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<110> Advaxis, Inc.

<120> Compositions And Methods For Lyophilization Of Bacteria Or Listeria Strains

<130> 062384/519152

<150> 62/560,318
<151> 2017-09-19

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<170> PatentIn version 3.5

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gataaa 66

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gataaa 66

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gataaa 66

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gacaaa 66

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Asp Tyr Lys Asp His Asp Gly Asp Tyr Lys Asp His Asp Ile Asp Tyr
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Lys Asp Asp Asp Asp Lys
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Gly Ala Ser Gly Ala Ser
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Gly Ser Ala Gly Ser Ala
1 5

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Gly Gly Gly Gly Ser
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Val Gly Lys Gly Gly Ser Gly Gly
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Glu Ala Ala Ala Lys
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Ala Tyr Leu Ala Tyr Leu
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<400> 41

Leu Arg Ala Leu Arg Ala
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Arg Leu Arg Ala
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Lys Glu Asn Ser Ile Ser Ser Met Ala Pro Pro Ala Ser Pro Pro Ala
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Ser Pro Lys Thr Pro Ile Glu Lys Lys His Ala Asp Glu Ile Asp Lys
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Lys Glu Asn Ser Ile Ser Ser Met Ala Pro Pro Ala Ser Pro Pro Ala
1   5   10   15

Ser Pro Lys

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Lys Thr Glu Glu Gln Pro Ser Glu Val Asn Thr Gly Pro Arg
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<400> 46

Lys Glu Ser Val Val Asp Ala Ser Glu Ser Asp Leu Asp Ser Ser Met
1   5   10   15

Gln Ser Ala Asp Glu Ser Thr Pro Gln Pro Leu Lys
            20   25

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<400> 47

Lys Ser Glu Glu Val Asn Ala Ser Asp Phe Pro Pro Pro Pro Thr Asp
1   5   10   15

Glu Glu Leu Arg
            20

<210> 48
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<400> 48

Arg Gly Gly Arg Pro Thr Ser Glu Glu Phe Ser Ser Leu Asn Ser Gly
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Asp Phe Thr Asp Asp Glu Asn Ser Glu Thr Thr Glu Glu Glu Ile Asp
            20   25   30

Arg

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Lys Gln Asn Thr Ala Ser Thr Glu Thr Thr Thr Thr Asn Glu Gln Pro
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Lys

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Lys Gln Asn Thr Ala Asn Thr Glu Thr Thr Thr Thr Asn Glu Gln Pro
1 5 10 15

Lys

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Arg Ser Glu Val Thr Ile Ser Pro Ala Glu Thr Pro Glu Ser Pro Pro
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Ala Thr Pro

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Lys Ala Ser Val Thr Asp Thr Ser Glu Gly Asp Leu Asp Ser Ser Met
1   5   10   15

Gln Ser Ala Asp Glu Ser Thr Pro Gln Pro Leu Lys
            20   25

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Lys Asn Glu Glu Val Asn Ala Ser Asp Phe Pro Pro Pro Pro Thr Asp
1   5   10   15

Glu Glu Leu Arg
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Arg Gly Gly Ile Pro Thr Ser Glu Glu Phe Ser Ser Leu Asn Ser Gly
1   5   10   15

Asp Phe Thr Asp Asp Glu Asn Ser Glu Thr Thr Glu Glu Glu Ile Asp
            20   25   30

Arg

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Pro Ile Ala Gln Gln Thr Glu Ala Lys Asp Ala Ser Ala Phe Asn Lys
            20                  25                  30


Glu Asn Ser Ile Ser Ser Met Ala Pro Pro Ala Ser Pro Pro Ala Ser
        35                  40                  45


Pro Lys Thr Pro Ile Glu Lys Lys His Ala Asp Glu Ile Asp Lys Tyr
    50                  55                  60


Ile Gln Gly Leu Asp Tyr Asn Lys Asn Asn Val Leu Val Tyr His Gly
65                  70                  75                  80


Asp Ala Val Thr Asn Val Pro Pro Arg Lys Gly Tyr Lys Asp Gly Asn
                85                  90                  95


Glu Tyr Ile Val Val Glu Lys Lys Lys Lys Ser Ile Asn Gln Asn Asn
            100                 105                 110


Ala Asp Ile Gln Val Val Asn Ala Ile Ser Ser Leu Thr Tyr Pro Gly
        115                 120                 125


Ala Leu Val Lys Ala Asn Ser Glu Leu Val Glu Asn Gln Pro Asp Val
    130                 135                 140


Leu Pro Val Lys Arg Asp Ser Leu Thr Leu Ser Ile Asp Leu Pro Gly
145                 150                 155                 160


Met Thr Asn Gln Asp Asn Lys Ile Val Val Lys Asn Ala Thr Lys Ser
                165                 170                 175
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Asn Val Asn Asn Ala Val Asn Thr Leu Val Glu Arg Trp Asn Glu Lys
            180                 185                 190

Tyr Ala Gln Ala Tyr Pro Asn Val Ser Ala Lys Ile Asp Tyr Asp Asp
        195                 200                 205

Glu Met Ala Tyr Ser Glu Ser Gln Leu Ile Ala Lys Phe Gly Thr Ala
    210                 215                 220

Phe Lys Ala Val Asn Asn Ser Leu Asn Val Asn Phe Gly Ala Ile Ser
225                 230                 235                 240

Glu Gly Lys Met Gln Glu Glu Val Ile Ser Phe Lys Gln Ile Tyr Tyr
                245                 250                 255

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

Ala Val Thr Lys Glu Gln Leu Gln Ala Leu Gly Val Asn Ala Glu Asn
        275                 280                 285

Pro Pro Ala Tyr Ile Ser Ser Val Ala Tyr Gly Arg Gln Val Tyr Leu
    290                 295                 300

Lys Leu Ser Thr Asn Ser His Ser Thr Lys Val Lys Ala Ala Phe Asp
305                 310                 315                 320

Ala Ala Val Ser Gly Lys Ser Val Ser Gly Asp Val Glu Leu Thr Asn
                325                 330                 335

Ile Ile Lys Asn Ser Ser Phe Lys Ala Val Ile Tyr Gly Gly Ser Ala
            340                 345                 350

Lys Asp Glu Val Gln Ile Ile Asp Gly Asn Leu Gly Asp Leu Arg Asp
        355                 360                 365
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```
Ile Leu Lys Lys Gly Ala Thr Phe Asn Arg Glu Thr Pro Gly Val Pro
    370                 375                 380

Ile Ala Tyr Thr Thr Asn Phe Leu Lys Asp Asn Glu Leu Ala Val Ile
385                 390                 395                 400

Lys Asn Asn Ser Glu Tyr Ile Glu Thr Thr Ser Lys Ala Tyr Thr Asp
                405                 410                 415

Gly Lys Ile Asn Ile Asp His Ser Gly Gly Tyr Val Ala Gln Phe Asn
            420                 425                 430

Ile Ser Trp Asp Glu Val Asn Tyr Asp Pro Glu Gly Asn Glu Ile Val
        435                 440                 445

Gln His Lys Asn Trp Ser Glu Asn Asn Lys Ser Lys Leu Ala His Phe
    450                 455                 460

Thr Ser Ser Ile Tyr Leu Pro Gly Asn Ala Arg Asn Ile Asn Val Tyr
465                 470                 475                 480

Ala Lys Glu Cys Thr Gly Leu Ala Trp Glu Trp Trp Arg Thr Val Ile
                485                 490                 495

Asp Asp Arg Asn Leu Pro Leu Val Lys Asn Arg Asn Ile Ser Ile Trp
            500                 505                 510

Gly Thr Thr Leu Tyr Pro Lys Tyr Ser Asn Lys Val Asp Asn Pro Ile
        515                 520                 525

Glu
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Met Lys Lys Ile Met Leu Val Phe Ile Thr Leu Ile Leu Val Ser Leu
1               5                  10                  15


Pro Ile Ala Gln Gln Thr Glu Ala Lys Asp Ala Ser Ala Phe Asn Lys
            20                  25                  30


Glu Asn Ser Ile Ser Ser Val Ala Pro Pro Ala Ser Pro Pro Ala Ser
        35                  40                  45


Pro Lys Thr Pro Ile Glu Lys Lys His Ala Asp Glu Ile Asp Lys Tyr
    50                  55                  60


Ile Gln Gly Leu Asp Tyr Asn Lys Asn Asn Val Leu Val Tyr His Gly
65                  70                  75                  80


Asp Ala Val Thr Asn Val Pro Pro Arg Lys Gly Tyr Lys Asp Gly Asn
                85                  90                  95


Glu Tyr Ile Val Val Glu Lys Lys Lys Lys Ser Ile Asn Gln Asn Asn
            100                 105                 110


Ala Asp Ile Gln Val Val Asn Ala Ile Ser Ser Leu Thr Tyr Pro Gly
        115                 120                 125


Ala Leu Val Lys Ala Asn Ser Glu Leu Val Glu Asn Gln Pro Asp Val
    130                 135                 140


Leu Pro Val Lys Arg Asp Ser Leu Thr Leu Ser Ile Asp Leu Pro Gly
145                 150                 155                 160


Met Thr Asn Gln Asp Asn Lys Ile Val Val Lys Asn Ala Thr Lys Ser
                165                 170                 175


Asn Val Asn Asn Ala Val Asn Thr Leu Val Glu Arg Trp Asn Glu Lys
            180                 185                 190
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Tyr Ala Gln Ala Tyr Ser Asn Val Ser Ala Lys Ile Asp Tyr Asp Asp
        195                 200                 205

Glu Met Ala Tyr Ser Glu Ser Gln Leu Ile Ala Lys Phe Gly Thr Ala
    210                 215                 220

Phe Lys Ala Val Asn Asn Ser Leu Asn Val Asn Phe Gly Ala Ile Ser
225                 230                 235                 240

Glu Gly Lys Met Gln Glu Glu Val Ile Ser Phe Lys Gln Ile Tyr Tyr
                245                 250                 255

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

Ala Val Thr Lys Glu Gln Leu Gln Ala Leu Gly Val Asn Ala Glu Asn
        275                 280                 285

