr Leu Leu Lys Leu Asp Arg Gln Ile Arg Ala
        35                  40                  45

Ala Ile Arg Arg Trp Ile Gly Leu Pro His Asp Cys Pro Leu Gly Tyr
    50                  55                  60

Phe His Ala Lys Ile Gly Ser Gly Gly Leu Gly Ile Pro Ser Met Arg
65                  70                  75                  80

Thr Met Ile Pro Glu Leu Leu Leu Arg Arg Leu Thr Lys Leu Glu Met
                85                  90                  95

Asn Glu Thr Met Gly Thr Lys Glu Ile Pro Lys Cys Glu Ser Tyr Trp
            100                 105                 110

Tyr Tyr Val Lys Lys Met Glu Asp Leu Thr Lys Tyr Asp Gly His Lys
        115                 120                 125

Leu Asp Thr Lys Tyr Ala Cys Gln Arg Tyr Trp Ala Gln Lys Leu Tyr
    130                 135                 140

Lys Ser Val Asp Gly Arg Asp Leu Glu Ala Ser Ser Lys Val Pro Phe
145                 150                 155                 160

Ala Asn His Trp Ile Leu Asp His Thr Arg Trp Leu Pro Gly Tyr Glu
                165                 170                 175

Tyr Cys Lys Met Val Lys Phe Lys Val Asn Ala Met Pro Val Leu Thr
            180                 185                 190

Arg Thr Ser
        195
```

<210> 169
<211> 193
<212> PRT
<213> Drosophila melanogaster

<400> 169

```
Gln Arg Leu Thr Lys Ala Pro Leu Lys Pro Gln Gln Arg Leu Phe Ala
1               5                  10                  15

Leu Arg Thr Val Leu Ile Pro Gln Leu Tyr His Lys Leu Ala Leu Gly
            20                  25                  30

Ser Val Ala Ile Gly Val Leu Arg Lys Thr Asp Lys Leu Ile Arg Tyr
        35                  40                  45

Tyr Val Arg Arg Trp Leu Asn Leu Pro Leu Asp Val Pro Ile Ala Phe
    50                  55                  60

Val His Ala Pro Pro Lys Ser Gly Gly Leu Gly Ile Pro Ser Leu Arg
65                  70                  75                  80

Trp Val Ala Pro Met Leu Arg Leu Arg Arg Leu Ser Asn Ile Lys Trp
                85                  90                  95

Pro His Leu Thr Gln Asn Glu Val Ala Ser Ser Phe Leu Glu Ala Glu
            100                 105                 110

Lys Gln Arg Ala Arg Asp Arg Leu Leu Ala Glu Gln Asn Glu Leu Leu
        115                 120                 125

Ser Arg Pro Ala Ile Glu Lys Tyr Trp Ala Asn Lys Leu Tyr Leu Ser
    130                 135                 140

Val Asp Gly Ser Gly Leu Arg Glu Gly Gly His Tyr Gly Pro Gln His
145                 150                 155                 160

Gly Trp Val Ser Gln Pro Thr Arg Leu Leu Thr Gly Lys Glu Tyr Met
                165                 170                 175

Asp Gly Ile Arg Leu Arg Ile Asn Ala Leu Pro Thr Lys Ser Arg Thr
            180                 185                 190

Thr
```

<210> 170
<211> 193
<212> PRT
<213> Drosophila mercatorum

<400> 170

```
Glu Arg Leu Met Gln Ser Pro Leu Lys Pro Gln Gln Lys Leu Phe Ala
1               5                  10                  15

Leu Arg Thr Val Leu Val Pro Gln Leu Tyr His Lys Leu Thr Leu Gly
            20                  25                  30

Ser Val Ala Leu Gly Val Leu Arg Lys Cys Asp Lys Leu Val Arg Ser
        35                  40                  45

Phe Ala Arg Lys Leu Leu Gly Leu Pro Leu Asp Val Ser Val Ala Phe
    50                  55                  60

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

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

Pro His Leu Glu Gln Ser Glu Val Ala Ser Ala Phe Leu Ser Glu Glu
            100                 105                 110

Leu Arg Arg Ala Arg Asp Arg Ala Lys Ala Gly Val Asn Glu Leu Leu
        115                 120                 125

Ser Gln Pro Lys Ile Asp Thr Tyr Trp Ala Asp Arg Leu Tyr Thr Ser
    130                 135                 140

