SEQUENCE LISTING

<110> TAKEDA CALIFORNIA, INC.

<120> UTI FUSION PROTEINS

<130> UTI-5001-WO

<140>
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<150> 61/943,617
<151> 2014-02-24

<160> 48

<170> PatentIn version 3.5

<210> 1
<211> 375
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 1

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Ala Val Leu Pro Gln Glu Glu Glu Gly Ser Gly Gly Gly Gln Leu Val
1               5                  10                  15

Thr Glu Val Thr Lys Lys Glu Asp Ser Cys Gln Leu Gly Tyr Ser Ala
            20                  25                  30

Gly Pro Cys Met Gly Met Thr Ser Arg Tyr Phe Tyr Asn Gly Thr Ser
        35                  40                  45

Met Ala Cys Glu Thr Phe Gln Tyr Gly Gly Cys Met Gly Asn Gly Asn
    50                  55                  60

Asn Phe Val Thr Glu Lys Glu Cys Leu Gln Thr Cys Arg Thr Val Ala
65                  70                  75                  80

Ala Cys Asn Leu Pro Ile Val Arg Gly Pro Cys Arg Ala Phe Ile Gln
                85                  90                  95

Leu Trp Ala Phe Asp Ala Val Lys Gly Lys Cys Val Leu Phe Pro Tyr
            100                 105                 110

Gly Gly Cys Gln Gly Asn Gly Asn Lys Phe Tyr Ser Glu Lys Glu Cys
        115                 120                 125

Arg Glu Tyr Cys Gly Val Pro Gly Asp Gly Asp Glu Glu Leu Leu Gly
    130                 135                 140
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Ser Gly Gly Gly Gly Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala
145                 150                 155                 160

Pro Glu Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro
                165                 170                 175

Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val
            180                 185                 190

Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val
        195                 200                 205

Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln
    210                 215                 220

Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln
225                 230                 235                 240

Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala
                245                 250                 255

Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro
            260                 265                 270

Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr
        275                 280                 285

Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser
    290                 295                 300

Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr
305                 310                 315                 320

Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr
                325                 330                 335

Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe
            340                 345                 350

Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys
        355                 360                 365

Ser Leu Ser Leu Ser Pro Gly
    370                 375
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<210> 2

<211> 1125
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic
polynucleotide"

<400> 2
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aagaaagagg actcctgcca gctgggctac tctgccggcc cttgtatggg catgacctcc 120

cggtacttct acaacggcac ctccatggcc tgcgagacat tccagtacgg cggctgcatg 180

ggcaacggca acaactttgt gacagagaaa gagtgcctgc agacctgcag aaccgtggcc 240

gcctgtaacc tgcctatcgt gcggggaccc tgtcgggcct ttatccagct gtgggccttc 300

gacgccgtga agggcaaatg cgtgctgttc ccctatggcg gctgccaggg aaatggaaac 360

aagttctact ccgagaaaga atgccgcgag tactgtggcg tgccaggcga cggggatgag 420

gaactgctgg gatcaggcgg cggaggcgac aagacccata cctgtccacc ttgccctgcc 480

cccgagctgc tgggaggacc ttctgtgttc ctgttccccc caaagcccaa ggacaccctg 540

atgatctccc ggacccctga agtgacctgc gtggtggtgg atgtgtccca cgaggatccc 600

gaagtgaagt tcaattggta cgtggacggc gtggaagtgc acaacgccaa gaccaagccc 660

agagaggaac agtacaactc cacctaccgg gtggtgtccg tgctgaccgt gctgcaccag 720

gattggctga acggcaaaga gtacaagtgc aaggtgtcca acaaggccct gcctgccccc 780

atcgaaaaga ccatctccaa ggccaagggc cagccccggg aaccccaggt gtacacactg 840

ccccctagcc gggaagagat gacaaagaac caggtgtccc tgacctgtct cgtgaaggga 900

ttctaccccct ccgatatcgc cgtggaatgg gagtccaacg gccagcctga gaacaactac 960

aagaccaccc cccctgtgct ggactccgac ggctcattct tcctgtactc caagctgaca 1020

gtggacaagt cccggtggca gcagggcaac gtgttctcct gctccgtgat gcacgaggcc 1080

ctgcacaacc actacaccca gaagtccctg tccctgagcc ccggc 1125

<210> 3
<211> 375
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic
polypeptide"

<400> 3
Ala Val Leu Pro Gln Glu Glu Glu Gly Ser Gly Gly Gly Gln Leu Val
1 5 10 15

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Thr Glu Val Thr Lys Lys Glu Asp Ser Cys Gln Leu Gly Tyr Ser Ala
            20                  25                  30

Gly Pro Cys Met Gly Met Thr Ser Arg Tyr Phe Tyr Asn Gly Thr Ser
        35                  40                  45

Met Ala Cys Glu Thr Phe Gln Tyr Gly Gly Cys Met Gly Asn Gly Asn
    50                  55                  60

Asn Phe Val Thr Glu Lys Glu Cys Leu Gln Thr Cys Arg Thr Val Ala
65                  70                  75                  80

Ala Cys Asn Leu Pro Ile Val Arg Gly Pro Cys Arg Ala Phe Ile Gln
                85                  90                  95

Leu Trp Ala Phe Asp Ala Val Lys Gly Lys Cys Val Leu Phe Pro Tyr
            100                 105                 110

Gly Gly Cys Gln Gly Asn Gly Asn Lys Phe Tyr Ser Glu Lys Glu Cys
        115                 120                 125

Arg Glu Tyr Cys Gly Val Pro Gly Asp Gly Asp Glu Glu Leu Leu Arg
    130                 135                 140

Glu Pro Lys Ser Ser Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala
145                 150                 155                 160

Pro Glu Leu Leu Gly Gly Ser Ser Val Phe Leu Phe Pro Pro Lys Pro
                165                 170                 175

Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val
            180                 185                 190

Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val
        195                 200                 205

Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln
    210                 215                 220

Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln
225                 230                 235                 240

Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala
                245                 250                 255

Leu Pro Ala Ser Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro
            260                 265                 270
```

```
Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr
        275                 280                 285

Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser
    290                 295                 300

Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr
305                 310                 315                 320

Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr
                325                 330                 335

Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe
            340                 345                 350

Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys
        355                 360                 365

Ser Leu Ser Leu Ser Pro Gly
    370                 375
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<210> 4
<211> 1125
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polynucleotide"

<400> 4

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gctgtgctgc ctcaggaaga ggaaggctct ggcggaggcc agctcgtgac cgaagtgacc       60

aagaaagagg actcctgcca gctgggctac tctgccggcc cttgtatggg catgacctcc      120

cggtacttct acaacggcac ctccatggcc tgcgagacat tccagtacgg cggctgcatg      180

ggcaacggca acaactttgt gacagagaaa gagtgcctgc agacctgcag aaccgtggcc      240

gcctgtaacc tgcctatcgt gcggggaccc tgtcgggcct ttatccagct gtgggccttc      300

gacgccgtga agggcaaatg cgtgctgttc ccctatggcg gctgccaggg aaatggaaac      360

aagttctact ccgagaaaga atgccgcgag tactgtggcg tgccaggcga cggggatgag      420

gaactgctgc gggagcccaa atcttccgac aagacccata cctgtccacc ttgccctgcc      480

cccgagctgc tgggaggatc ctctgtgttc ctgttccccc caaagcccaa ggacaccctg      540

atgatctccc ggacccctga agtgacctgc gtggtggtgg atgtgtccca cgaggatccc      600

gaagtgaagt tcaattggta cgtggacggc gtggaagtgc acaacgccaa gaccaagccc      660
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agagaggaac agtacaactc cacctaccgg gtggtgtccg tgctgaccgt gctgcaccag 720

gattggctga acggcaaaga gtacaagtgc aaggtgtcca acaaggccct gcctgcctcc 780

atcgaaaaga ccatctccaa ggccaagggc cagccccggg aaccccaggt gtacacactg 840

ccccctagcc gggaagagat gacaaagaac caggtgtccc tgacctgtct cgtgaaggga 900

ttctaccccct ccgatatcgc cgtggaatgg gagtccaacg gccagcctga gaacaactac 960

aagaccaccc cccctgtgct ggactccgac ggctcattct tcctgtactc caagctgaca 1020

gtggacaagt cccggtggca gcagggcaac gtgttctcct gctccgtgat gcacgaggcc 1080

ctgcacaacc actacaccca gaagtccctg tccctgagcc ccggc 1125

<210> 5
<211> 370
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 5
Ala Val Leu Pro Gln Glu Glu Glu Gly Ser Gly Gly Gly Gln Leu Val
1 5 10 15