Pro Pro Ala Tyr Ile Ser Ser Val Ala Tyr Gly Arg Gln Val Tyr Leu
    290                 295                 300

Lys Leu Ser Thr Asn Ser His Ser Thr Lys Val Lys Ala Ala Phe Asp
305                 310                 315                 320

Ala Ala Val Ser Gly Lys Ser Val Ser Gly Asp Val Glu Leu Thr Asn
                325                 330                 335

Ile Ile Lys Asn Ser Ser Phe Lys Ala Val Ile Tyr Gly Gly Ser Ala
            340                 345                 350

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

Ile Leu Lys Lys Gly Ala Thr Phe Asn Arg Glu Thr Pro Gly Val Pro
    370                 375                 380
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Ile Ala Tyr Thr Thr Asn Phe Leu Lys Asp Asn Glu Leu Ala Val Ile
385                 390                 395                 400

Lys Asn Asn Ser Glu Tyr Ile Glu Thr Thr Ser Lys Ala Tyr Thr Asp
                405                 410                 415

Gly Lys Ile Asn Ile Asp His Ser Gly Gly Tyr Val Ala Gln Phe Asn
            420                 425                 430

Ile Ser Trp Asp Glu Val Asn Tyr Asp Pro Glu Gly Asn Glu Ile Val
        435                 440                 445

Gln His Lys Asn Trp Ser Glu Asn Asn Lys Ser Lys Leu Ala His Phe
    450                 455                 460

Thr Ser Ser Ile Tyr Leu Pro Gly Asn Ala Arg Asn Ile Asn Val Tyr
465                 470                 475                 480

Ala Lys Glu Cys Thr Gly Leu Ala Trp Glu Trp Trp Arg Thr Val Ile
                485                 490                 495

Asp Asp Arg Asn Leu Pro Leu Val Lys Asn Arg Asn Ile Ser Ile Trp
            500                 505                 510

Gly Thr Thr Leu Tyr Pro Lys Tyr Ser Asn Lys Val Asp Asn Pro Ile
        515                 520                 525

Glu
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Met Lys Lys Ile Met Leu Val Phe Ile Thr Leu Ile Leu Val Ser Leu
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Pro Ile Ala Gln Gln Thr Glu Ala Lys Asp Ala Ser Ala Phe Asn Lys
            20                  25                  30

Glu Asn Ser Ile Ser Ser Val Ala Pro Pro Ala Ser Pro Pro Ala Ser
        35                  40                  45

Pro Lys Thr Pro Ile Glu Lys Lys His Ala Asp Glu Ile Asp Lys Tyr
    50                  55                  60

Ile Gln Gly Leu Asp Tyr Asn Lys Asn Asn Val Leu Val Tyr His Gly
65                  70                  75                  80

Asp Ala Val Thr Asn Val Pro Pro Arg Lys Gly Tyr Lys Asp Gly Asn
                85                  90                  95

Glu Tyr Ile Val Val Glu Lys Lys Lys Lys Ser Ile Asn Gln Asn Asn
            100                 105                 110

Ala Asp Ile Gln Val Val Asn Ala Ile Ser Ser Leu Thr Tyr Pro Gly
        115                 120                 125

Ala Leu Val Lys Ala Asn Ser Glu Leu Val Glu Asn Gln Pro Asp Val
    130                 135                 140

Leu Pro Val Lys Arg Asp Ser Leu Thr Leu Ser Ile Asp Leu Pro Gly
145                 150                 155                 160

Met Thr Asn Gln Asp Asn Lys Ile Val Val Lys Asn Ala Thr Lys Ser
                165                 170                 175

Asn Val Asn Asn Ala Val Asn Thr Leu Val Glu Arg Trp Asn Glu Lys
            180                 185                 190

Tyr Ala Gln Ala Tyr Ser Asn Val Ser Ala Lys Ile Asp Tyr Asp Asp
        195                 200                 205
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Glu Met Ala Tyr Ser Glu Ser Gln Leu Ile Ala Lys Phe Gly Thr Ala
    210                 215                 220

Phe Lys Ala Val Asn Asn Ser Leu Asn Val Asn Phe Gly Ala Ile Ser
225                 230                 235                 240

Glu Gly Lys Met Gln Glu Glu Val Ile Ser Phe Lys Gln Ile Tyr Tyr
                245                 250                 255

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

Ala Val Thr Lys Glu Gln Leu Gln Ala Leu Gly Val Asn Ala Glu Asn
        275                 280                 285

Pro Pro Ala Tyr Ile Ser Ser Val Ala Tyr Gly Arg Gln Val Tyr Leu
    290                 295                 300

Lys Leu Ser Thr Asn Ser His Ser Thr Lys Val Lys Ala Ala Phe Asp
305                 310                 315                 320

Ala Ala Val Ser Gly Lys Ser Val Ser Gly Asp Val Glu Leu Thr Asn
                325                 330                 335

Ile Ile Lys Asn Ser Ser Phe Lys Ala Val Ile Tyr Gly Gly Ser Ala
            340                 345                 350

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

Ile Leu Lys Lys Gly Ala Thr Phe Asn Arg Glu Thr Pro Gly Val Pro
    370                 375                 380

Ile Ala Tyr Thr Thr Asn Phe Leu Lys Asp Asn Glu Leu Ala Val Ile
385                 390                 395                 400
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```
Lys Asn Asn Ser Glu Tyr Ile Glu Thr Thr Ser Lys Ala Tyr Thr Asp
                405                 410                 415


Gly Lys Ile Asn Ile Asp His Ser Gly Gly Tyr Val Ala Gln Phe Asn
            420                 425                 430


Ile Ser Trp Asp Glu Val Asn Tyr Asp
        435                 440


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Met Lys Lys Ile Met Leu Val Phe Ile Thr Leu Ile Leu Val Ser Leu
1               5                   10                  15


Pro Ile Ala Gln Gln Thr Glu Ala Lys Asp Ala Ser Ala Phe Asn Lys
            20                  25                  30


Glu Asn Ser Ile Ser Ser Val Ala Pro Pro Ala Ser Pro Pro Ala Ser
        35                  40                  45


Pro Lys Thr Pro Ile Glu Lys Lys His Ala Asp Glu Ile Asp Lys Tyr
    50                  55                  60


Ile Gln Gly Leu Asp Tyr Asn Lys Asn Asn Val Leu Val Tyr His Gly
65                  70                  75                  80


Asp Ala Val Thr Asn Val Pro Pro Arg Lys Gly Tyr Lys Asp Gly Asn
                85                  90                  95


Glu Tyr Ile Val Val Glu Lys Lys Lys Lys Ser Ile Asn Gln Asn Asn
            100                 105                 110
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Ala Asp Ile Gln Val Val Asn Ala Ile Ser Ser Leu Thr Tyr Pro Gly
        115                 120                 125

Ala Leu Val Lys Ala Asn Ser Glu Leu Val Glu Asn Gln Pro Asp Val
    130                 135                 140

Leu Pro Val Lys Arg Asp Ser Leu Thr Leu Ser Ile Asp Leu Pro Gly
145                 150                 155                 160

Met Thr Asn Gln Asp Asn Lys Ile Val Val Lys Asn Ala Thr Lys Ser
                165                 170                 175

Asn Val Asn Asn Ala Val Asn Thr Leu Val Glu Arg Trp Asn Glu Lys
            180                 185                 190

Tyr Ala Gln Ala Tyr Ser Asn Val Ser Ala Lys Ile Asp Tyr Asp Asp
        195                 200                 205

Glu Met Ala Tyr Ser Glu Ser Gln Leu Ile Ala Lys Phe Gly Thr Ala
    210                 215                 220

Phe Lys Ala Val Asn Asn Ser Leu Asn Val Asn Phe Gly Ala Ile Ser
225                 230                 235                 240

Glu Gly Lys Met Gln Glu Glu Val Ile Ser Phe Lys Gln Ile Tyr Tyr
                245                 250                 255

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

Ala Val Thr Lys Glu Gln Leu Gln Ala Leu Gly Val Asn Ala Glu Asn
        275                 280                 285

Pro Pro Ala Tyr Ile Ser Ser Val Ala Tyr Gly Arg Gln Val Tyr Leu
    290                 295                 300

Lys Leu Ser Thr Asn Ser His Ser Thr Lys Val Lys Ala Ala Phe Asp
305                 310                 315                 320
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```
Ala Ala Val Ser Gly Lys Ser Val Ser Gly Asp Val Glu Leu Thr Asn
                325                 330                 335


Ile Ile Lys Asn Ser Ser Phe Lys Ala Val Ile Tyr Gly Gly Ser Ala
            340                 345                 350


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


Ile Leu Lys Lys Gly Ala Thr Phe Asn Arg Glu Thr Pro Gly Val Pro
    370                 375                 380


Ile Ala Tyr Thr Thr Asn Phe Leu Lys Asp Asn Glu Leu Ala Val Ile
385                 390                 395                 400


Lys Asn Asn Ser Glu Tyr Ile Glu Thr Thr Ser Lys Ala Tyr Thr Asp
                405                 410                 415


<210>  59
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<223>  Synthetic

<400>  59

Met Lys Lys Ile Met Leu Val Phe Ile Thr Leu Ile Leu Val Ser Leu
1               5                   10                  15


Pro Ile Ala Gln Gln Thr Glu Ala Lys Asp Ala Ser Ala Phe Asn Lys
            20                  25                  30


Glu Asn Ser Ile Ser Ser Met Ala Pro Pro Ala Ser Pro Pro Ala Ser
        35                  40                  45


Pro Lys Thr Pro Ile Glu Lys Lys His Ala Asp Glu Ile Asp Lys Tyr
    50                  55                  60
```

```
Ile Gln Gly Leu Asp Tyr Asn Lys Asn Asn Val Leu Val Tyr His Gly
65                  70                  75                  80

Asp Ala Val Thr Asn Val Pro Pro Arg Lys Gly Tyr Lys Asp Gly Asn
                85                  90                  95

Glu Tyr Ile Val Val Glu Lys Lys Lys Lys Ser Ile Asn Gln Asn Asn
            100                 105                 110

Ala Asp Ile Gln Val Val Asn Ala Ile Ser Ser Leu Thr Tyr Pro Gly
        115                 120                 125