Val Asp Gly Asn Gly Leu Arg Glu Ala Arg Arg Tyr Ala Pro Gln His
145                 150                 155                 160

Gly Trp Val Ser Gln Pro Thr Arg Leu Met Ser Gly Lys Ala Tyr Arg
                165                 170                 175

Thr Gly Ile Gln Leu Arg Ile Asn Ala Leu Pro Thr Arg Ser Arg Thr
            180                 185                 190
```

Thr

<210> 171
<211> 190
<212> PRT
<213> Forficula auricularia

<400> 171
Asp Val Leu Thr Lys Ala Pro Leu Lys Pro Gln Gln Arg Leu Phe Ala
1   5   10   15

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

Gly Ser Asn Leu Ser Leu Leu Lys Lys Ile Asp Leu Met Val Arg Ala
        35   40   45

Ala Gly Arg Lys Trp Cys Cys Leu Pro Lys Asp Thr Pro Asn Ala Tyr
    50   55   60

Phe His Ala Ser Ser Arg Asp Gly Gly Leu Gly Leu Pro Ser Met Arg
65   70   75   80

Trp Leu Ile Pro Leu His Arg Tyr Leu Arg Leu Leu Arg Tyr Glu Gly
                85   90   95

Arg Asn Pro Glu Asp Thr Asn Val Tyr Leu Thr Thr Glu Ile Asn Arg
            100   105   110

Ala Lys Ile Arg Leu Ser Asp Asn Gly Ser Asn Ile Asp Cys Gln Ala
        115   120   125

Lys Leu Trp Gln Phe Trp Ala Asp Arg Leu Tyr Lys Ser Val Asp Gly
    130   135   140

Ser Ala Leu Ile Glu Ser Ser Lys Val Pro Gln Gln His Arg Trp Ala
145   150   155   160

Thr Gly Gly Ser Arg Phe Leu Thr Gly Arg Asp Phe Ile Asn Ser Ile
165 170 175

Lys Leu Arg Ile Asn Thr Leu Pro Thr Leu Ser Arg Thr Leu
180 185 190

<210> 172
<211> 191
<212> PRT
<213> Lasius niger

<400> 172
Gly Ala Leu Thr Lys Ala Pro Leu Lys Pro Gln Gln Arg Leu Tyr Ala
1 5 10 15

Leu Arg Thr Val Val Ile Pro Lys Leu Tyr His Gln Leu Ala Leu Gly
20 25 30

Ala Val Thr Ile Gly Thr Leu Asn Lys Thr Asp Arg Leu Val Arg Gly
35 40 45

Ala Leu Arg Lys Trp Leu Ala Leu Pro His Asp Thr Pro Asn Ala Tyr
50 55 60

Phe His Thr Ser Val Arg Asp Gly Gly Leu Gly Ile Pro Ala Ile Arg
65 70 75 80

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

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

Thr Cys Lys Lys Arg Leu Thr Asp His Gly Val Leu Leu Gly Thr Pro
115 120 125

Glu Met Val Ala Lys Arg Trp Ala Gln Gln Leu Tyr Gly Ser Ile Asp
130 135 140

Gly Ala Gly Leu Lys Asp Ser Ala Lys Thr Pro His Gln His Gln Trp
145 150 155 160

```
Ile Ala Asp Gly Ser Lys Phe Leu Thr Gly Lys Asp Phe Ile Asn Cys
                165                 170                 175


Asn Arg Ala Arg Ile Gly Ala Leu Pro Thr Arg Ser Arg Thr Thr
            180                 185                 190


<210> 173
<211> 194
<212> PRT
<213> Bacillus rossius

<400> 173
Glu Lys Leu Arg Arg Ala Pro Leu Lys Pro Gln Gln Arg Leu Tyr Ala
1               5                   10                  15


Leu Arg Thr Val Val Val Pro Gly Leu Tyr His Leu Leu Val Leu Gly
            20                  25                  30


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


Thr Val Arg Lys Trp Leu Ser Leu Pro His Asp Val Pro Asn Ala Tyr
    50                  55                  60


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


Trp Thr Val Pro Arg Leu Arg Phe His Arg Leu Lys Ala Leu Ser Val
                85                  90                  95


Leu Cys Asp Gly Gly Gly Pro Asp Glu Met Val Ala Cys Val Gly Asp
            100                 105                 110