Thr Glu Val Thr Lys Lys Glu Asp Ser Cys Gln Leu Gly Tyr Ser Ala
20 25 30

Gly Pro Cys Met Gly Met Thr Ser Arg Tyr Phe Tyr Asn Gly Thr Ser
35 40 45

Met Ala Cys Glu Thr Phe Gln Tyr Gly Gly Cys Met Gly Asn Gly Asn
50 55 60

Asn Phe Val Thr Glu Lys Glu Cys Leu Gln Thr Cys Arg Thr Val Ala
65 70 75 80

Ala Cys Asn Leu Pro Ile Val Arg Gly Pro Cys Arg Ala Phe Ile Gln
85 90 95

Leu Trp Ala Phe Asp Ala Val Lys Gly Lys Cys Val Leu Phe Pro Tyr
100 105 110

Gly Gly Cys Gln Gly Asn Gly Asn Lys Phe Tyr Ser Glu Lys Glu Cys
115 120 125

Arg Glu Tyr Cys Gly Val Pro Gly Asp Gly Asp Glu Glu Leu Leu Arg
130 135 140

```
Lys Ser Cys Val Glu Cys Pro Pro Cys Pro Ala Pro Pro Val Ala Gly
145                 150                 155                 160

Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile
                165                 170                 175

Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu
            180                 185                 190

Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Met Glu Val His
        195                 200                 205

Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg
    210                 215                 220

Val Val Ser Val Leu Thr Val Val His Gln Asp Trp Leu Asn Gly Lys
225                 230                 235                 240

Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ala Pro Ile Glu
                245                 250                 255

Lys Thr Ile Ser Lys Thr Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr
            260                 265                 270

Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu
        275                 280                 285

Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp
    290                 295                 300

Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Met
305                 310                 315                 320

Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp
                325                 330                 335

Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His
            340                 345                 350

Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro
        355                 360                 365

Gly Lys
    370
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<210> 6
<211> 1110

<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polynucleotide"

<400> 6
gctgtgctgc ctcaggaaga ggaaggctct ggcggaggcc agctcgtgac cgaagtgacc 60

aagaaagagg actcctgcca gctgggctac tctgccggcc cttgtatggg catgacctcc 120

cggtacttct acaacggcac ctccatggcc tgcgagacat tccagtacgg cggctgcatg 180

ggcaacggca acaactttgt gacagagaaa gagtgcctgc agacctgcag aaccgtggcc 240

gcctgtaacc tgcctatcgt gcggggaccc tgtcgggcct ttatccagct gtgggccttc 300

gacgccgtga agggcaaatg cgtgctgttc ccctatggcg gctgccaggg aaatggaaac 360

aagttctact ccgagaaaga atgccgcgag tactgtggcg tgccaggcga cggggatgag 420

gaactgctgc ggaaatcctg tgtcgagtgc ccaccgtgcc cagcaccacc tgtggcagga 480

ccgtcagtct tcctcttccc cccaaaaccc aaggacaccc tcatgatctc ccggacccct 540

gaggtcacgt gcgtggtggt ggacgtgagc cacgaagacc ccgaggtcca gttcaactgg 600

tacgtggacg gcatggaggt gcataatgcc aagacaaagc cacgggagga gcagttcaac 660

agcacgttcc gtgtggtcag cgtcctcacc gtcgtgcacc aggactggct gaacggcaag 720

gagtacaagt gcaaggtctc caacaaaggc ctcccagccc ccatcgagaa aaccatctcc 780

aaaaccaaag ggcagccccg agaaccacag gtgtacaccc tgcccccatc ccgggaggag 840

atgaccaaga accaggtcag cctgacctgc ctggtcaaag gcttctaccc cagcgacatc 900

gccgtggagt gggagagcaa tgggcagccg gagaacaact acaagaccac acctcccatg 960

ctggactccg acggctcctt cttcctctac agcaagctca ccgtggacaa gagcaggtgg 1020

cagcagggga acgtcttctc atgctccgtg atgcatgagg ctctgcacaa ccactacaca 1080

cagaagagcc tctccctgtc tccgggtaaa 1110

<210> 7
<211> 370
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 7
Ala Val Leu Pro Gln Glu Glu Glu Gly Ser Gly Gly Gly Gln Leu Val
1 5 10 15

```
Thr Glu Val Thr Lys Lys Glu Asp Ser Cys Gln Leu Gly Tyr Ser Ala
            20                  25                  30

Gly Pro Cys Met Gly Met Thr Ser Arg Tyr Phe Tyr Asn Gly Thr Ser
        35                  40                  45

Met Ala Cys Glu Thr Phe Gln Tyr Gly Gly Cys Met Gly Asn Gly Asn
    50                  55                  60

Asn Phe Val Thr Glu Lys Glu Cys Leu Gln Thr Cys Arg Thr Val Ala
65                  70                  75                  80

Ala Cys Asn Leu Pro Ile Val Arg Gly Pro Cys Arg Ala Phe Ile Gln
                85                  90                  95

Leu Trp Ala Phe Asp Ala Val Lys Gly Lys Cys Val Leu Phe Pro Tyr
            100                 105                 110

Gly Gly Cys Gln Gly Asn Gly Asn Lys Phe Tyr Ser Glu Lys Glu Cys
        115                 120                 125

Arg Glu Tyr Cys Gly Val Pro Gly Asp Gly Asp Glu Glu Leu Leu Arg
    130                 135                 140

Lys Cys Cys Val Glu Cys Pro Pro Cys Pro Ala Pro Pro Val Ala Gly
145                 150                 155                 160

Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile
                165                 170                 175

Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu
            180                 185                 190

Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Met Glu Val His
        195                 200                 205

Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg
    210                 215                 220

Val Val Ser Val Leu Thr Val Val His Gln Asp Trp Leu Asn Gly Lys
225                 230                 235                 240

Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ala Pro Ile Glu
                245                 250                 255

Lys Thr Ile Ser Lys Thr Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr
            260                 265                 270
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Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu
        275                 280                 285

Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp
    290                 295                 300

Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Met
305                 310                 315                 320

Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp
                325                 330                 335

Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His
            340                 345                 350

Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro
        355                 360                 365

Gly Lys
    370
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<210> 8
<211> 1110
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polynucleotide"

<400> 8

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cggtacttct acaacggcac ctccatggcc tgcgagacat tccagtacgg cggctgcatg       180

ggcaacggca acaactttgt gacagagaaa gagtgcctgc agacctgcag aaccgtggcc       240

gcctgtaacc tgcctatcgt gcggggaccc tgtcgggcct ttatccagct gtgggccttc       300

gacgccgtga agggcaaatg cgtgctgttc ccctatggcg gctgccaggg aaatggaaac       360

aagttctact ccgagaaaga atgccgcgag tactgtggcg tgccaggcga cggggatgag       420

gaactgctgc ggaaatgttg tgtcgagtgc ccaccgtgcc cagcaccacc tgtggcagga       480

ccgtcagtct tcctcttccc cccaaaaccc aaggacaccc tcatgatctc ccggacccct       540

gaggtcacgt gcgtggtggt ggacgtgagc cacgaagacc ccgaggtcca gttcaactgg       600

tacgtggacg gcatggaggt gcataatgcc aagacaaagc cacgggagga gcagttcaac       660

agcacgttcc gtgtggtcag cgtcctcacc gtcgtgcacc aggactggct gaacggcaag       720
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gagtacaagt gcaaggtctc caacaaaggc ctcccagccc ccatcgagaa aaccatctcc 780

aaaaccaaag ggcagccccg agaaccacag gtgtacaccc tgcccccatc ccgggaggag 840

atgaccaaga accaggtcag cctgacctgc ctggtcaaag gcttctaccc cagcgacatc 900

gccgtggagt gggagagcaa tgggcagccg gagaacaact acaagaccac acctcccatg 960

ctggactccg acggctcctt cttcctctac agcaagctca ccgtggacaa gagcaggtgg 1020

cagcagggga acgtcttctc atgctccgtg atgcatgagg ctctgcacaa ccactacaca 1080

cagaagagcc tctccctgtc tccgggtaaa 1110

<210> 9
<211> 375
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 9
Ala Val Leu Pro Gln Glu Glu Glu Gly Ala Gly Gly Gly Gln Leu Val
1 5 10 15