Ala Leu Val Lys Ala Asn Ser Glu Leu Val Glu Asn Gln Pro Asp Val
    130                 135                 140

Leu Pro Val Lys Arg Asp Ser Leu Thr Leu Ser Ile Asp Leu Pro Gly
145                 150                 155                 160

Met Thr Asn Gln Asp Asn Lys Ile Val Val Lys Asn Ala Thr Lys Ser
                165                 170                 175

Asn Val Asn Asn Ala Val Asn Thr Leu Val Glu Arg Trp Asn Glu Lys
            180                 185                 190

Tyr Ala Gln Ala Tyr Pro Asn Val Ser Ala Lys Ile Asp Tyr Asp Asp
        195                 200                 205

Glu Met Ala Tyr Ser Glu Ser Gln Leu Ile Ala Lys Phe Gly Thr Ala
    210                 215                 220

Phe Lys Ala Val Asn Asn Ser Leu Asn Val Asn Phe Gly Ala Ile Ser
225                 230                 235                 240

Glu Gly Lys Met Gln Glu Glu Val Ile Ser Phe Lys Gln Ile Tyr Tyr
                245                 250                 255
```

```
Asn Val Asn Val Asn Glu Pro Thr Arg Pro Ser Arg Phe Phe Gly Lys
            260                 265                 270

Ala Val Thr Lys Glu Gln Leu Gln Ala Leu Gly Val Asn Ala Glu Asn
        275                 280                 285

Pro Pro Ala Tyr Ile Ser Ser Val Ala Tyr Gly Arg Gln Val Tyr Leu
    290                 295                 300

Lys Leu Ser Thr Asn Ser His Ser Thr Lys Val Lys Ala Ala Phe Asp
305                 310                 315                 320

Ala Ala Val Ser Gly Lys Ser Val Ser Gly Asp Val Glu Leu Thr Asn
                325                 330                 335

Ile Ile Lys Asn Ser Ser Phe Lys Ala Val Ile Tyr Gly Gly Ser Ala
            340                 345                 350

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

Ile Leu Lys Lys Gly Ala Thr Phe Asn Arg Glu Thr Pro Gly Val Pro
    370                 375                 380

Ile Ala Tyr Thr Thr Asn Phe Leu Lys Asp Asn Glu Leu Ala Val Ile
385                 390                 395                 400

Lys Asn Asn Ser Glu Tyr Ile Glu Thr Thr Ser Lys Ala Tyr Thr Asp
                405                 410                 415

Gly Lys Ile Asn Ile Asp His Ser Gly Gly Tyr Val Ala Gln Phe Asn
            420                 425                 430

Ile Ser Trp Asp Glu Val Asn Tyr Asp
        435                 440
```

<210> 60
<211> 1323

<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 60
atgaaaaaaa taatgctagt ttttattaca cttatattag ttagtctacc aattgcgcaa 60

caaactgaag caaaggatgc atctgcattc aataaagaaa attcaatttc atccatggca 120

ccaccagcat ctccgcctgc aagtcctaag acgccaatcg aaaagaaaca cgcggatgaa 180

atcgataagt atatacaagg attggattac aataaaaaca atgtattagt ataccacgga 240

gatgcagtga caaatgtgcc gccaagaaaa ggttacaaag atggaaatga atatattgtt 300

gtggagaaaa agaagaaatc catcaatcaa aataatgcag acattcaagt tgtgaatgca 360

atttcgagcc taacctatcc aggtgctctc gtaaaagcga attcggaatt agtagaaaat 420

caaccagatg ttctccctgt aaaacgtgat tcattaacac tcagcattga tttgccaggt 480

atgactaatc aagacaataa aatagttgta aaaaatgcca ctaaatcaaa cgttaacaac 540

gcagtaaata cattagtgga aagatggaat gaaaaatatg ctcaagctta tccaaatgta 600

agtgcaaaaa ttgattatga tgacgaaatg gcttacagtg aatcacaatt aattgcgaaa 660

tttggtacag catttaaagc tgtaaataat agcttgaatg taaacttcgg cgcaatcagt 720

gaagggaaaa tgcaagaaga agtcattagt tttaaacaaa tttactataa cgtgaatgtt 780

aatgaaccta caagaccttc cagatttttc ggcaaagctg ttactaaaga gcagttgcaa 840

gcgcttggag tgaatgcaga aaatcctcct gcatatatct caagtgtggc gtatggccgt 900

caagtttatt tgaaattatc aactaattcc catagtacta aagtaaaagc tgcttttgat 960

gctgccgtaa gcggaaaatc tgtctcaggt gatgtagaac taacaaatat catcaaaaat 1020

tcttccttca aagccgtaat ttacggaggt tccgcaaaag atgaagttca aatcatcgac 1080

ggcaacctcg gagacttacg cgatattttg aaaaaaggcg ctacttttaa tcgagaaaca 1140

ccaggagttc ccattgctta tacaacaaac ttcctaaaag acaatgaatt agctgttatt 1200

aaaaacaact cagaatatat tgaaacaact tcaaaagctt atacagatgg aaaaattaac 1260

atcgatcact ctggaggata cgttgctcaa ttcaacattt cttgggatga agtaaattat 1320

gat 1323

<210> 61
<211> 633
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 61

Met Arg Ala Met Met Val Val Phe Ile Thr Ala Asn Cys Ile Thr Ile
1 5 10 15

Asn Pro Asp Ile Ile Phe Ala Ala Thr Asp Ser Glu Asp Ser Ser Leu
20 25 30

Asn Thr Asp Glu Trp Glu Glu Glu Lys Thr Glu Glu Gln Pro Ser Glu
35 40 45

Val Asn Thr Gly Pro Arg Tyr Glu Thr Ala Arg Glu Val Ser Ser Arg
50 55 60

Asp Ile Glu Glu Leu Glu Lys Ser Asn Lys Val Lys Asn Thr Asn Lys
65 70 75 80

Ala Asp Leu Ile Ala Met Leu Lys Ala Lys Ala Glu Lys Gly Pro Asn
85 90 95

Asn Asn Asn Asn Asn Gly Glu Gln Thr Gly Asn Val Ala Ile Asn Glu
100 105 110

Glu Ala Ser Gly Val Asp Arg Pro Thr Leu Gln Val Glu Arg Arg His
115 120 125

Pro Gly Leu Ser Ser Asp Ser Ala Ala Glu Ile Lys Lys Arg Arg Lys
130 135 140

```
Ala Ile Ala Ser Ser Asp Ser Glu Leu Glu Ser Leu Thr Tyr Pro Asp
145                 150                 155                 160

Lys Pro Thr Lys Ala Asn Lys Arg Lys Val Ala Lys Glu Ser Val Val
                165                 170                 175

Asp Ala Ser Glu Ser Asp Leu Asp Ser Ser Met Gln Ser Ala Asp Glu
            180                 185                 190

Ser Thr Pro Gln Pro Leu Lys Ala Asn Gln Lys Pro Phe Phe Pro Lys
        195                 200                 205

Val Phe Lys Lys Ile Lys Asp Ala Gly Lys Trp Val Arg Asp Lys Ile
    210                 215                 220

Asp Glu Asn Pro Glu Val Lys Lys Ala Ile Val Asp Lys Ser Ala Gly
225                 230                 235                 240

Leu Ile Asp Gln Leu Leu Thr Lys Lys Lys Ser Glu Glu Val Asn Ala
                245                 250                 255

Ser Asp Phe Pro Pro Pro Pro Thr Asp Glu Glu Leu Arg Leu Ala Leu
            260                 265                 270

Pro Glu Thr Pro Met Leu Leu Gly Phe Asn Ala Pro Thr Pro Ser Glu
        275                 280                 285

Pro Ser Ser Phe Glu Phe Pro Pro Pro Pro Thr Asp Glu Glu Leu Arg
    290                 295                 300

Leu Ala Leu Pro Glu Thr Pro Met Leu Leu Gly Phe Asn Ala Pro Ala
305                 310                 315                 320

Thr Ser Glu Pro Ser Ser Phe Glu Phe Pro Pro Pro Pro Thr Glu Asp
                325                 330                 335

Glu Leu Glu Ile Met Arg Glu Thr Ala Pro Ser Leu Asp Ser Ser Phe
            340                 345                 350
```

```
Thr Ser Gly Asp Leu Ala Ser Leu Arg Ser Ala Ile Asn Arg His Ser
        355                 360                 365

Glu Asn Phe Ser Asp Phe Pro Leu Ile Pro Thr Glu Glu Glu Leu Asn
    370                 375                 380

Gly Arg Gly Gly Arg Pro Thr Ser Glu Glu Phe Ser Ser Leu Asn Ser
385                 390                 395                 400

Gly Asp Phe Thr Asp Asp Glu Asn Ser Glu Thr Thr Glu Glu Glu Ile
                405                 410                 415

Asp Arg Leu Ala Asp Leu Arg Asp Arg Gly Thr Gly Lys His Ser Arg
            420                 425                 430

Asn Ala Gly Phe Leu Pro Leu Asn Pro Phe Ile Ser Ser Pro Val Pro
        435                 440                 445

Ser Leu Thr Pro Lys Val Pro Lys Ile Ser Ala Pro Ala Leu Ile Ser
    450                 455                 460

Asp Ile Thr Lys Lys Ala Pro Phe Lys Asn Pro Ser Gln Pro Leu Asn
465                 470                 475                 480

Val Phe Asn Lys Lys Thr Thr Thr Lys Thr Val Thr Lys Lys Pro Thr
                485                 490                 495

Pro Val Lys Thr Ala Pro Lys Leu Ala Glu Leu Pro Ala Thr Lys Pro
            500                 505                 510

Gln Glu Thr Val Leu Arg Glu Asn Lys Thr Pro Phe Ile Glu Lys Gln
        515                 520                 525

Ala Glu Thr Asn Lys Gln Ser Ile Asn Met Pro Ser Leu Pro Val Ile
    530                 535                 540
```

```
Gln Lys Glu Ala Thr Glu Ser Asp Lys Glu Glu Met Lys Pro Gln Thr
545                 550                 555                 560