Glu Ile Lys Arg Ala Ser Ala Arg Leu Gln Asp His Gly Met Asn Ile
        115                 120                 125


Asn Thr Arg Asn Thr Tyr Arg Val Arg Phe Ala Arg Leu Leu His Thr
    130                 135                 140
```

Ser Asn Asp Gly Ala Pro Leu Lys Gly Ser Lys Lys Val Glu Gly Gln
145 150 155 160

His Arg Trp Val Thr Asp Gly Ser Leu Met Leu Ser Gly Arg Asp Tyr
165 170 175

Ile Ala Cys Asn Trp Val Arg Ile Asn Ser Ile Pro Leu Arg Lys Arg
180 185 190

Thr Ala

<210> 174
<211> 193
<212> PRT
<213> Eyprepocnemis plorans

<400> 174
Asp Ile Ile Lys Arg Ala Pro Leu Lys Pro Gln Gln Arg Leu Phe Ala
1 5 10 15

Leu Arg Ser Val Ile Leu Pro Gly Thr Tyr His Gly Leu Ala Leu Gly
20 25 30

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

Ala Val Arg Ala Trp Leu Arg Leu Pro Asp Asp Thr Pro Ile Gly Tyr
50 55 60

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

Trp Leu Gly Pro Leu Leu Arg Arg Arg Arg Leu Ala Ser Met Glu Gly
85 90 95

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

Ile Cys Arg Leu Asp Asn Tyr Leu Lys Trp Asp Gly Asp Val Ile Lys
115 120 125

```
Thr Ser Tyr Gln Leu Gly Arg Phe Trp Ala Leu Arg Leu His Ser Ser
    130                 135                 140

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

Ser Trp Val Ser Asn Thr Arg Leu Met Leu Ser Gly Arg Asp Phe Leu
                165                 170                 175

Ala Cys Val Arg Ala Arg Ile Ser Ala Leu Pro Ser Arg Ala Arg Leu
            180                 185                 190

Leu
```

<210> 175
<211> 195
<212> PRT
<213> Lepidurus couesii

<400> 175

```
Asn Lys Leu Gln Lys Ala Pro Leu Lys Leu Gln Gln Lys Leu Tyr Ala
1               5                   10                  15

Val Arg Asn Phe Val Ile Pro Arg Ala Leu His Gly Leu Ile Leu Ser
            20                  25                  30

Lys Thr Asn Leu Lys Glu Leu Asn Thr Leu Asp Arg Ala Ile Arg Val
        35                  40                  45

Phe Leu Arg Thr Leu Leu Tyr Leu Pro Lys Asp Thr Pro Leu Gly Phe
    50                  55                  60

Phe His Ser Pro Ile Lys Ser Gly Gly Leu Gly Ile Thr Cys Phe Arg
65                  70                  75                  80