Thr Glu Val Thr Lys Lys Glu Asp Ser Cys Gln Leu Gly Tyr Ser Ala
20 25 30

Gly Pro Cys Met Gly Met Thr Ser Arg Tyr Phe Tyr Asn Gly Thr Ser
35 40 45

Met Ala Cys Glu Thr Phe Gln Tyr Gly Gly Cys Met Gly Asn Gly Asn
50 55 60

Asn Phe Val Thr Glu Lys Glu Cys Leu Gln Thr Cys Arg Thr Val Ala
65 70 75 80

Ala Cys Asn Leu Pro Ile Val Arg Gly Pro Cys Arg Ala Phe Ile Gln
85 90 95

Leu Trp Ala Phe Asp Ala Val Lys Gly Lys Cys Val Leu Phe Pro Tyr
100 105 110

Gly Gly Cys Gln Gly Asn Gly Asn Lys Phe Tyr Ser Glu Lys Glu Cys
115 120 125

Arg Glu Tyr Cys Gly Val Pro Gly Asp Gly Asp Glu Glu Leu Leu Arg
130 135 140

```
Glu Pro Lys Ser Ser Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala
145                 150                 155                 160

Pro Glu Leu Leu Gly Gly Ser Ser Val Phe Leu Phe Pro Pro Lys Pro
                165                 170                 175

Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val
            180                 185                 190

Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val
        195                 200                 205

Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln
    210                 215                 220

Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln
225                 230                 235                 240

Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala
                245                 250                 255

Leu Pro Ala Ser Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro
            260                 265                 270

Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr
        275                 280                 285

Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser
    290                 295                 300

Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr
305                 310                 315                 320

Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr
                325                 330                 335

Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe
            340                 345                 350

Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys
        355                 360                 365

Ser Leu Ser Leu Ser Pro Gly
    370                 375
```

<210> 10
<211> 1125
<212> DNA

<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polynucleotide"

<400> 10
gctgtgctgc ctcaggaaga ggaaggcgca ggcggaggcc agctcgtgac cgaagtgacc 60

aagaaagagg actcctgcca gctgggctac tctgccggcc cttgtatggg catgacctcc 120

cggtacttct acaacggcac ctccatggcc tgcgagacat tccagtacgg cggctgcatg 180

ggcaacggca acaactttgt gacagagaaa gagtgcctgc agacctgcag aaccgtggcc 240

gcctgtaacc tgcctatcgt gcggggaccc tgtcgggcct ttatccagct gtgggccttc 300

gacgccgtga agggcaaatg cgtgctgttc ccctatggcg gctgccaggg aaatggaaac 360

aagttctact ccgagaaaga atgccgcgag tactgtggcg tgccaggcga cggggatgag 420

gaactgctgc gggagcccaa atcttccgac aagacccata cctgtccacc ttgccctgcc 480

cccgagctgc tgggaggatc ctctgtgttc ctgttccccc caaagcccaa ggacaccctg 540

atgatctccc ggacccctga agtgacctgc gtggtggtgg atgtgtccca cgaggatccc 600

gaagtgaagt tcaattggta cgtggacggc gtggaagtgc acaacgccaa gaccaagccc 660

agagaggaac agtacaactc cacctaccgg gtggtgtccg tgctgaccgt gctgcaccag 720

gattggctga acggcaaaga gtacaagtgc aaggtgtcca acaaggccct gcctgcctcc 780

atcgaaaaga ccatctccaa ggccaagggc cagccccggg aaccccaggt gtacacactg 840

ccccctagcc gggaagagat gacaaagaac caggtgtccc tgacctgtct cgtgaaggga 900

ttctaccccct ccgatatcgc cgtggaatgg gagtccaacg gccagcctga gaacaactac 960

aagaccaccc cccctgtgct ggactccgac ggctcattct tcctgtactc caagctgaca 1020

gtggacaagt cccggtggca gcagggcaac gtgttctcct gctccgtgat gcacgaggcc 1080

ctgcacaacc actacaccca gaagtccctg tccctgagcc ccggc 1125

<210> 11
<211> 353
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 11
Glu Asp Ser Cys Gln Leu Gly Tyr Ser Ala Gly Pro Cys Met Gly Met
1 5 10 15

Thr Ser Arg Tyr Phe Tyr Asn Gly Thr Ser Met Ala Cys Glu Thr Phe

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            20                  25                  30

Gln Tyr Gly Gly Cys Met Gly Asn Gly Asn Asn Phe Val Thr Glu Lys
        35                  40                  45

Glu Cys Leu Gln Thr Cys Arg Thr Val Ala Ala Cys Asn Leu Pro Ile
    50                  55                  60

Val Arg Gly Pro Cys Arg Ala Phe Ile Gln Leu Trp Ala Phe Asp Ala
65                  70                  75                  80

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

Gly Asn Lys Phe Tyr Ser Glu Lys Glu Cys Arg Glu Tyr Cys Gly Val
            100                 105                 110

Pro Gly Asp Gly Asp Glu Glu Leu Leu Arg Glu Pro Lys Ser Ser Asp
        115                 120                 125

Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly
    130                 135                 140

Ser Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile
145                 150                 155                 160

Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu
                165                 170                 175

Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His
            180                 185                 190

Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg
        195                 200                 205

Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys
    210                 215                 220

Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Ser Ile Glu
225                 230                 235                 240

Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr
                245                 250                 255

Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu
            260                 265                 270
```

```
Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp
        275                 280                 285

Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val
    290                 295                 300

Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp
305                 310                 315                 320

Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His
                325                 330                 335

Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro
            340                 345                 350

Gly
```

<210> 12
<211> 1059
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polynucleotide"

<400> 12

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gaggactcct gccagctggg ctactctgcc ggcccttgta tgggcatgac ctcccggtac       60

ttctacaacg gcacctccat ggcctgcgag acattccagt acggcggctg catgggcaac      120

ggcaacaact ttgtgacaga gaaagagtgc ctgcagacct gcagaaccgt ggccgcctgt      180

aacctgccta tcgtgcgggg accctgtcgg gcctttatcc agctgtgggc cttcgacgcc      240

gtgaagggca aatgcgtgct gttcccctat ggcggctgcc agggaaatgg aaacaagttc      300

tactccgaga aagaatgccg cgagtactgt ggcgtgccag gcgacgggga tgaggaactg      360

ctgcgggagc ccaaatcttc cgacaagacc catacctgtc caccttgccc tgcccccgag      420

ctgctgggag gatcctctgt gttcctgttc cccccaaagc ccaaggacac cctgatgatc      480

tcccggaccc ctgaagtgac ctgcgtggtg gtggatgtgt cccacgagga tcccgaagtg      540

aagttcaatt ggtacgtgga cggcgtggaa gtgcacaacg ccaagaccaa gcccagagag      600

gaacagtaca actccaccta ccgggtggtg tccgtgctga ccgtgctgca ccaggattgg      660

ctgaacggca aagagtacaa gtgcaaggtg tccaacaagg ccctgcctgc ctccatcgaa      720

aagaccatct ccaaggccaa gggccagccc cgggaacccc aggtgtacac actgcccccc      780

agccgggaag agatgacaaa gaaccaggtg tccctgacct gtctcgtgaa gggattctac      840
```

ccctccgata tcgccgtgga atgggagtcc aacggccagc ctgagaacaa ctacaagacc 900

acccccccctg tgctggactc cgacggctca ttcttcctgt actccaagct gacagtggac 960

aagtcccggt ggcagcaggg caacgtgttc tcctgctccg tgatgcacga ggccctgcac 1020

aaccactaca cccagaagtc cctgtccctg agccccggc 1059

<210> 13
<211> 253
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 13

Ala Val Leu Pro Gln Glu Glu Glu Gly Ser Gly Gly Gly Gln Leu Val
1 5 10 15

Thr Glu Val Thr Lys Lys Glu Pro Lys Ser Ser Asp Lys Thr His Thr
20 25 30

Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Ser Ser Val Phe
35 40 45

Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro
50 55 60

Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val
65 70 75 80

Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr
85 90 95

Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val
100 105 110

Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys
115 120 125

Lys Val Ser Asn Lys Ala Leu Pro Ala Ser Ile Glu Lys Thr Ile Ser
130 135 140

Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro
145 150 155 160

Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val
165 170 175

Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly
180 185 190

Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp
195 200 205

Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp
210 215 220

Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His
225 230 235 240

Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly
245 250

<210> 14
<211> 759
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polynucleotide"