Glu Glu Lys Met Val Glu Glu Ser Glu Ser Ala Asn Asn Ala Asn Gly
                565                 570                 575


Lys Asn Arg Ser Ala Gly Ile Glu Glu Gly Lys Leu Ile Ala Lys Ser
            580                 585                 590


Ala Glu Asp Glu Lys Ala Lys Glu Glu Pro Gly Asn His Thr Thr Leu
        595                 600                 605


Ile Leu Ala Met Leu Ala Ile Gly Val Phe Ser Leu Gly Ala Phe Ile
    610                 615                 620


Lys Ile Ile Gln Leu Arg Lys Asn Asn
625                 630


<210>  62
<211>  639
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic

<400>  62

Met Gly Leu Asn Arg Phe Met Arg Ala Met Met Val Val Phe Ile Thr
1               5                   10                  15


Ala Asn Cys Ile Thr Ile Asn Pro Asp Ile Ile Phe Ala Ala Thr Asp
            20                  25                  30


Ser Glu Asp Ser Ser Leu Asn Thr Asp Glu Trp Glu Glu Glu Lys Thr
        35                  40                  45


Glu Glu Gln Pro Ser Glu Val Asn Thr Gly Pro Arg Tyr Glu Thr Ala
    50                  55                  60
```

```
Arg Glu Val Ser Ser Arg Asp Ile Glu Glu Leu Glu Lys Ser Asn Lys
65                  70                  75                  80

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

Ala Glu Lys Gly Pro Asn Asn Asn Asn Asn Asn Gly Glu Gln Thr Gly
            100                 105                 110

Asn Val Ala Ile Asn Glu Glu Ala Ser Gly Val Asp Arg Pro Thr Leu
        115                 120                 125

Gln Val Glu Arg Arg His Pro Gly Leu Ser Ser Asp Ser Ala Ala Glu
    130                 135                 140

Ile Lys Lys Arg Arg Lys Ala Ile Ala Ser Ser Asp Ser Glu Leu Glu
145                 150                 155                 160

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

Ala Lys Glu Ser Val Val Asp Ala Ser Glu Ser Asp Leu Asp Ser Ser
            180                 185                 190

Met Gln Ser Ala Asp Glu Ser Thr Pro Gln Pro Leu Lys Ala Asn Gln
        195                 200                 205

Lys Pro Phe Phe Pro Lys Val Phe Lys Lys Ile Lys Asp Ala Gly Lys
    210                 215                 220

Trp Val Arg Asp Lys Ile Asp Glu Asn Pro Glu Val Lys Lys Ala Ile
225                 230                 235                 240

Val Asp Lys Ser Ala Gly Leu Ile Asp Gln Leu Leu Thr Lys Lys Lys
                245                 250                 255

Ser Glu Glu Val Asn Ala Ser Asp Phe Pro Pro Pro Pro Thr Asp Glu
            260                 265                 270
```

```
Glu Leu Arg Leu Ala Leu Pro Glu Thr Pro Met Leu Leu Gly Phe Asn
        275                 280                 285

Ala Pro Thr Pro Ser Glu Pro Ser Ser Phe Glu Phe Pro Pro Pro Pro
    290                 295                 300

Thr Asp Glu Glu Leu Arg Leu Ala Leu Pro Glu Thr Pro Met Leu Leu
305                 310                 315                 320

Gly Phe Asn Ala Pro Ala Thr Ser Glu Pro Ser Ser Phe Glu Phe Pro
                325                 330                 335

Pro Pro Pro Thr Glu Asp Glu Leu Glu Ile Met Arg Glu Thr Ala Pro
            340                 345                 350

Ser Leu Asp Ser Ser Phe Thr Ser Gly Asp Leu Ala Ser Leu Arg Ser
        355                 360                 365

Ala Ile Asn Arg His Ser Glu Asn Phe Ser Asp Phe Pro Leu Ile Pro
    370                 375                 380

Thr Glu Glu Glu Leu Asn Gly Arg Gly Gly Arg Pro Thr Ser Glu Glu
385                 390                 395                 400

Phe Ser Ser Leu Asn Ser Gly Asp Phe Thr Asp Asp Glu Asn Ser Glu
                405                 410                 415

Thr Thr Glu Glu Glu Ile Asp Arg Leu Ala Asp Leu Arg Asp Arg Gly
            420                 425                 430

Thr Gly Lys His Ser Arg Asn Ala Gly Phe Leu Pro Leu Asn Pro Phe
        435                 440                 445

Ile Ser Ser Pro Val Pro Ser Leu Thr Pro Lys Val Pro Lys Ile Ser
    450                 455                 460
```

```
Ala Pro Ala Leu Ile Ser Asp Ile Thr Lys Lys Ala Pro Phe Lys Asn
465                 470                 475                 480


Pro Ser Gln Pro Leu Asn Val Phe Asn Lys Lys Thr Thr Thr Lys Thr
                485                 490                 495


Val Thr Lys Lys Pro Thr Pro Val Lys Thr Ala Pro Lys Leu Ala Glu
            500                 505                 510


Leu Pro Ala Thr Lys Pro Gln Glu Thr Val Leu Arg Glu Asn Lys Thr
        515                 520                 525


Pro Phe Ile Glu Lys Gln Ala Glu Thr Asn Lys Gln Ser Ile Asn Met
    530                 535                 540


Pro Ser Leu Pro Val Ile Gln Lys Glu Ala Thr Glu Ser Asp Lys Glu
545                 550                 555                 560


Glu Met Lys Pro Gln Thr Glu Glu Lys Met Val Glu Glu Ser Glu Ser
                565                 570                 575


Ala Asn Asn Ala Asn Gly Lys Asn Arg Ser Ala Gly Ile Glu Glu Gly
            580                 585                 590


Lys Leu Ile Ala Lys Ser Ala Glu Asp Glu Lys Ala Lys Glu Glu Pro
        595                 600                 605


Gly Asn His Thr Thr Leu Ile Leu Ala Met Leu Ala Ile Gly Val Phe
    610                 615                 620


Ser Leu Gly Ala Phe Ile Lys Ile Ile Gln Leu Arg Lys Asn Asn
625                 630                 635


<210>  63
<211>  93
<212>  PRT
<213>  Artificial Sequence

<220>
```

<223> Synthetic

<400> 63

Ala Thr Asp Ser Glu Asp Ser Ser Leu Asn Thr Asp Glu Trp Glu Glu
1 5 10 15

Glu Lys Thr Glu Glu Gln Pro Ser Glu Val Asn Thr Gly Pro Arg Tyr
20 25 30

Glu Thr Ala Arg Glu Val Ser Ser Arg Asp Ile Glu Glu Leu Glu Lys
35 40 45

Ser Asn Lys Val Lys Asn Thr Asn Lys Ala Asp Leu Ile Ala Met Leu
50 55 60

Lys Ala Lys Ala Glu Lys Gly Pro Asn Asn Asn Asn Asn Asn Gly Glu
65 70 75 80

Gln Thr Gly Asn Val Ala Ile Asn Glu Glu Ala Ser Gly
85 90

<210> 64
<211> 200
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 64

Ala Thr Asp Ser Glu Asp Ser Ser Leu Asn Thr Asp Glu Trp Glu Glu
1 5 10 15

Glu Lys Thr Glu Glu Gln Pro Ser Glu Val Asn Thr Gly Pro Arg Tyr
20 25 30

Glu Thr Ala Arg Glu Val Ser Ser Arg Asp Ile Glu Glu Leu Glu Lys
35 40 45

```
Ser Asn Lys Val Lys Asn Thr Asn Lys Ala Asp Leu Ile Ala Met Leu
    50                  55                  60

Lys Ala Lys Ala Glu Lys Gly Pro Asn Asn Asn Asn Asn Asn Gly Glu
65                  70                  75                  80

Gln Thr Gly Asn Val Ala Ile Asn Glu Glu Ala Ser Gly Val Asp Arg
                85                  90                  95

Pro Thr Leu Gln Val Glu Arg Arg His Pro Gly Leu Ser Ser Asp Ser
            100                 105                 110

Ala Ala Glu Ile Lys Lys Arg Arg Lys Ala Ile Ala Ser Ser Asp Ser
        115                 120                 125

Glu Leu Glu Ser Leu Thr Tyr Pro Asp Lys Pro Thr Lys Ala Asn Lys
    130                 135                 140

Arg Lys Val Ala Lys Glu Ser Val Val Asp Ala Ser Glu Ser Asp Leu
145                 150                 155                 160

Asp Ser Ser Met Gln Ser Ala Asp Glu Ser Thr Pro Gln Pro Leu Lys
                165                 170                 175

Ala Asn Gln Lys Pro Phe Phe Pro Lys Val Phe Lys Lys Ile Lys Asp
            180                 185                 190

Ala Gly Lys Trp Val Arg Asp Lys
        195                 200
```

<210> 65
<211> 303
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 65

```
Ala Thr Asp Ser Glu Asp Ser Ser Leu Asn Thr Asp Glu Trp Glu Glu
1               5                  10                  15

Glu Lys Thr Glu Glu Gln Pro Ser Glu Val Asn Thr Gly Pro Arg Tyr
            20                  25                  30

Glu Thr Ala Arg Glu Val Ser Ser Arg Asp Ile Glu Glu Leu Glu Lys
        35                  40                  45

Ser Asn Lys Val Lys Asn Thr Asn Lys Ala Asp Leu Ile Ala Met Leu
    50                  55                  60

Lys Ala Lys Ala Glu Lys Gly Pro Asn Asn Asn Asn Asn Asn Gly Glu
65                  70                  75                  80

Gln Thr Gly Asn Val Ala Ile Asn Glu Glu Ala Ser Gly Val Asp Arg
                85                  90                  95

Pro Thr Leu Gln Val Glu Arg Arg His Pro Gly Leu Ser Ser Asp Ser
            100                 105                 110

Ala Ala Glu Ile Lys Lys Arg Arg Lys Ala Ile Ala Ser Ser Asp Ser
        115                 120                 125

Glu Leu Glu Ser Leu Thr Tyr Pro Asp Lys Pro Thr Lys Ala Asn Lys
    130                 135                 140

Arg Lys Val Ala Lys Glu Ser Val Val Asp Ala Ser Glu Ser Asp Leu
145                 150                 155                 160