Thr Ser Val Leu Lys Cys Arg Leu Gln Arg Ile Ala Arg Met Arg Ser
                85                  90                  95
```

Ser Cys Asp Gly Val Ile Gln Ala Val Ala Glu Ser Asp Ile Phe Ala
100 105 110

Asp Glu Tyr Ala Lys Leu Arg Asp Leu Ile Arg Ile Asn Gly Asn Val
115 120 125

Leu Asp Thr Thr Glu Ser Ile Lys Arg Tyr Trp Ala Gln Arg Leu His
130 135 140

Ser Ser Val Asp Gly Lys Thr Leu Ala Tyr Met Asp Tyr Phe Pro Gln
145 150 155 160

Gly Asn Leu Trp Met Ser Glu Asp Lys Val Ser Gln Arg Ser Tyr Val
165 170 175

Phe Ala Asp Cys Val Lys Leu Arg Ile Asn Ala Ile Pro Thr Arg Val
180 185 190

Arg Val Ser
195

<210> 176
<211> 195
<212> PRT
<213> Lepidurus apus lubbocki

<220>
<221> MOD_RES
<222> (66)..(66)
<223> Any amino acid

<220>
<221> MOD_RES
<222> (105)..(105)
<223> Any amino acid

<220>
<221> MOD_RES
<222> (114)..(114)
<223> Any amino acid

<220>
<221> MOD_RES
<222> (125)..(125)

<223> Any amino acid

<220>
<221> MOD_RES
<222> (129)..(129)
<223> Any amino acid

<220>
<221> MOD_RES
<222> (159)..(159)
<223> Any amino acid

<400> 176
Asn Lys Leu Gln Lys Ala Pro Leu Lys Ile Gln Gln Lys Leu Tyr Ala
1 5 10 15

Val Arg Asn Phe Ile Ile Pro Arg Ala Leu His Gly Leu Ile Leu Ser
            20 25 30

Arg Thr Asn Leu Lys Glu Leu Asn Thr Leu Asp Arg Ala Ile Arg Val
        35 40 45

Phe Ile Arg Thr Leu Leu His Leu Pro Lys Asp Thr Pro Leu Gly Phe
    50 55 60

Phe Xaa Ala Pro Ile Lys Thr Gly Gly Leu Gly Ile Thr Cys Phe Arg
65 70 75 80

Thr Thr Val Leu Lys Cys Arg Leu Gln Arg Ile Ala Arg Met Arg Asn
                85 90 95

Cys Ser Asp Glu Val Leu Glu Ala Xaa Ala Glu Ser Asp Thr Phe Asp
            100 105 110

Asp Xaa Tyr Ala Lys Leu Arg Asp Leu Ile Arg Ile Xaa Gly Asn Val
        115 120 125

Xaa Asp Thr Thr Glu Asn Ile Lys Lys Tyr Trp Ala Gln Arg Leu His
    130 135 140

Ser Ser Val Asp Gly Lys Thr Leu Ala Tyr Met Asp Tyr Phe Xaa Gln
145 150 155 160

Gly Asn Leu Trp Met Ser Glu Asp Lys Val Ser Gln Arg Ser Tyr Ile
165 170 175

Phe Ala Asp Cys Val Lys Leu Arg Ile Asn Ala Ile Pro Thr Arg Val
180 185 190

Arg Val Ser
195

<210> 177
<211> 200
<212> PRT
<213> Lepidurus couesii

<220>
<221> MOD_RES
<222> (131)..(131)
<223> Any amino acid

<400> 177
Asn Lys Leu Gln Lys Ser Pro Leu Lys Leu Gln Gln Lys Leu Phe Ala
1 5 10 15

Leu Arg Val Tyr Leu Ile Pro Arg Leu Leu His Gly Leu Val Leu Ser
20 25 30

Arg Val Ala Ile Gly Glu Leu Lys Ile Met Asp Lys Leu Ile Leu Lys
35 40 45

His Leu Arg Val Trp Leu Arg Leu Pro Lys Asp Thr Pro Leu Gly Phe
50 55 60

Phe Tyr Ser Pro Val Lys Leu Gly Gly Leu Gly Ile Lys Asn Leu Arg
65 70 75 80

Thr Asn Val Leu Lys Cys Arg Lys Gln Arg Ile Glu Arg Met Leu Val
85 90 95

Ser Pro Asp Asp Val Val Arg Leu Val Ala Glu Ser Glu Ile Phe Leu
100 105 110

Lys Glu Thr Asp Lys Leu Lys Asp Leu Leu Thr Ile Asn Gly Met Cys
115 120 125

Leu Asp Xaa Arg Asn Val Pro Arg Thr Gly Lys Asn Asn Lys Phe Trp
130 135 140

Ser Glu Arg Leu Tyr Thr Ser Phe Asp Gly Lys Thr Leu Ala Tyr Ser
145 150 155 160

Glu Tyr Phe Thr Gln Gly Gly Gly Trp Ile Arg Glu Asp Lys Ile Leu
165 170 175

Gln Pro Ala His Val Phe Ala Glu Cys Ile Lys Leu Arg Ile Asn Ala
180 185 190

Leu Pro Thr Lys Ser Arg Val Ala
195 200

<210> 178
<211> 195
<212> PRT
<213> Triops cancriformis

<400> 178
Asn Arg Leu Gln Lys Ala Pro Leu Lys Leu Gln Gln Lys Leu Tyr Ala
1 5 10 15

Leu Arg Ile Tyr Leu Ile Pro Arg Leu Ile His Gly Leu Thr Leu Ser
20 25 30

Lys Thr Asn Leu Gly Glu Leu Lys Thr Leu Asp Lys Leu Ile Arg Lys
35 40 45

Tyr Ile Arg Ala Trp Leu His Leu Pro Asp Asp Thr Pro Met Gly Tyr
50 55 60

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

Leu Val Ile Leu Asn Asn Arg Leu Glu Arg Ile Leu Arg Met Lys Ala