<400> 14
gctgtgctgc ctcaggaaga ggaaggctct ggcggaggcc agctcgtgac cgaagtgacc 60

aagaaagagc ccaaatcttc cgacaagacc catacctgtc caccttgccc tgcccccgag 120

ctgctgggag gatcctctgt gttcctgttc cccccaaagc ccaaggacac cctgatgatc 180

tcccggaccc ctgaagtgac ctgcgtggtg gtggatgtgt cccacgagga tcccgaagtg 240

aagttcaatt ggtacgtgga cggcgtggaa gtgcacaacg ccaagaccaa gcccagagag 300

gaacagtaca actccaccta ccgggtggtg tccgtgctga ccgtgctgca ccaggattgg 360

ctgaacggca aagagtacaa gtgcaaggtg tccaacaagg ccctgcctgc ctccatcgaa 420

aagaccatct ccaaggccaa gggccagccc cgggaacccc aggtgtacac actgcccccct 480

agccgggaag agatgacaaa gaaccaggtg tccctgacct gtctcgtgaa gggattctac 540

ccctccgata tcgccgtgga atgggagtcc aacggccagc ctgagaacaa ctacaagacc 600

acccccccctg tgctggactc cgacggctca ttcttcctgt actccaagct gacagtggac 660

aagtcccggt ggcagcaggg caacgtgttc tcctgctccg tgatgcacga ggccctgcac 720

aaccactaca cccagaagtc cctgtccctg agccccggc 759

<210> 15
<211> 384
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 15
Ala Val Leu Pro Gln Glu Glu Glu Gly Ser Gly Gly Gly Gln Leu Val
1 5 10 15

Thr Glu Val Thr Lys Lys Glu Asp Ser Cys Gln Leu Gly Tyr Ser Ala
20 25 30

Gly Pro Cys Met Gly Met Thr Ser Arg Tyr Phe Tyr Asn Gly Thr Ser
35 40 45

Met Ala Cys Glu Thr Phe Gln Tyr Gly Gly Cys Met Gly Asn Gly Asn
50 55 60

Asn Phe Val Thr Glu Lys Glu Cys Leu Gln Thr Cys Arg Thr Val Ala
65 70 75 80

Ala Cys Asn Leu Pro Ile Val Arg Gly Pro Cys Arg Ala Phe Ile Gln
85 90 95

Leu Trp Ala Phe Asp Ala Val Lys Gly Lys Cys Val Leu Phe Pro Tyr
100 105 110

Gly Gly Cys Gln Gly Asn Gly Asn Lys Phe Tyr Ser Glu Lys Glu Cys
115 120 125

Arg Glu Tyr Cys Gly Val Pro Gly Asp Gly Asp Glu Glu Leu Leu Gly
130 135 140

Gly Gly Gly Ser Gly Gly Gly Gly Ser Glu Pro Lys Ser Ser Asp Lys
145 150 155 160

Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Ser
165 170 175

Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser
180 185 190

Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp
195 200 205

Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn
210 215 220

```
Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val
225                 230                 235                 240

Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu
                245                 250                 255

Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Ser Ile Glu Lys
            260                 265                 270

Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr
        275                 280                 285

Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr
    290                 295                 300

Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu
305                 310                 315                 320

Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu
                325                 330                 335

Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys
            340                 345                 350

Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu
        355                 360                 365

Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly
    370                 375                 380
```

<210> 16
<211> 1152
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic
polynucleotide"

<400> 16
gctgtgctgc ctcaggaaga ggaaggctct ggcggaggcc agctcgtgac cgaagtgacc 60

aagaaagagg actcctgcca gctgggctac tctgccggcc cttgtatggg catgacctcc 120

cggtacttct acaacggcac ctccatggcc tgcgagacat tccagtacgg cggctgcatg 180

ggcaacggca acaactttgt gacagagaaa gagtgcctgc agacctgcag aaccgtggcc 240

gcctgtaacc tgcctatcgt gcggggaccc tgtcgggcct ttatccagct gtgggccttc 300

gacgccgtga agggcaaatg cgtgctgttc ccctatggcg gctgccaggg aaatggaaac 360

```
aagttctact ccgagaaaga atgccgcgag tactgtggcg tgccaggcga cggggatgag      420

gaactgctgg gaggtggtgg atcaggtggc ggaggatcag agcccaaatc ttccgacaag      480

acccatacct gtccaccttg ccctgccccc gagctgctgg gaggatcctc tgtgttcctg      540

ttccccccaa agcccaagga caccctgatg atctcccgga cccctgaagt gacctgcgtg      600

gtggtggatg tgtcccacga ggatcccgaa gtgaagttca attggtacgt ggacggcgtg      660

gaagtgcaca acgccaagac caagcccaga gaggaacagt acaactccac ctaccgggtg      720

gtgtccgtgc tgaccgtgct gcaccaggat tggctgaacg gcaaagagta caagtgcaag      780

gtgtccaaca aggccctgcc tgcctccatc gaaaagacca tctccaaggc caagggccag      840

ccccgggaac cccaggtgta cacactgccc cctagccggg aagagatgac aaagaaccag      900

gtgtccctga cctgtctcgt gaagggattc taccctccg atatcgccgt ggaatgggag      960

tccaacggcc agcctgagaa caactacaag accacccccc ctgtgctgga ctccgacggc     1020

tcattcttcc tgtactccaa gctgacagtg gacaagtccc ggtggcagca gggcaacgtg     1080

ttctcctgct ccgtgatgca cgaggccctg cacaaccact acacccagaa gtccctgtcc     1140

ctgagccccg gc                                                         1152
```

<210> 17
<211> 365
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 17

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Ala Val Leu Pro Gln Glu Glu Glu Gly Ser Gly Gly Gly Gln Leu Val
1               5                  10                  15

Thr Glu Val Thr Lys Lys Glu Asp Ser Cys Gln Leu Gly Tyr Ser Ala
            20                  25                  30

Gly Pro Cys Met Gly Met Thr Ser Arg Tyr Phe Tyr Asn Gly Thr Ser
        35                  40                  45

Met Ala Cys Glu Thr Phe Gln Tyr Gly Gly Cys Met Gly Asn Gly Asn
    50                  55                  60

Asn Phe Val Thr Glu Lys Glu Cys Leu Gln Thr Cys Arg Thr Val Ala
65                  70                  75                  80

Ala Cys Asn Leu Pro Ile Val Arg Gly Pro Cys Arg Ala Phe Ile Gln
                85                  90                  95
```

```
Leu Trp Ala Phe Asp Ala Val Lys Gly Lys Cys Val Leu Phe Pro Tyr
            100                 105                 110

Gly Gly Cys Gln Gly Asn Gly Asn Lys Phe Tyr Ser Glu Lys Glu Cys
        115                 120                 125

Arg Glu Tyr Cys Gly Val Pro Gly Asp Gly Asp Glu Glu Leu Leu Arg
    130                 135                 140

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

Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro
                165                 170                 175

Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val
            180                 185                 190

Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr
        195                 200                 205

Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val
    210                 215                 220

Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys
225                 230                 235                 240

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

Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro
            260                 265                 270

Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val
        275                 280                 285

Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly
    290                 295                 300

Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp
305                 310                 315                 320

Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp
                325                 330                 335

Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His
            340                 345                 350
```

Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly
355 360 365

<210> 18
<211> 1095
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polynucleotide"

<400> 18
gctgtgctgc ctcaggaaga ggaaggctct ggcggaggcc agctcgtgac cgaagtgacc 60

aagaaagagg actcctgcca gctgggctac tctgccggcc cttgtatggg catgacctcc 120

cggtacttct acaacggcac ctccatggcc tgcgagacat tccagtacgg cggctgcatg 180

ggcaacggca acaactttgt gacagagaaa gagtgcctgc agacctgcag aaccgtggcc 240

gcctgtaacc tgcctatcgt gcggggaccc tgtcgggcct ttatccagct gtgggccttc 300

gacgccgtga agggcaaatg cgtgctgttc ccctatggcg gctgccaggg aaatggaaac 360

aagttctact ccgagaaaga atgccgcgag tactgtggcg tgccaggcga cggggatgag 420

gaactgctgc ggtgtccacc ttgccctgcc cccgagctgc tgggaggatc ctctgtgttc 480

ctgttccccc caaagcccaa ggacaccctg atgatctccc ggacccctga agtgacctgc 540

gtggtggtgg atgtgtccca cgaggatccc gaagtgaagt tcaattggta cgtggacggc 600

gtggaagtgc acaacgccaa gaccaagccc agagaggaac agtacaactc cacctaccgg 660

gtggtgtccg tgctgaccgt gctgcaccag gattggctga acggcaaaga gtacaagtgc 720

aaggtgtcca acaaggccct gcctgcctcc atcgaaaaga ccatctccaa ggccaagggc 780

cagccccggg aaccccaggt gtacacactg ccccctagcc gggaagagat gacaaagaac 840

caggtgtccc tgacctgtct cgtgaaggga ttctaccccc ccgatatcgc cgtggaatgg 900

gagtccaacg gccagcctga gaacaactac aagaccaccc cccctgtgct ggactccgac 960

ggctcattct tcctgtactc caagctgaca gtggacaagt cccggtggca gcagggcaac 1020

gtgttctcct gctccgtgat gcacgaggcc ctgcacaacc actacaccca gaagtccctg 1080

tccctgagcc ccggc 1095

<210> 19
<211> 343
<212> PRT
<213> Artificial Sequence

<220>
<221> source

<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 19
Ala Val Leu Pro Gln Glu Glu Glu Gly Ser Gly Gly Gly Gln Leu Val
1 5 10 15

Thr Glu Val Thr Lys Lys Glu Asp Ser Cys Gln Leu Gly Tyr Ser Ala
20 25 30

Gly Pro Cys Met Gly Met Thr Ser Arg Tyr Phe Tyr Asn Gly Thr Ser
35 40 45

Met Ala Cys Glu Thr Phe Gln Tyr Gly Gly Cys Met Gly Asn Gly Asn
50 55 60

Asn Phe Val Thr Glu Lys Glu Cys Leu Gln Thr Cys Arg Thr Val Ala
65 70 75 80

Ala Cys Asn Leu Pro Ile Val Arg Gly Pro Cys Arg Ala Phe Ile Gln
85 90 95

Leu Trp Ala Phe Asp Ala Val Lys Gly Lys Cys Val Leu Phe Pro Tyr
100 105 110

Gly Gly Cys Gln Gly Asn Gly Asn Lys Phe Tyr Ser Glu Lys Glu Cys
115 120 125

Arg Glu Tyr Cys Gly Val Ser Ser Val Phe Leu Phe Pro Pro Lys Pro
130 135 140

Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val
145 150 155 160

Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val
165 170 175

Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln
180 185 190

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

Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala
210 215 220

Leu Pro Ala Ser Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro
225 230 235 240

Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr
245 250 255

Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser
260 265 270

Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr
275 280 285

Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr
290 295 300

Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe
305 310 315 320

Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys
325 330 335

Ser Leu Ser Leu Ser Pro Gly
340

<210> 20
<211> 1029
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polynucleotide"

<400> 20
gctgtgctgc ctcaggaaga ggaaggctct ggcggaggcc agctcgtgac cgaagtgacc 60

aagaaagagg actcctgcca gctgggctac tctgccggcc cttgtatggg catgacctcc 120

cggtacttct acaacggcac ctccatggcc tgcgagacat tccagtacgg cggctgcatg 180

ggcaacggca acaactttgt gacagagaaa gagtgcctgc agacctgcag aaccgtggcc 240

gcctgtaacc tgcctatcgt gcggggaccc tgtcgggcct ttatccagct gtgggccttc 300

gacgccgtga agggcaaatg cgtgctgttc ccctatggcg gctgccaggg aaatggaaac 360

aagttctact ccgagaaaga atgccgcgag tactgtggcg tgtcctctgt gttcctgttc 420

cccccaaagc ccaaggacac cctgatgatc tcccggaccc ctgaagtgac ctgcgtggtg 480

gtggatgtgt cccacgagga tcccgaagtg aagttcaatt ggtacgtgga cggcgtggaa 540

gtgcacaacg ccaagaccaa gcccagagag gaacagtaca actccaccta ccgggtggtg 600

tccgtgctga ccgtgctgca ccaggattgg ctgaacggca aagagtacaa gtgcaaggtg 660

tccaacaagg ccctgcctgc ctccatcgaa aagaccatct ccaaggccaa gggccagccc 720

cgggaacccc aggtgtacac actgcccccct agccgggaag agatgacaaa gaaccaggtg 780

tccctgacct gtctcgtgaa gggattctac ccctccgata tcgccgtgga atgggagtcc 840

aacggccagc ctgagaacaa ctacaagacc acccccccctg tgctggactc cgacggctca 900

ttcttcctgt actccaagct gacagtggac aagtcccggt ggcagcaggg caacgtgttc 960

tcctgctccg tgatgcacga ggccctgcac aaccactaca cccagaagtc cctgtccctg 1020

agccccggc 1029

<210> 21
<211> 375
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 21
Ala Val Leu Pro Gln Glu Glu Glu Gly Ser Gly Gly Gly Gln Leu Val
1 5 10 15

Thr Glu Val Thr Ser Ser Glu Asp Ser Cys Gln Leu Gly Tyr Ser Ala
20 25 30

Gly Pro Cys Met Gly Met Thr Ser Arg Tyr Phe Tyr Asn Gly Thr Ser
35 40 45

Met Ala Cys Glu Thr Phe Gln Tyr Gly Gly Cys Met Gly Asn Gly Asn
50 55 60

Asn Phe Val Thr Glu Lys Glu Cys Leu Gln Thr Cys Arg Thr Val Ala
65 70 75 80

Ala Cys Asn Leu Pro Ile Val Arg Gly Pro Cys Arg Ala Phe Ile Gln
85 90 95

Leu Trp Ala Phe Asp Ala Val Lys Gly Lys Cys Val Leu Phe Pro Tyr
100 105 110

Gly Gly Cys Gln Gly Asn Gly Asn Lys Phe Tyr Ser Glu Lys Glu Cys
115 120 125

Arg Glu Tyr Cys Gly Val Pro Gly Asp Gly Asp Glu Glu Leu Leu Arg
130 135 140

Glu Pro Lys Ser Ser Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala
145 150 155 160

```
Pro Glu Leu Leu Gly Gly Ser Ser Val Phe Leu Phe Pro Pro Lys Pro
                165                 170                 175

Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val
            180                 185                 190

Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val
        195                 200                 205

Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln
    210                 215                 220

Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln
225                 230                 235                 240

Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala
                245                 250                 255

Leu Pro Ala Ser Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro
            260                 265                 270

Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr
        275                 280                 285

Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser
    290                 295                 300

Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr
305                 310                 315                 320

Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr
                325                 330                 335

Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe
            340                 345                 350

Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys
        355                 360                 365