Asp Ser Ser Met Gln Ser Ala Asp Glu Ser Thr Pro Gln Pro Leu Lys
                165                 170                 175

Ala Asn Gln Lys Pro Phe Phe Pro Lys Val Phe Lys Lys Ile Lys Asp
            180                 185                 190

Ala Gly Lys Trp Val Arg Asp Lys Ile Asp Glu Asn Pro Glu Val Lys
        195                 200                 205
```

```
Lys Ala Ile Val Asp Lys Ser Ala Gly Leu Ile Asp Gln Leu Leu Thr
    210                 215                 220

Lys Lys Lys Ser Glu Glu Val Asn Ala Ser Asp Phe Pro Pro Pro Pro
225                 230                 235                 240

Thr Asp Glu Glu Leu Arg Leu Ala Leu Pro Glu Thr Pro Met Leu Leu
                245                 250                 255

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

Pro Pro Pro Thr Asp Glu Glu Leu Arg Leu Ala Leu Pro Glu Thr Pro
        275                 280                 285

Met Leu Leu Gly Phe Asn Ala Pro Ala Thr Ser Glu Pro Ser Ser
    290                 295                 300
```

<210> 66
<211> 370
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 66

```
Ala Thr Asp Ser Glu Asp Ser Ser Leu Asn Thr Asp Glu Trp Glu Glu
1               5                   10                  15

Glu Lys Thr Glu Glu Gln Pro Ser Glu Val Asn Thr Gly Pro Arg Tyr
            20                  25                  30

Glu Thr Ala Arg Glu Val Ser Ser Arg Asp Ile Glu Glu Leu Glu Lys
        35                  40                  45

Ser Asn Lys Val Lys Asn Thr Asn Lys Ala Asp Leu Ile Ala Met Leu
    50                  55                  60
```

```
Lys Ala Lys Ala Glu Lys Gly Pro Asn Asn Asn Asn Asn Asn Gly Glu
65                  70                  75                  80

Gln Thr Gly Asn Val Ala Ile Asn Glu Glu Ala Ser Gly Val Asp Arg
                85                  90                  95

Pro Thr Leu Gln Val Glu Arg Arg His Pro Gly Leu Ser Ser Asp Ser
            100                 105                 110

Ala Ala Glu Ile Lys Lys Arg Arg Lys Ala Ile Ala Ser Ser Asp Ser
        115                 120                 125

Glu Leu Glu Ser Leu Thr Tyr Pro Asp Lys Pro Thr Lys Ala Asn Lys
    130                 135                 140

Arg Lys Val Ala Lys Glu Ser Val Val Asp Ala Ser Glu Ser Asp Leu
145                 150                 155                 160

Asp Ser Ser Met Gln Ser Ala Asp Glu Ser Thr Pro Gln Pro Leu Lys
                165                 170                 175

Ala Asn Gln Lys Pro Phe Phe Pro Lys Val Phe Lys Lys Ile Lys Asp
            180                 185                 190

Ala Gly Lys Trp Val Arg Asp Lys Ile Asp Glu Asn Pro Glu Val Lys
        195                 200                 205

Lys Ala Ile Val Asp Lys Ser Ala Gly Leu Ile Asp Gln Leu Leu Thr
    210                 215                 220

Lys Lys Lys Ser Glu Glu Val Asn Ala Ser Asp Phe Pro Pro Pro Pro
225                 230                 235                 240

Thr Asp Glu Glu Leu Arg Leu Ala Leu Pro Glu Thr Pro Met Leu Leu
                245                 250                 255
```

```
Gly Phe Asn Ala Pro Thr Pro Ser Glu Pro Ser Ser Phe Glu Phe Pro
            260                 265                 270

Pro Pro Pro Thr Asp Glu Glu Leu Arg Leu Ala Leu Pro Glu Thr Pro
        275                 280                 285

Met Leu Leu Gly Phe Asn Ala Pro Ala Thr Ser Glu Pro Ser Ser Phe
    290                 295                 300

Glu Phe Pro Pro Pro Pro Thr Glu Asp Glu Leu Glu Ile Met Arg Glu
305                 310                 315                 320

Thr Ala Pro Ser Leu Asp Ser Ser Phe Thr Ser Gly Asp Leu Ala Ser
                325                 330                 335

Leu Arg Ser Ala Ile Asn Arg His Ser Glu Asn Phe Ser Asp Phe Pro
            340                 345                 350

Leu Ile Pro Thr Glu Glu Glu Leu Asn Gly Arg Gly Gly Arg Pro Thr
        355                 360                 365

Ser Glu
    370
```

<210> 67
<211> 390
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 67

```
Met Arg Ala Met Met Val Val Phe Ile Thr Ala Asn Cys Ile Thr Ile
1               5                   10                  15

Asn Pro Asp Ile Ile Phe Ala Ala Thr Asp Ser Glu Asp Ser Ser Leu
            20                  25                  30
```

```
Asn Thr Asp Glu Trp Glu Glu Glu Lys Thr Glu Glu Gln Pro Ser Glu
        35                  40                  45

Val Asn Thr Gly Pro Arg Tyr Glu Thr Ala Arg Glu Val Ser Ser Arg
    50                  55                  60

Asp Ile Lys Glu Leu Glu Lys Ser Asn Lys Val Arg Asn Thr Asn Lys
65                  70                  75                  80

Ala Asp Leu Ile Ala Met Leu Lys Glu Lys Ala Glu Lys Gly Pro Asn
                85                  90                  95

Ile Asn Asn Asn Asn Ser Glu Gln Thr Glu Asn Ala Ala Ile Asn Glu
            100                 105                 110

Glu Ala Ser Gly Ala Asp Arg Pro Ala Ile Gln Val Glu Arg Arg His
        115                 120                 125

Pro Gly Leu Pro Ser Asp Ser Ala Ala Glu Ile Lys Lys Arg Arg Lys
    130                 135                 140

Ala Ile Ala Ser Ser Asp Ser Glu Leu Glu Ser Leu Thr Tyr Pro Asp
145                 150                 155                 160

Lys Pro Thr Lys Val Asn Lys Lys Lys Val Ala Lys Glu Ser Val Ala
                165                 170                 175

Asp Ala Ser Glu Ser Asp Leu Asp Ser Ser Met Gln Ser Ala Asp Glu
            180                 185                 190

Ser Ser Pro Gln Pro Leu Lys Ala Asn Gln Gln Pro Phe Phe Pro Lys
        195                 200                 205

Val Phe Lys Lys Ile Lys Asp Ala Gly Lys Trp Val Arg Asp Lys Ile
    210                 215                 220

Asp Glu Asn Pro Glu Val Lys Lys Ala Ile Val Asp Lys Ser Ala Gly
225                 230                 235                 240
```

```
Leu Ile Asp Gln Leu Leu Thr Lys Lys Lys Ser Glu Glu Val Asn Ala
                245                 250                 255

Ser Asp Phe Pro Pro Pro Pro Thr Asp Glu Glu Leu Arg Leu Ala Leu
            260                 265                 270

Pro Glu Thr Pro Met Leu Leu Gly Phe Asn Ala Pro Ala Thr Ser Glu
        275                 280                 285

Pro Ser Ser Phe Glu Phe Pro Pro Pro Pro Thr Asp Glu Glu Leu Arg
    290                 295                 300

Leu Ala Leu Pro Glu Thr Pro Met Leu Leu Gly Phe Asn Ala Pro Ala
305                 310                 315                 320

Thr Ser Glu Pro Ser Ser Phe Glu Phe Pro Pro Pro Pro Thr Glu Asp
                325                 330                 335

Glu Leu Glu Ile Ile Arg Glu Thr Ala Ser Ser Leu Asp Ser Ser Phe
            340                 345                 350

Thr Arg Gly Asp Leu Ala Ser Leu Arg Asn Ala Ile Asn Arg His Ser
        355                 360                 365

Gln Asn Phe Ser Asp Phe Pro Pro Ile Pro Thr Glu Glu Glu Leu Asn
    370                 375                 380

Gly Arg Gly Gly Arg Pro
385                 390
```

<210> 68
<211> 1170
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 68
atgcgtgcga tgatggtggt tttcattact gccaattgca ttacgattaa ccccgacata 60

atatttgcag cgacagatag cgaagattct agtctaaaca cagatgaatg ggaagaagaa 120

aaaacagaag agcaaccaag cgaggtaaat acgggaccaa gatacgaaac tgcacgtgaa 180

gtaagttcac gtgatattaa agaactagaa aaatcgaata aagtgagaaa tacgaacaaa 240

gcagacctaa tagcaatgtt gaaagaaaaa gcagaaaaag gtccaaatat caataataac 300

aacagtgaac aaactgagaa tgcggctata aatgaagagg cttcaggagc cgaccgacca 360

gctatacaag tggagcgtcg tcatccagga ttgccatcgg atagcgcagc ggaaattaaa 420

aaaagaagga aagccatagc atcatcggat agtgagcttg aaagccttac ttatccggat 480

aaaccaacaa aagtaaataa gaaaaaagtg gcgaaagagt cagttgcgga tgcttctgaa 540

agtgacttag attctagcat gcagtcagca gatgagtctt caccacaacc tttaaaagca 600

aaccaacaac cattttccc taaagtattt aaaaaaataa aagatgcggg gaaatgggta 660

cgtgataaaa tcgacgaaaa tcctgaagta aagaaagcga ttgttgataa aagtgcaggg 720

ttaattgacc aattattaac caaaaagaaa agtgaagagg taaatgcttc ggacttcccg 780

ccaccaccta cggatgaaga gttaagactt gctttgccag agacaccaat gcttcttggt 840

tttaatgctc ctgctacatc agaaccgagc tcattcgaat ttccaccacc acctacggat 900

gaagagttaa gacttgcttt gccagagacg ccaatgcttc ttggttttaa tgctcctgct 960

acatcggaac cgagctcgtt cgaatttcca ccgcctccaa cagaagatga actagaaatc 1020

atccgggaaa cagcatcctc gctagattct agttttacaa gaggggattt agctagtttg 1080

agaaatgcta ttaatcgcca tagtcaaaat ttctctgatt tcccaccaat cccaacagaa 1140

gaagagttga acgggagagg cggtagacca 1170

<210> 69
<211> 100
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 69

Met Gly Leu Asn Arg Phe Met Arg Ala Met Met Val Val Phe Ile Thr
1 5 10 15

Ala Asn Cys Ile Thr Ile Asn Pro Asp Ile Ile Phe Ala Ala Thr Asp
20 25 30

Ser Glu Asp Ser Ser Leu Asn Thr Asp Glu Trp Glu Glu Glu Lys Thr
35 40 45

Glu Glu Gln Pro Ser Glu Val Asn Thr Gly Pro Arg Tyr Glu Thr Ala
50 55 60

Arg Glu Val Ser Ser Arg Asp Ile Lys Glu Leu Glu Lys Ser Asn Lys
65 70 75 80

Val Arg Asn Thr Asn Lys Ala Asp Leu Ile Ala Met Leu Lys Glu Lys
85 90 95

Ala Glu Lys Gly
100

<210> 70
<211> 390
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 70

Met Arg Ala Met Met Val Val Phe Ile Thr Ala Asn Cys Ile Thr Ile
1 5 10 15

Asn Pro Asp Ile Ile Phe Ala Ala Thr Asp Ser Glu Asp Ser Ser Leu
20 25 30

Asn Thr Asp Glu Trp Glu Glu Glu Lys Thr Glu Glu Gln Pro Ser Glu
35 40 45