85 90 95

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

Val Glu Ile Arg Lys Leu His Asp Leu Leu Ser Ile Asp Gly Thr Ile
115 120 125

Leu Asp Thr Ser Val Lys Ile His Ser Phe Trp Ala Glu Arg Leu Tyr
130 135 140

Ser Ser Tyr Asp Gly Lys Cys Leu Cys Asn Ser Ala Asn Phe Pro Pro
145 150 155 160

Gly Asn Lys Trp Ile Gly Glu Asp Ser Leu Asn Gln Arg Ser His Ile
165 170 175

Phe Ala Asp Cys Leu Lys Leu Arg Ile Asn Ala Leu Pro Thr Arg Ser
180 185 190

Arg Thr Ala
195

<210> 179
<211> 188
<212> PRT
<213> Trichinella murrelli

<400> 179
Lys Ser Val Lys Ser Ala Pro Leu Lys Pro Glu Gln Lys Val Ala Leu
1 5 10 15

Ile Arg Ser His Leu Leu Pro Arg Leu Gln Phe Leu Phe Ser Thr Ala
20 25 30

Glu Val Asp Ser Arg Lys Ala Trp Leu Ile Asp Ser Ile Ile Arg Gly
35 40 45

Cys Val Lys Glu Ile Leu His Ser Val Lys Ala Gly Met Cys Thr Asp
50 55 60

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Ile Phe Tyr Ile Pro Ser Arg Asp Gly Gly Met Gly Leu Thr Ser Leu
65                  70                  75                  80


Gly Glu Phe Ser Leu Phe Ser Arg Gln Lys Ala Leu Ala Lys Met Ala
                85                  90                  95


Gly Ser Ser Asp Pro Leu Ser Lys Arg Val Ala Glu Phe Phe Ile Glu
            100                 105                 110


Arg Trp Asn Ile Ala Arg Asp Pro Lys Val Ile Glu Ala Ala Arg Arg
        115                 120                 125


Val Tyr Gln Lys Lys Arg Tyr Gln Arg Phe Phe Gln Thr Tyr Gln Ser
    130                 135                 140


Gly Gly Trp Asn Glu Phe Ser Gly Asn Thr Ile Gly Asn Ala Trp Leu
145                 150                 155                 160


Thr Asn Gly Arg Ala Arg Gly Arg Asn Phe Ile Met Ala Val Lys Phe
                165                 170                 175


Arg Ser Asn Thr Ala Ala Thr Arg Ala Glu Asn Leu
            180                 185


<210> 180
<211> 188
<212> PRT
<213> Trichinella sp.

<400> 180
Lys Ser Val Lys Ser Ala Pro Leu Lys Pro Glu Gln Lys Val Ala Leu
1               5                   10                  15


Ile Arg Ser His Leu Leu Pro Arg Leu Gln Phe Leu Phe Ser Thr Ala
            20                  25                  30


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


Cys Val Lys Glu Ile Leu His Ser Val Lys Ala Gly Met Cys Thr Asp
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50 55 60

Phe Phe Tyr Ile Pro Ser Arg Asp Gly Gly Met Gly Leu Thr Ser Leu
65 70 75 80

Gly Glu Phe Ser Leu Phe Gly Arg Gln Lys Ala Leu Ala Lys Met Ala
85 90 95

Gly Ser Ser Asp Pro Leu Ser Lys Arg Val Ala Glu Phe Phe Ile Glu
100 105 110

Arg Trp Asn Ile Ala Arg Asp Pro Lys Val Ile Glu Ala Ala Arg Arg
115 120 125

Val Tyr Gln Lys Lys Arg Tyr Gln Arg Phe Phe Arg Thr Tyr Gln Ser
130 135 140

Gly Gly Trp Asn Glu Phe Ser Gly Asn Thr Ile Gly Asn Ala Trp Leu
145 150 155 160

Thr Asn Gly Arg Ala Arg Gly Arg Asn Phe Ile Met Ala Val Lys Phe
165 170 175

Arg Ser Asn Thr Ala Ala Thr Arg Ala Glu Asn Leu
180 185

<210> 181
<211> 188
<212> PRT
<213> Trichinella britovi

<400> 181
Lys Ser Val Arg Ser Ala Pro Leu Lys Pro Glu Gln Lys Val Ala Leu
1 5 10 15

Ile Arg Ser His Leu Leu Pro Arg Leu Gln Phe Leu Phe Ser Thr Ala
20 25 30

Glu Ala Asp Ser Arg Lys Ala Trp Leu Ile Asp Ser Ile Ile Arg Gly
35 40 45

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Cys Val Lys Glu Ile Leu His Ser Val Lys Ala Gly Met Cys Thr Glu
    50                  55                  60

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

Gly Glu Phe Ser Leu Phe Ser Arg Gln Lys Ala Leu Ala Lys Met Ala
                85                  90                  95