Ser Leu Ser Leu Ser Pro Gly
    370                 375
```

<210> 22
<211> 1125
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polynucleotide"

<400> 22
gctgtgctgc ctcaggaaga ggaaggctct ggcggaggcc agctcgtgac cgaagtgacc 60

tcctccgagg actcctgcca gctgggctac tctgccggcc cttgtatggg catgacctcc 120

cggtacttct acaacggcac ctccatggcc tgcgagacat tccagtacgg cggctgcatg 180

ggcaacggca acaactttgt gacagagaaa gagtgcctgc agacctgcag aaccgtggcc 240

gcctgtaacc tgcctatcgt gcggggaccc tgtcgggcct ttatccagct gtgggccttc 300

gacgccgtga agggcaaatg cgtgctgttc ccctatggcg gctgccaggg aaatggaaac 360

aagttctact ccgagaaaga atgccgcgag tactgtggcg tgccaggcga cggggatgag 420

gaactgctgc gggagcccaa atcttccgac aagacccata cctgtccacc ttgccctgcc 480

cccgagctgc tgggaggatc ctctgtgttc ctgttccccc caaagcccaa ggacaccctg 540

atgatctccc ggacccctga agtgacctgc gtggtggtgg atgtgtccca cgaggatccc 600

gaagtgaagt tcaattggta cgtggacggc gtggaagtgc acaacgccaa gaccaagccc 660

agagaggaac agtacaactc cacctaccgg gtggtgtccg tgctgaccgt gctgcaccag 720

gattggctga acggcaaaga gtacaagtgc aaggtgtcca acaaggccct gcctgcctcc 780

atcgaaaaga ccatctccaa ggccaagggc cagccccggg aaccccaggt gtacacactg 840

ccccctagcc gggaagagat gacaaagaac caggtgtccc tgacctgtct cgtgaaggga 900

ttctaccccct ccgatatcgc cgtggaatgg gagtccaacg gccagcctga gaacaactac 960

aagaccaccc cccctgtgct ggactccgac ggctcattct tcctgtactc caagctgaca 1020

gtggacaagt cccggtggca gcagggcaac gtgttctcct gctccgtgat gcacgaggcc 1080

ctgcacaacc actacaccca gaagtccctg tccctgagcc ccggc 1125

<210> 23
<211> 320
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 23
Ala Val Leu Pro Gln Glu Glu Glu Gly Ser Gly Gly Gly Gln Leu Val
1 5 10 15

Thr Glu Val Thr Lys Lys Thr Val Ala Ala Cys Asn Leu Pro Ile Val
20 25 30

```
Arg Gly Pro Cys Arg Ala Phe Ile Gln Leu Trp Ala Phe Asp Ala Val
        35                  40                  45

Lys Gly Lys Cys Val Leu Phe Pro Tyr Gly Gly Cys Gln Gly Asn Gly
    50                  55                  60

Asn Lys Phe Tyr Ser Glu Lys Glu Cys Arg Glu Tyr Cys Gly Val Pro
65                  70                  75                  80

Gly Asp Gly Asp Glu Glu Leu Leu Arg Glu Pro Lys Ser Ser Asp Lys
                85                  90                  95

Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Ser
            100                 105                 110

Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser
        115                 120                 125

Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp
    130                 135                 140

Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn
145                 150                 155                 160

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

Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu
            180                 185                 190

Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Ser Ile Glu Lys
        195                 200                 205

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

Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr
225                 230                 235                 240

Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu
                245                 250                 255

Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu
            260                 265                 270

Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys
        275                 280                 285
```

Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu
290 295 300

Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly
305 310 315 320

<210> 24
<211> 960
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polynucleotide"

<400> 24
gctgtgctgc ctcaggaaga ggaaggctct ggcggaggcc agctcgtgac cgaagtgacc 60

aagaaaaccg tggccgcctg taacctgcct atcgtgcggg gaccctgtcg ggcctttatc 120

cagctgtggg ccttcgacgc cgtgaagggc aaatgcgtgc tgttccccta tggcggctgc 180

cagggaaatg gaaacaagtt ctactccgag aaagaatgcc gcgagtactg tggcgtgcca 240

ggcgacgggg atgaggaact gctgcgggag cccaaatctt ccgacaagac ccatacctgt 300

ccaccttgcc ctgcccccga gctgctggga ggatcctctg tgttcctgtt ccccccaaag 360

cccaaggaca ccctgatgat ctcccggacc cctgaagtga cctgcgtggt ggtggatgtg 420

tcccacgagg atcccgaagt gaagttcaat tggtacgtgg acggcgtgga agtgcacaac 480

gccaagacca agcccagaga ggaacagtac aactccacct accgggtggt gtccgtgctg 540

accgtgctgc accaggattg gctgaacggc aaagagtaca agtgcaaggt gtccaacaag 600

gccctgcctg cctccatcga aaagaccatc tccaaggcca agggccagcc ccgggaaccc 660

caggtgtaca cactgccccc tagccgggaa gagatgacaa agaaccaggt gtccctgacc 720

tgtctcgtga agggattcta cccctccgat atcgccgtgg aatgggagtc caacggccag 780

cctgagaaca actacaagac cacccccccc gtgctggact ccgacggctc attcttcctg 840

tactccaagc tgacagtgga caagtcccgg tggcagcagg gcaacgtgtt ctcctgctcc 900

gtgatgcacg aggccctgca caaccactac acccagaagt ccctgtccct gagccccggc 960

<210> 25
<211> 308
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 25
Ala Val Leu Pro Gln Glu Glu Glu Gly Ser Gly Gly Gly Gln Leu Val
1 5 10 15

Thr Glu Val Thr Lys Lys Glu Asp Ser Cys Gln Leu Gly Tyr Ser Ala
20 25 30

Gly Pro Cys Met Gly Met Thr Ser Arg Tyr Phe Tyr Asn Gly Thr Ser
35 40 45

Met Ala Cys Glu Thr Phe Gln Tyr Gly Gly Cys Met Gly Asn Gly Asn
50 55 60

Asn Phe Val Thr Glu Lys Glu Cys Leu Gln Thr Cys Arg Glu Pro Lys
65 70 75 80

Ser Ser Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu
85 90 95

Leu Gly Gly Ser Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr
100 105 110

Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val
115 120 125

Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val
130 135 140

Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser
145 150 155 160

Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu
165 170 175

Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala
180 185 190

Ser Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro
195 200 205

Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln
210 215 220

Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala
225 230 235 240

Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr

245 250 255

Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu
260 265 270

Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser
275 280 285

Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser
290 295 300

Leu Ser Pro Gly
305

<210> 26
<211> 924
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polynucleotide"

<400> 26
gctgtgctgc ctcaggaaga ggaaggctct ggcggaggcc agctcgtgac cgaagtgacc 60

aagaaagagg actcctgcca gctgggctac tctgccggcc cttgtatggg catgacctcc 120

cggtacttct acaacggcac ctccatggcc tgcgagacat tccagtacgg cggctgcatg 180

ggcaacggca acaactttgt gacagagaaa gagtgcctgc agacctgcag agagcccaaa 240

tcttccgaca agacccatac ctgtccacct tgccctgccc ccgagctgct gggaggatcc 300

tctgtgttcc tgttcccccc aaagcccaag gacaccctga tgatctcccg gacccctgaa 360

gtgacctgcg tggtggtgga tgtgtcccac gaggatcccg aagtgaagtt caattggtac 420

gtggacggcg tggaagtgca caacgccaag accaagccca gagaggaaca gtacaactcc 480

acctaccggg tggtgtccgt gctgaccgtg ctgcaccagg attggctgaa cggcaaagag 540

tacaagtgca aggtgtccaa caaggccctg cctgcctcca tcgaaaagac catctccaag 600

gccaagggcc agccccggga accccaggtg tacacactgc cccctagccg ggaagagatg 660

acaaagaacc aggtgtccct gacctgtctc gtgaagggat tctacccctc cgatatcgcc 720

gtggaatggg agtccaacgg ccagcctgag aacaactaca agaccacccc ccctgtgctg 780

gactccgacg gctcattctt cctgtactcc aagctgacag tggacaagtc ccggtggcag 840

cagggcaacg tgttctcctg ctccgtgatg cacgaggccc tgcacaacca ctacacccag 900

aagtccctgt ccctgagccc cggc 924

<210> 27
<211> 374
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 27

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Ala Val Leu Pro Gln Glu Ser Glu Gly Ser Gly Thr Glu Pro Leu Ile
1               5                  10                  15

Thr Gly Thr Leu Lys Lys Glu Asp Ser Cys Gln Leu Asn Tyr Ser Glu
            20                  25                  30

Gly Pro Cys Leu Gly Met Gln Glu Arg Tyr Tyr Tyr Asn Gly Ala Ser
        35                  40                  45

Met Ala Cys Glu Thr Phe Gln Tyr Gly Gly Cys Leu Gly Asn Gly Asn
    50                  55                  60

Asn Phe Ile Ser Glu Lys Asp Cys Leu Gln Thr Cys Arg Thr Ile Ala
65                  70                  75                  80

Ala Cys Asn Leu Pro Ile Val Gln Gly Pro Cys Arg Ala Phe Ile Lys
                85                  90                  95

Leu Trp Ala Phe Asp Ala Ala Gln Gly Lys Cys Ile Gln Phe His Tyr
            100                 105                 110

Gly Gly Cys Lys Gly Asn Gly Asn Lys Phe Tyr Ser Glu Lys Glu Cys
        115                 120                 125

Lys Glu Tyr Cys Gly Val Pro Gly Asp Gly Tyr Glu Glu Leu Ile Arg
    130                 135                 140

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

Val Pro Glu Val Ser Ser Val Phe Ile Phe Pro Pro Lys Pro Lys Asp
                165                 170                 175

Val Leu Thr Ile Thr Leu Thr Pro Lys Val Thr Cys Val Val Val Asp
            180                 185                 190

Ile Ser Lys Asp Asp Pro Glu Val Gln Phe Ser Trp Phe Val Asp Asp
        195                 200                 205
```