```
Val Asn Thr Gly Pro Arg Tyr Glu Thr Ala Arg Glu Val Ser Ser Arg
    50                  55                  60

Asp Ile Glu Glu Leu Glu Lys Ser Asn Lys Val Lys Asn Thr Asn Lys
65                  70                  75                  80

Ala Asp Leu Ile Ala Met Leu Lys Ala Lys Ala Glu Lys Gly Pro Asn
                85                  90                  95

Asn Asn Asn Asn Asn Gly Glu Gln Thr Gly Asn Val Ala Ile Asn Glu
            100                 105                 110

Glu Ala Ser Gly Val Asp Arg Pro Thr Leu Gln Val Glu Arg Arg His
        115                 120                 125

Pro Gly Leu Ser Ser Asp Ser Ala Ala Glu Ile Lys Lys Arg Arg Lys
    130                 135                 140

Ala Ile Ala Ser Ser Asp Ser Glu Leu Glu Ser Leu Thr Tyr Pro Asp
145                 150                 155                 160

Lys Pro Thr Lys Ala Asn Lys Arg Lys Val Ala Lys Glu Ser Val Val
                165                 170                 175

Asp Ala Ser Glu Ser Asp Leu Asp Ser Ser Met Gln Ser Ala Asp Glu
            180                 185                 190

Ser Thr Pro Gln Pro Leu Lys Ala Asn Gln Lys Pro Phe Phe Pro Lys
        195                 200                 205

Val Phe Lys Lys Ile Lys Asp Ala Gly Lys Trp Val Arg Asp Lys Ile
    210                 215                 220

Asp Glu Asn Pro Glu Val Lys Lys Ala Ile Val Asp Lys Ser Ala Gly
225                 230                 235                 240
```

Leu Ile Asp Gln Leu Leu Thr Lys Lys Lys Ser Glu Glu Val Asn Ala
245 250 255

Ser Asp Phe Pro Pro Pro Pro Thr Asp Glu Glu Leu Arg Leu Ala Leu
260 265 270

Pro Glu Thr Pro Met Leu Leu Gly Phe Asn Ala Pro Thr Pro Ser Glu
275 280 285

Pro Ser Ser Phe Glu Phe Pro Pro Pro Pro Thr Asp Glu Glu Leu Arg
290 295 300

Leu Ala Leu Pro Glu Thr Pro Met Leu Leu Gly Phe Asn Ala Pro Ala
305 310 315 320

Thr Ser Glu Pro Ser Ser Phe Glu Phe Pro Pro Pro Pro Thr Glu Asp
325 330 335

Glu Leu Glu Ile Met Arg Glu Thr Ala Pro Ser Leu Asp Ser Ser Phe
340 345 350

Thr Ser Gly Asp Leu Ala Ser Leu Arg Ser Ala Ile Asn Arg His Ser
355 360 365

Glu Asn Phe Ser Asp Phe Pro Leu Ile Pro Thr Glu Glu Glu Leu Asn
370 375 380

Gly Arg Gly Gly Arg Pro
385 390

<210> 71
<211> 1170
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 71
atgcgtgcga tgatggtagt tttcattact gccaactgca ttacgattaa ccccgacata 60

atatttgcag cgacagatag cgaagattcc agtctaaaca cagatgaatg ggaagaagaa 120

aaaacagaag agcagccaag cgaggtaaat acgggaccaa gatacgaaac tgcacgtgaa 180

gtaagttcac gtgatattga ggaactagaa aaatcgaata aagtgaaaaa tacgaacaaa 240

gcagacctaa tagcaatgtt gaaagcaaaa gcagagaaag gtccgaataa caataataac 300

aacggtgagc aaacaggaaa tgtggctata aatgaagagg cttcaggagt cgaccgacca 360

actctgcaag tggagcgtcg tcatccaggt ctgtcatcgg atagcgcagc ggaaattaaa 420

aaaagaagaa aagccatagc gtcgtcggat agtgagcttg aaagccttac ttatccagat 480

aaaccaacaa aagcaaataa gagaaaagtg gcgaaagagt cagttgtgga tgcttctgaa 540

agtgacttag attctagcat gcagtcagca gacgagtcta caccacaacc tttaaaagca 600

aatcaaaaac cattttccc taaagtattt aaaaaaataa aagatgcggg gaaatgggta 660

cgtgataaaa tcgacgaaaa tcctgaagta aagaaagcga ttgttgataa aagtgcaggg 720

ttaattgacc aattattaac caaaaagaaa agtgaagagg taaatgcttc ggacttcccg 780

ccaccaccta cggatgaaga gttaagactt gctttgccag agacaccgat gcttctcggt 840

tttaatgctc ctactccatc ggaaccgagc tcattcgaat ttccgccgcc acctacggat 900

gaagagttaa gacttgcttt gccagagacg ccaatgcttc ttggttttaa tgctcctgct 960

acatcggaac cgagctcatt cgaatttcca ccgcctccaa cagaagatga actagaaatt 1020

atgcgggaaa cagcaccttc gctagattct agttttacaa gcggggattt agctagtttg 1080

agaagtgcta ttaatcgcca tagcgaaaat ttctctgatt tcccactaat cccaacagaa 1140

gaagagttga acgggagagg cggtagacca 1170

<210> 72
<211> 226
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 72

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Met Lys Lys Ile Met Leu Val Phe Ile Thr Leu Ile Leu Val Ser Leu
1               5                  10                  15

Pro Ile Ala Gln Gln Thr Glu Ala Ser Arg Ala Thr Asp Ser Glu Asp
            20                  25                  30

Ser Ser Leu Asn Thr Asp Glu Trp Glu Glu Glu Lys Thr Glu Glu Gln
        35                  40                  45

Pro Ser Glu Val Asn Thr Gly Pro Arg Tyr Glu Thr Ala Arg Glu Val
    50                  55                  60

Ser Ser Arg Asp Ile Glu Glu Leu Glu Lys Ser Asn Lys Val Lys Asn
65                  70                  75                  80

Thr Asn Lys Ala Asp Leu Ile Ala Met Leu Lys Ala Lys Ala Glu Lys
                85                  90                  95

Gly Pro Asn Asn Asn Asn Asn Asn Gly Glu Gln Thr Gly Asn Val Ala
            100                 105                 110

Ile Asn Glu Glu Ala Ser Gly Val Asp Arg Pro Thr Leu Gln Val Glu
        115                 120                 125

Arg Arg His Pro Gly Leu Ser Ser Asp Ser Ala Ala Glu Ile Lys Lys
    130                 135                 140

Arg Arg Lys Ala Ile Ala Ser Ser Asp Ser Glu Leu Glu Ser Leu Thr
145                 150                 155                 160

Tyr Pro Asp Lys Pro Thr Lys Ala Asn Lys Arg Lys Val Ala Lys Glu
                165                 170                 175

Ser Val Val Asp Ala Ser Glu Ser Asp Leu Asp Ser Ser Met Gln Ser
            180                 185                 190

Ala Asp Glu Ser Thr Pro Gln Pro Leu Lys Ala Asn Gln Lys Pro Phe
        195                 200                 205
```

Phe Pro Lys Val Phe Lys Lys Ile Lys Asp Ala Gly Lys Trp Val Arg
210 215 220

Asp Lys
225

<210> 73
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 73

Gln Asp Asn Lys Arg
1 5

<210> 74
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 74

Glu Cys Thr Gly Leu Ala Trp Glu Trp Trp Arg
1 5 10

<210> 75
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 75

Glu Ser Leu Leu Met Trp Ile Thr Gln Cys Arg
1 5 10

<210> 76
<211> 368
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 76

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Met Val Thr Gly Trp His Arg Pro Thr Trp Ile Glu Ile Asp Arg Ala
1               5                   10                  15


Ala Ile Arg Glu Asn Ile Lys Asn Glu Gln Asn Lys Leu Pro Glu Ser
            20                  25                  30


Val Asp Leu Trp Ala Val Val Lys Ala Asn Ala Tyr Gly His Gly Ile
        35                  40                  45


Ile Glu Val Ala Arg Thr Ala Lys Glu Ala Gly Ala Lys Gly Phe Cys
    50                  55                  60


Val Ala Ile Leu Asp Glu Ala Leu Ala Leu Arg Glu Ala Gly Phe Gln
65                  70                  75                  80


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


Leu Ala Ala Lys Asn His Ile Ser Leu Thr Val Phe Arg Glu Asp Trp
            100                 105                 110


Leu Glu Asn Leu Thr Leu Glu Ala Thr Leu Arg Ile His Leu Lys Val
        115                 120                 125


Asp Ser Gly Met Gly Arg Leu Gly Ile Arg Thr Thr Glu Glu Ala Arg
    130                 135                 140