Gly Ser Ser Asp Pro Leu Ser Lys Arg Val Ala Glu Phe Phe Met Glu
            100                 105                 110

Arg Trp Asn Ile Ala Arg Asp Pro Lys Val Thr Glu Ala Ala Arg Arg
        115                 120                 125

Val Tyr Gln Lys Lys Arg Tyr Gln Arg Phe Phe Gln Thr Tyr Gln Ser
    130                 135                 140

Gly Gly Trp Asn Glu Phe Ser Gly Asn Thr Ile Gly Asn Ala Trp Leu
145                 150                 155                 160

Thr Asn Gly Arg Ala Arg Gly Arg Asn Tyr Val Met Ala Val Lys Phe
                165                 170                 175

Arg Ser Asn Thr Ala Ala Thr Arg Ala Glu Asn Leu
            180                 185


<210> 182
<211> 199
<212> PRT
<213> Trichinella nelsoni

<400> 182
Glu Arg Ile Arg Lys Ala Pro Leu Lys Pro Ala Gln Lys Leu Ala Thr
1               5                   10                  15

Val Arg Asp Tyr Leu Ile Pro Ser Leu Glu Tyr Lys Leu Gly Val Pro
            20                  25                  30

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

Thr Val Lys Arg Phe Leu His Leu Gln Ile Thr Gly Met Asn Ser Met
50 55 60

Phe Leu Thr Met Pro Ile Lys Glu Gly Gly Leu Gly Leu Arg Pro Leu
65 70 75 80

Thr Thr Gln Arg Ile Ala Arg Val Ala Val Gly Thr Asn Ser Met Met
85 90 95

Thr Ser Met Asp Asn Val Ser Arg Val Val Ala Asn Thr Ala Thr Leu
100 105 110

Arg Lys Pro Leu Leu Ser Ala Leu Glu His Phe Ala Val Pro Ala Ala
115 120 125

Thr Lys Gly Ala Ile Arg Glu Gly Lys Gln Asn Leu Leu Arg Glu Glu
130 135 140

Ile Ala Gln Leu Ser Glu Thr Tyr Gln Gly Ser Cys Leu Pro Ser Phe
145 150 155 160

Lys Lys Gly Ser Leu Val Asn Ser Trp Leu Arg Gly Thr Cys Gly Met
165 170 175

Arg Ser Arg Asp Tyr Ile Thr Gly Leu Lys Leu Arg Phe Gly Val Ile
180 185 190

Glu Thr Arg Ser Gln Lys Trp
195

<210> 183
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
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<220>
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<222> (24)..(28)
<223> a, c, t, g, unknown or other

<400> 183
acactctttc cctacacgac gctnnnnn 28

<210> 184
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<212> DNA
<213> Artificial Sequence

<220>
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oligonucleotide

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<400> 184
nnnnnacact ctttccctac acgacgct 28

<210> 185
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oligonucleotide

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<400> 185
agcgtcgtgt agggaaagag tgtnnnnn 28

<210> 186
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<212> DNA
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oligonucleotide

<220>
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<223> a, c, t, g, unknown or other

<400> 186
nnnnnagcgt cgtgtaggga aagagtgt 28

<210> 187
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<212> DNA
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oligonucleotide

<220>
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<222> (1)..(5)
<223> a, c, t, g, unknown or other

<400> 187
nnnnnacact ctttccctac acgacgcta 29

<210> 188
<211> 29
<212> DNA
<213> Artificial Sequence

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oligonucleotide

<220>
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<223> a, c, t, g, unknown or other

<400> 188
nnnnnagcgt cgtgtaggga aagagtgta 29

<210> 189
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 189
Pro Gly Pro Asp
1

<210> 190
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 190
Gly Gly Leu Ala
1

<210> 191
<211> 11
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 191
acactctttc c 11