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Val Glu Val His Thr Ala Gln Thr Gln Pro Arg Glu Glu Gln Phe Asn
    210                 215                 220

Ser Thr Phe Arg Ser Val Ser Glu Leu Pro Ile Met His Gln Asp Trp
225                 230                 235                 240

Leu Asn Gly Lys Glu Phe Lys Cys Arg Val Asn Ser Ala Ala Phe Pro
                245                 250                 255

Ala Pro Ile Glu Lys Thr Ile Ser Lys Thr Lys Gly Arg Pro Lys Ala
            260                 265                 270

Pro Gln Val Tyr Thr Ile Pro Pro Pro Lys Glu Gln Met Ala Lys Asp
        275                 280                 285

Lys Val Ser Leu Thr Cys Met Ile Thr Asp Phe Phe Pro Glu Asp Ile
    290                 295                 300

Thr Val Glu Trp Gln Trp Asn Gly Gln Pro Ala Glu Asn Tyr Lys Asn
305                 310                 315                 320

Thr Gln Pro Ile Met Asp Thr Asp Gly Ser Tyr Phe Val Tyr Ser Lys
                325                 330                 335

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

Ser Val Leu His Glu Gly Leu His Asn His His Thr Glu Lys Ser Leu
        355                 360                 365

Ser His Ser Pro Gly Lys
    370
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<210> 28
<211> 1122
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polynucleotide"

<400> 28
gcagtgctgc cccaagagag tgaggggtca gggactgagc cactaataac tgggaccctc 60

aagaaagaag actcctgcca gctcaattac tcagaaggcc cctgcctagg gatgcaagag 120

aggtattact acaacggcgc ttccatggcc tgcgagacct ttcaatatgg gggttgccta 180

ggcaacggca acaacttcat ctctgagaag gactgtctgc agacatgtcg gaccatagcg 240

gcctgcaatc tccccatagt ccaaggcccc tgccgagcct tcataaagct ctgggcattt 300

gatgcagcac aagggaagtg catccaattc cactacgggg gctgcaaagg caacggcaac 360

aaattctact ctgagaagga atgcaaagag tactgtggag tccctggtga tgggtacgag 420

gaactaatac gcagtaaaat cgtgcctcgg gactgcggct gcaagccctg catctgcacc 480

gtgcccgagg tgtcctccgt gttcatcttc ccacccaagc ccaaggacgt gctgaccatc 540

accctgaccc ccaaagtgac ctgcgtggtg gtggacatct ccaaggacga ccccgaggtg 600

cagttcagtt ggttcgtgga cgacgtggaa gtgcacaccg cccagaccca gcccagagag 660

gaacagttca actccacctt cagatccgtg tccgagctgc ccatcatgca ccaggactgg 720

ctgaacggca aagagttcaa gtgcagagtg aactccgccg ccttcccagc ccccatcgaa 780

aagaccatct ccaagaccaa gggcagaccc aaggcccccc aggtgtacac catccccca 840

cccaaagaac agatggccaa ggacaaggtg tccctgacct gcatgatcac cgatttcttc 900

ccagaggaca tcaccgtgga atggcagtgg aacggccagc ccgccgagaa ctacaagaac 960

acccagccca tcatggacac cgacggctcc tacttcgtgt actccaagct gaacgtgcag 1020

aagtccaact gggaggccgg caacaccttc acctgtagcg tgctgcacga gggcctgcac 1080

aaccaccaca ccgagaagtc cctgtcccac tcccccggca ag 1122

<210> 29
<211> 391
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 29
Glu Pro Lys Ser Ser Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala
1 5 10 15

Pro Glu Leu Leu Gly Gly Ser Ser Val Phe Leu Phe Pro Pro Lys Pro
20 25 30

Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val
35 40 45

Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val
50 55 60

Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln
65 70 75 80

Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln

85 90 95

Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala
100 105 110

Leu Pro Ala Ser Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro
115 120 125

Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr
130 135 140

Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser
145 150 155 160

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

Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr
180 185 190

Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe
195 200 205

Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys
210 215 220

Ser Leu Ser Leu Ser Pro Gly Lys Gly Gly Gly Gly Ser Gly Gly Gly
225 230 235 240

Gly Ser Gly Gly Gly Gly Ser Ala Val Leu Pro Gln Glu Glu Glu Gly
245 250 255

Ser Gly Gly Gly Gln Leu Val Thr Glu Val Thr Lys Lys Glu Asp Ser
260 265 270

Cys Gln Leu Gly Tyr Ser Ala Gly Pro Cys Met Gly Met Thr Ser Arg
275 280 285

Tyr Phe Tyr Asn Gly Thr Ser Met Ala Cys Glu Thr Phe Gln Tyr Gly
290 295 300

Gly Cys Met Gly Asn Gly Asn Asn Phe Val Thr Glu Lys Glu Cys Leu
305 310 315 320

Gln Thr Cys Arg Thr Val Ala Ala Cys Asn Leu Pro Ile Val Arg Gly
325 330 335

Pro Cys Arg Ala Phe Ile Gln Leu Trp Ala Phe Asp Ala Val Lys Gly
340 345 350

Lys Cys Val Leu Phe Pro Tyr Gly Gly Cys Gln Gly Asn Gly Asn Lys
355 360 365

Phe Tyr Ser Glu Lys Glu Cys Arg Glu Tyr Cys Gly Val Pro Gly Asp
370 375 380

Gly Asp Glu Glu Leu Leu Arg
385 390

<210> 30
<211> 1173
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polynucleotide"