Arg Ile Glu Ala Thr Ser Thr Asn Asp His Gln Leu Gln Leu Glu Gly
145                 150                 155                 160
```

```
Ile Tyr Thr His Phe Ala Thr Ala Asp Gln Leu Glu Thr Ser Tyr Phe
                165                 170                 175

Glu Gln Gln Leu Ala Lys Phe Gln Thr Ile Leu Thr Ser Leu Lys Lys
            180                 185                 190

Arg Pro Thr Tyr Val His Thr Ala Asn Ser Ala Ala Ser Leu Leu Gln
        195                 200                 205

Pro Gln Ile Gly Phe Asp Ala Ile Arg Phe Gly Ile Ser Met Tyr Gly
    210                 215                 220

Leu Thr Pro Ser Thr Glu Ile Lys Thr Ser Leu Pro Phe Glu Leu Lys
225                 230                 235                 240

Pro Ala Leu Ala Leu Tyr Thr Glu Met Val His Val Lys Glu Leu Ala
                245                 250                 255

Pro Gly Asp Ser Val Ser Tyr Gly Ala Thr Tyr Thr Ala Thr Glu Arg
            260                 265                 270

Glu Trp Val Ala Thr Leu Pro Ile Gly Tyr Ala Asp Gly Leu Ile Arg
        275                 280                 285

His Tyr Ser Gly Phe His Val Leu Val Asp Gly Glu Pro Ala Pro Ile
    290                 295                 300

Ile Gly Arg Val Cys Met Asp Gln Thr Ile Ile Lys Leu Pro Arg Glu
305                 310                 315                 320

Phe Gln Thr Gly Ser Lys Val Thr Ile Ile Gly Lys Asp His Gly Asn
                325                 330                 335

Thr Val Thr Ala Asp Asp Ala Ala Gln Tyr Leu Asp Thr Ile Asn Tyr
            340                 345                 350
```

Glu Val Thr Cys Leu Leu Asn Glu Arg Ile Pro Arg Lys Tyr Ile His
        355   360   365

<210> 77
<211> 289
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 77

Met Lys Val Leu Val Asn Asn His Leu Val Glu Arg Glu Asp Ala Thr
1   5   10   15

Val Asp Ile Glu Asp Arg Gly Tyr Gln Phe Gly Asp Gly Val Tyr Glu
            20   25   30

Val Val Arg Leu Tyr Asn Gly Lys Phe Phe Thr Tyr Asn Glu His Ile
        35   40   45

Asp Arg Leu Tyr Ala Ser Ala Ala Lys Ile Asp Leu Val Ile Pro Tyr
    50   55   60

Ser Lys Glu Glu Leu Arg Glu Leu Leu Glu Lys Leu Val Ala Glu Asn
65   70   75   80

Asn Ile Asn Thr Gly Asn Val Tyr Leu Gln Val Thr Arg Gly Val Gln
                85   90   95

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

Leu Thr Ala Ala Ala Arg Glu Val Pro Arg Asn Glu Arg Gln Phe Val
        115   120   125

Glu Gly Gly Thr Ala Ile Thr Glu Glu Asp Val Arg Trp Leu Arg Cys
    130   135   140

```
Asp Ile Lys Ser Leu Asn Leu Leu Gly Asn Ile Leu Ala Lys Asn Lys
145                 150                 155                 160

Ala His Gln Gln Asn Ala Leu Glu Ala Ile Leu His Arg Gly Glu Gln
                165                 170                 175

Val Thr Glu Cys Ser Ala Ser Asn Val Ser Ile Ile Lys Asp Gly Val
            180                 185                 190

Leu Trp Thr His Ala Ala Asp Asn Leu Ile Leu Asn Gly Ile Thr Arg
        195                 200                 205

Gln Val Ile Ile Asp Val Ala Lys Lys Asn Gly Ile Pro Val Lys Glu
    210                 215                 220

Ala Asp Phe Thr Leu Thr Asp Leu Arg Glu Ala Asp Glu Val Phe Ile
225                 230                 235                 240

Ser Ser Thr Thr Ile Glu Ile Thr Pro Ile Thr His Ile Asp Gly Val
                245                 250                 255

Gln Val Ala Asp Gly Lys Arg Gly Pro Ile Thr Ala Gln Leu His Gln
            260                 265                 270

Tyr Phe Val Glu Glu Ile Thr Arg Ala Cys Gly Glu Leu Glu Phe Ala
        275                 280                 285

Lys
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<210> 78
<211> 1107
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 78
atggtgacag gctggcatcg tccaacatgg attgaaatag accgcgcagc aattcgcgaa 60

aatataaaaa atgaacaaaa taaactcccg gaaagtgtcg acttatgggc agtagtcaaa 120

gctaatgcat atggtcacgg aattatcgaa gttgctagga cggcgaaaga agctggagca 180

aaaggtttct gcgtagccat tttagatgag gcactggctc ttagagaagc tggatttcaa 240

gatgacttta ttcttgtgct tggtgcaacc agaaaagaag atgctaatct ggcagccaaa 300

aaccacattt cacttactgt ttttagagaa gattggctag agaatctaac gctagaagca 360

acacttcgaa ttcatttaaa agtagatagc ggtatggggc gtctcggtat tcgtacgact 420

gaagaagcac ggcgaattga agcaaccagt actaatgatc accaattaca actggaaggt 480

atttacacgc attttgcaac agccgaccag ctagaaacta gttattttga acaacaatta 540

gctaagttcc aaacgatttt aacgagttta aaaaaacgac caacttatgt tcatacagcc 600

aattcagctg cttcattgtt acagccacaa atcgggtttg atgcgattcg ctttggtatt 660

tcgatgtatg gattaactcc ctccacagaa atcaaaacta gcttgccgtt tgagcttaaa 720

cctgcacttg cactctatac cgagatggtt catgtgaaag aacttgcacc aggcgatagc 780

gttagctacg gagcaactta tacagcaaca gagcgagaat gggttgcgac attaccaatt 840

ggctatgcgg atggattgat tcgtcattac agtggtttcc atgttttagt agacggtgaa 900

ccagctccaa tcattggtcg agtttgtatg gatcaaacca tcataaaact accacgtgaa 960

tttcaaactg gttcaaaagt aacgataatt ggcaaagatc atggtaacac ggtaacagca 1020

gatgatgccg ctcaatattt agatacaatt aattatgagg taacttgttt gttaaatgag 1080

cgcataccta gaaaatacat ccattag 1107

<210> 79
<211> 870
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 79
atgaaagtat tagtaaataa ccatttagtt gaaagagaag atgccacagt tgacattgaa 60

gaccgcggat atcagtttgg tgatggtgta tatgaagtag ttcgtctata taatggaaaa 120

ttctttactt ataatgaaca cattgatcgc ttatatgcta gtgcagcaaa aattgactta 180

gttattcctt attccaaaga agagctacgt gaattacttg aaaaattagt tgccgaaaat 240

aatatcaata cagggaatgt ctatttacaa gtgactcgtg gtgttcaaaa cccacgtaat 300

catgtaatcc ctgatgattt ccctctagaa ggcgttttaa cagcagcagc tcgtgaagta 360

cctagaaacg agcgtcaatt cgttgaaggt ggaacggcga ttacagaaga agatgtgcgc 420

tggttacgct gtgatattaa gagcttaaac cttttaggaa atattctagc aaaaaataaa 480

gcacatcaac aaaatgcttt ggaagctatt ttacatcgcg gggaacaagt aacagaatgt 540

tctgcttcaa acgtttctat tattaaagat ggtgtattat ggacgcatgc ggcagataac 600

ttaatcttaa atggtatcac tcgtcaagtt atcattgatg ttgcgaaaaa gaatggcatt 660

cctgttaaag aagcggattt cactttaaca gaccttcgtg aagcggatga agtgttcatt 720

tcaagtacaa ctattgaaat tacacctatt acgcatattg acggagttca agtagctgac 780

ggaaaacgtg gaccaattac agcgcaactt catcaatatt ttgtagaaga aatcactcgt 840

gcatgtggcg aattagagtt tgcaaaataa 870

<210> 80
<211> 237
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 80

Met Asn Ala Gln Ala Glu Glu Phe Lys Lys Tyr Leu Glu Thr Asn Gly
1 5 10 15

Ile Lys Pro Lys Gln Phe His Lys Lys Glu Leu Ile Phe Asn Gln Trp
20 25 30

Asp Pro Gln Glu Tyr Cys Ile Phe Leu Tyr Asp Gly Ile Thr Lys Leu
35 40 45

```
Thr Ser Ile Ser Glu Asn Gly Thr Ile Met Asn Leu Gln Tyr Tyr Lys
    50                  55                  60

Gly Ala Phe Val Ile Met Ser Gly Phe Ile Asp Thr Glu Thr Ser Val
65                  70                  75                  80

Gly Tyr Tyr Asn Leu Glu Val Ile Ser Glu Gln Ala Thr Ala Tyr Val
                85                  90                  95

Ile Lys Ile Asn Glu Leu Lys Glu Leu Leu Ser Lys Asn Leu Thr His
            100                 105                 110

Phe Phe Tyr Val Phe Gln Thr Leu Gln Lys Gln Val Ser Tyr Ser Leu
        115                 120                 125

Ala Lys Phe Asn Asp Phe Ser Ile Asn Gly Lys Leu Gly Ser Ile Cys
    130                 135                 140

Gly Gln Leu Leu Ile Leu Thr Tyr Val Tyr Gly Lys Glu Thr Pro Asp
145                 150                 155                 160

Gly Ile Lys Ile Thr Leu Asp Asn Leu Thr Met Gln Glu Leu Gly Tyr
                165                 170                 175

Ser Ser Gly Ile Ala His Ser Ser Ala Val Ser Arg Ile Ile Ser Lys
            180                 185                 190

Leu Lys Gln Glu Lys Val Ile Val Tyr Lys Asn Ser Cys Phe Tyr Val
        195                 200                 205

Gln Asn Leu Asp Tyr Leu Lys Arg Tyr Ala Pro Lys Leu Asp Glu Trp
    210                 215                 220

Phe Tyr Leu Ala Cys Pro Ala Thr Trp Gly Lys Leu Asn
225                 230                 235
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<210> 81
<211> 714

<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 81
atgaacgctc aagcagaaga attcaaaaaa tatttagaaa ctaacgggat aaaaccaaaa 60

caatttcata aaaaagaact tatttttaac caatgggatc cacaagaata ttgtattttt 120

ctatatgatg gtatcacaaa gctcacgagt attagcgaga acgggaccat catgaattta 180

caatactaca aaggggcttt cgttataatg tctggcttta ttgatacaga aacatcggtt 240

ggctattata atttagaagt cattagcgag caggctaccg catacgttat caaaataaac 300

gaactaaaag aactactgag caaaaatctt acgcactttt tctatgtttt ccaaacccta 360

caaaaacaag tttcatacag cctagctaaa tttaatgatt tttcgattaa cgggaagctt 420

ggctctattt gcggtcaact tttaatcctg acctatgtgt atggtaaaga aactcctgat 480

ggcatcaaga ttacactgga taatttaaca atgcaggagt taggatattc aagtggcatc 540

gcacatagct cagctgttag cagaattatt tccaaattaa agcaagagaa agttatcgtg 600

tataaaaatt catgctttta tgtacaaaat cttgattatc tcaaaagata tgcccctaaa 660

ttagatgaat ggttttattt agcatgtcct gctacttggg gaaaattaaa ttaa 714

<210> 82
<211> 237
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 82

Met Asn Ala Gln Ala Glu Glu Phe Lys Lys Tyr Leu Glu Thr Asn Gly
1 5 10 15

Ile Lys Pro Lys Gln Phe His Lys Lys Glu Leu Ile Phe Asn Gln Trp
20 25 30