<400> 30
gagcccaaat cttccgacaa gacccatacc tgtccacctt gccctgcccc cgagctgctg 60

ggaggatcct ctgtgttcct gttcccccca aagcccaagg acaccctgat gatctcccgg 120

acccctgaag tgacctgcgt ggtggtggat gtgtcccacg aggatcccga agtgaagttc 180

aattggtacg tggacggcgt ggaagtgcac aacgccaaga ccaagcccag agaggaacag 240

tacaactcca cctaccgggt ggtgtccgtg ctgaccgtgc tgcaccagga ttggctgaac 300

ggcaaagagt acaagtgcaa ggtgtccaac aaggccctgc ctgcctccat cgaaaagacc 360

atctccaagg ccaagggcca gccccgggaa ccccaggtgt acacactgcc ccctagccgg 420

gaagagatga caaagaacca ggtgtccctg acctgtctcg tgaagggatt ctacccctcc 480

gatatcgccg tggaatggga gtccaacggc cagcctgaga acaactacaa gaccaccccc 540

cctgtgctgg actccgacgg ctcattcttc ctgtactcca agctgacagt ggacaagtcc 600

cggtggcagc agggcaacgt gttctcctgc tccgtgatgc acgaggccct gcacaaccac 660

tacacccaga agtccctgtc cctgagcccc ggcaagggag gtggtggatc aggaggtgga 720

ggttccggtg gcggaggatc agctgtgctg cctcaggaag aggaaggctc tggcggaggc 780

cagctcgtga ccgaagtgac caagaaagag gactcctgcc agctgggcta ctctgccggc 840

ccttgtatgg gcatgacctc ccggtacttc tacaacggca cctccatggc ctgcgagaca 900

ttccagtacg gcggctgcat gggcaacggc aacaactttg tgacagagaa agagtgcctg 960

cagacctgca gaaccgtggc cgcctgtaac ctgcctatcg tgcggggacc ctgtcgggcc 1020

tttatccagc tgtgggcctt cgacgccgtg aagggcaaat gcgtgctgtt cccctatggc 1080

ggctgccagg gaaatggaaa caagttctac tccgagaaag aatgccgcga gtactgtggc 1140

gtgccaggcg acggggatga ggaactgctg cgg 1173

<210> 31
<211> 147
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 31
Ala Val Leu Pro Gln Glu Glu Glu Gly Ser Gly Gly Gly Gln Leu Val
1 5 10 15

Thr Glu Val Thr Lys Lys Glu Asp Ser Cys Gln Leu Gly Tyr Ser Ala
20 25 30

Gly Pro Cys Met Gly Met Thr Ser Arg Tyr Phe Tyr Asn Gly Thr Ser
35 40 45

Met Ala Cys Glu Thr Phe Gln Tyr Gly Gly Cys Met Gly Asn Gly Asn
50 55 60

Asn Phe Val Thr Glu Lys Glu Cys Leu Gln Thr Cys Arg Thr Val Ala
65 70 75 80

Ala Cys Asn Leu Pro Ile Val Arg Gly Pro Cys Arg Ala Phe Ile Gln
85 90 95

Leu Trp Ala Phe Asp Ala Val Lys Gly Lys Cys Val Leu Phe Pro Tyr
100 105 110

Gly Gly Cys Gln Gly Asn Gly Asn Lys Phe Tyr Ser Glu Lys Glu Cys
115 120 125

Arg Glu Tyr Cys Gly Val Pro Gly Asp Gly Asp Glu Glu Leu Leu Arg
130 135 140

Phe Ser Asn
145

<210> 32
<211> 352
<212> PRT
<213> Artificial Sequence

<220>
<221> source

<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 32
Met Arg Ser Leu Gly Ala Leu Leu Leu Leu Leu Ser Ala Cys Leu Ala
1 5 10 15

Val Ser Ala Gly Pro Val Pro Thr Pro Pro Asp Asn Ile Gln Val Gln
20 25 30

Glu Asn Phe Asn Ile Ser Arg Ile Tyr Gly Lys Trp Tyr Asn Leu Ala
35 40 45

Ile Gly Ser Thr Cys Pro Trp Leu Lys Lys Ile Met Asp Arg Met Thr
50 55 60

Val Ser Thr Leu Val Leu Gly Glu Gly Ala Thr Glu Ala Glu Ile Ser
65 70 75 80

Met Thr Ser Thr Arg Trp Arg Lys Gly Val Cys Glu Glu Thr Ser Gly
85 90 95

Ala Tyr Glu Lys Thr Asp Thr Asp Gly Lys Phe Leu Tyr His Lys Ser
100 105 110

Lys Trp Asn Ile Thr Met Glu Ser Tyr Val Val His Thr Asn Tyr Asp
115 120 125

Glu Tyr Ala Ile Phe Leu Thr Lys Lys Phe Ser Arg His His Gly Pro
130 135 140

Thr Ile Thr Ala Lys Leu Tyr Gly Arg Ala Pro Gln Leu Arg Glu Thr
145 150 155 160

Leu Leu Gln Asp Phe Arg Val Val Ala Gln Gly Val Gly Ile Pro Glu
165 170 175

Asp Ser Ile Phe Thr Met Ala Asp Arg Gly Glu Cys Val Pro Gly Glu
180 185 190

Gln Glu Pro Glu Pro Ile Leu Ile Pro Arg Val Arg Arg Ala Val Leu
195 200 205

Pro Gln Glu Glu Glu Gly Ser Gly Gly Gly Gln Leu Val Thr Glu Val
210 215 220

Thr Lys Lys Glu Asp Ser Cys Gln Leu Gly Tyr Ser Ala Gly Pro Cys
225 230 235 240

```
Met Gly Met Thr Ser Arg Tyr Phe Tyr Asn Gly Thr Ser Met Ala Cys
                245                 250                 255


Glu Thr Phe Gln Tyr Gly Gly Cys Met Gly Asn Gly Asn Asn Phe Val
            260                 265                 270


Thr Glu Lys Glu Cys Leu Gln Thr Cys Arg Thr Val Ala Ala Cys Asn
        275                 280                 285


Leu Pro Ile Val Arg Gly Pro Cys Arg Ala Phe Ile Gln Leu Trp Ala
    290                 295                 300


Phe Asp Ala Val Lys Gly Lys Cys Val Leu Phe Pro Tyr Gly Gly Cys
305                 310                 315                 320


Gln Gly Asn Gly Asn Lys Phe Tyr Ser Glu Lys Glu Cys Arg Glu Tyr
                325                 330                 335


Cys Gly Val Pro Gly Asp Gly Asp Glu Glu Leu Leu Arg Phe Ser Asn
            340                 345                 350


<210> 33
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic
      peptide"

<400> 33
Ser Gly Gly Gly Gly Ser
1               5


<210> 34
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic
      peptide"

<400> 34
Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
1               5                   10


<210> 35
<211> 16
<212> PRT
<213> Artificial Sequence
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<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic
peptide"

<400> 35
Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
1 5 10 15

<210> 36
<211> 21
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic
peptide"

<400> 36
Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
1 5 10 15

Gly Gly Gly Gly Ser
20

<210> 37
<211> 26
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic
peptide"

<400> 37
Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
1 5 10 15

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
20 25

<210> 38
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic
polypeptide"

<400> 38
Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
1 5 10 15

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
20 25 30

<210> 39
<211> 36
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 39
Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
1 5 10 15

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly
20 25 30

Gly Gly Gly Ser
35

<210> 40
<211> 41
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 40
Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
1 5 10 15

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly
20 25 30

Gly Gly Gly Ser Gly Gly Gly Gly Ser
35 40

<210> 41
<211> 46
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 41
Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser

1 5 10 15

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly
20 25 30

Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
35 40 45

<210> 42
<211> 51
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 42
Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
1 5 10 15

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly
20 25 30

Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly
35 40 45

Gly Gly Ser
50

<210> 43
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic peptide"

<400> 43
Gly Ser Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
1 5 10 15

<210> 44
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic peptide"

<400> 44
Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Thr Ala Thr Gly
1   5   10   15

Val His Ser

<210> 45
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic peptide"

<400> 45
Pro Gly Asp Gly Asp Glu Glu Leu Leu Arg Glu Pro Lys Ser Ser Asp
1   5   10   15

Lys Thr His

<210> 46
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic peptide"

<400> 46
Pro Gly Asp Gly Asp Glu Glu Leu Leu Gly Ser Gly Gly Gly Gly Asp
1   5   10   15

Lys Thr His

<210> 47
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic peptide"

<400> 47
Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
1   5   10

<210> 48

<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic peptide"

<400> 48
Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
1 5 10 15