```
Asp Pro Gln Glu Tyr Cys Ile Phe Leu Tyr Asp Gly Ile Thr Lys Leu
        35                  40                  45

Thr Ser Ile Ser Glu Asn Gly Thr Ile Met Asn Leu Gln Tyr Tyr Lys
    50                  55                  60

Gly Ala Phe Val Ile Met Ser Gly Phe Ile Asp Thr Glu Thr Ser Val
65                  70                  75                  80

Gly Tyr Tyr Asn Leu Glu Val Ile Ser Glu Gln Ala Thr Ala Tyr Val
                85                  90                  95

Ile Lys Ile Asn Glu Leu Lys Glu Leu Leu Ser Lys Asn Leu Thr His
            100                 105                 110

Phe Phe Tyr Val Phe Gln Thr Leu Gln Lys Gln Val Ser Tyr Ser Leu
        115                 120                 125

Ala Lys Phe Asn Val Phe Ser Ile Asn Gly Lys Leu Gly Ser Ile Cys
    130                 135                 140

Gly Gln Leu Leu Ile Leu Thr Tyr Val Tyr Gly Lys Glu Thr Pro Asp
145                 150                 155                 160

Gly Ile Lys Ile Thr Leu Asp Asn Leu Thr Met Gln Glu Leu Gly Tyr
                165                 170                 175

Ser Ser Gly Ile Ala His Ser Ser Ala Val Ser Arg Ile Ile Ser Lys
            180                 185                 190

Leu Lys Gln Glu Lys Val Ile Val Tyr Lys Asn Ser Cys Phe Tyr Val
        195                 200                 205

Gln Asn Arg Asp Tyr Leu Lys Arg Tyr Ala Pro Lys Leu Asp Glu Trp
    210                 215                 220

Phe Tyr Leu Ala Cys Pro Ala Thr Trp Gly Lys Leu Asn
225                 230                 235
```

<210> 83
<211> 713
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 83
atgaacgctc aagcagaaga attcaaaaaa tatttagaaa ctaacgggat aaaaccaaaa 60

caatttcata aaaaagaact tatttttaac caatgggatc cacaagaata ttgtattttt 120

ctatatgatg gtatcacaaa gctcacgagt attagcgaga acgggaccat catgaattta 180

caatactaca aaggggcttt cgttataatg tctggcttta ttgatacaga aacatcggtt 240

ggctattata atttagaagt cattagcgag caggctaccg catacgttat caaaataaac 300

gaactaaaag aactactgag caaaaatctt acgcactttt tctatgtttt ccaaacccta 360

caaaaacaag tttcatacag cctagctaaa tttaatgttt tttcgattaa cgggaagctt 420

ggctctattt gcggtcaact tttaatcctg acctatgtgt atggtaaaga aactcctgat 480

ggcatcaaga ttacactgga taatttaaca atgcaggagt taggatattc aagtggcatc 540

gcacatagct cagctgttag cagaattatt tccaaattaa agcaagagaa agttatcgtg 600

tataaaaatt catgctttta tgtacaaaat ctgattatct caaaagatat gcccctaaat 660

tagatgaatg gttttattta gcatgtcctg ctacttgggg aaaattaaat taa 713

<210> 84
<211> 12
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 84
ggtggtggag ga 12

<210> 85
<211> 12

<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 85
ggtggaggtg ga 12

<210> 86
<211> 12
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 86
ggtggaggag gt 12

<210> 87
<211> 12
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 87
ggaggtggtg ga 12

<210> 88
<211> 12
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 88
ggaggaggtg gt 12

<210> 89
<211> 12
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 89
ggaggtggag gt 12

<210> 90
<211> 12
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 90
ggaggaggag gt 12

<210> 91
<211> 12
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 91
ggaggaggtg ga 12

<210> 92
<211> 12
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 92
ggaggtggag ga 12

<210> 93
<211> 12
<212> DNA
<213> Artificial Sequence

<220>

<223> Synthetic

<400> 93
ggtggaggag ga 12

<210> 94
<211> 12
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 94
ggaggaggag ga 12

<210> 95
<211> 529
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 95

Met Lys Lys Ile Met Leu Val Phe Ile Thr Leu Ile Leu Val Ser Leu
1 5 10 15

Pro Ile Ala Gln Gln Thr Glu Ala Lys Asp Ala Ser Ala Phe Asn Lys
20 25 30

Glu Asn Ser Ile Ser Ser Met Ala Pro Pro Ala Ser Pro Pro Ala Ser
35 40 45

Pro Lys Thr Pro Ile Glu Lys Lys His Ala Asp Glu Ile Asp Lys Tyr
50 55 60

Ile Gln Gly Leu Asp Tyr Asn Lys Asn Asn Val Leu Val Tyr His Gly
65 70 75 80

Asp Ala Val Thr Asn Val Pro Pro Arg Lys Gly Tyr Lys Asp Gly Asn
85 90 95

```
Glu Tyr Ile Val Val Glu Lys Lys Lys Lys Ser Ile Asn Gln Asn Asn
            100                 105                 110

Ala Asp Ile Gln Val Val Asn Ala Ile Ser Ser Leu Thr Tyr Pro Gly
        115                 120                 125

Ala Leu Val Lys Ala Asn Ser Glu Leu Val Glu Asn Gln Pro Asp Val
    130                 135                 140

Leu Pro Val Lys Arg Asp Ser Leu Thr Leu Ser Ile Asp Leu Pro Gly
145                 150                 155                 160

Met Thr Asn Gln Asp Asn Lys Ile Val Val Lys Asn Ala Thr Lys Ser
                165                 170                 175

Asn Val Asn Asn Ala Val Asn Thr Leu Val Glu Arg Trp Asn Glu Lys
            180                 185                 190

Tyr Ala Gln Ala Tyr Pro Asn Val Ser Ala Lys Ile Asp Tyr Asp Asp
        195                 200                 205

Glu Met Ala Tyr Ser Glu Ser Gln Leu Ile Ala Lys Phe Gly Thr Ala
    210                 215                 220

Phe Lys Ala Val Asn Asn Ser Leu Asn Val Asn Phe Gly Ala Ile Ser
225                 230                 235                 240

Glu Gly Lys Met Gln Glu Glu Val Ile Ser Phe Lys Gln Ile Tyr Tyr
                245                 250                 255

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

Ala Val Thr Lys Glu Gln Leu Gln Ala Leu Gly Val Asn Ala Glu Asn
        275                 280                 285
```

```
Pro Pro Ala Tyr Ile Ser Ser Val Ala Tyr Gly Arg Gln Val Tyr Leu
    290                 295                 300

Lys Leu Ser Thr Asn Ser His Ser Thr Lys Val Lys Ala Ala Phe Asp
305                 310                 315                 320

Ala Ala Val Ser Gly Lys Ser Val Ser Gly Asp Val Glu Leu Thr Asn
                325                 330                 335

Ile Ile Lys Asn Ser Ser Phe Lys Ala Val Ile Tyr Gly Gly Ser Ala
            340                 345                 350

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

Ile Leu Lys Lys Gly Ala Thr Phe Asn Arg Glu Thr Pro Gly Val Pro
    370                 375                 380

Ile Ala Tyr Thr Thr Asn Phe Leu Lys Asp Asn Glu Leu Ala Val Ile
385                 390                 395                 400

Lys Asn Asn Ser Glu Tyr Ile Glu Thr Thr Ser Lys Ala Tyr Thr Asp
                405                 410                 415

Gly Lys Ile Asn Ile Asp His Ser Gly Gly Tyr Val Ala Gln Phe Asn
            420                 425                 430

Ile Ser Trp Asp Glu Val Asn Tyr Asp Pro Glu Gly Asn Glu Ile Val
        435                 440                 445

Gln His Lys Asn Trp Ser Glu Asn Asn Lys Ser Lys Leu Ala His Phe
    450                 455                 460

Thr Ser Ser Ile Tyr Leu Pro Gly Asn Ala Arg Asn Ile Asn Val Tyr
465                 470                 475                 480

Ala Lys Glu Ala Thr Gly Leu Ala Trp Glu Ala Ala Arg Thr Val Ile
                485                 490                 495
```

Asp Asp Arg Asn Leu Pro Leu Val Lys Asn Arg Asn Ile Ser Ile Trp
500 505 510

Gly Thr Thr Leu Tyr Pro Lys Tyr Ser Asn Lys Val Asp Asn Pro Ile
515 520 525

Glu

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Pro Ile Ala Gln Gln Thr Glu Ala Lys
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Lys Asp Asp Asp Lys
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Tyr Met Leu Asp Leu Gln Pro Glu Thr Thr
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