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<110> PIERRE FABRE MEDICAMENT
KLINGUER-HAMOUR, Christine

<120> NOVEL ANTIBODIES FOR THE TREATMENT OF HIV

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<151> 2009-04-29

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<170> PatentIn version 3.5

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Pro Ala Arg Phe Thr Gly Ser Gly Ser Glu Thr Tyr Phe Thr Leu Thr
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65 70 75 80

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35 40 45

Phe Leu Thr Gly Ile Val Gly Asn Gly Leu Val Ile Leu Val Met Gly
50 55 60

Tyr Gln Lys Lys Leu Arg Ser Met Thr Asp Lys Tyr Arg Leu His Leu
65 70 75 80

Ser Val Ala Asp Leu Leu Phe Val Ile Thr Leu Pro Phe Trp Ala Val
85 90 95

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

His Val Ile Tyr Thr Val Asn Leu Tyr Ser Ser Val Leu Ile Leu Ala
115 120 125

Phe Ile Ser Leu Asp Arg Tyr Leu Ala Ile Val His Ala Thr Asn Ser
130 135 140

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

Trp Ile Pro Ala Leu Leu Leu Thr Ile Pro Asp Phe Ile Phe Ala Asn
165 170 175

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Val Ser Glu Ala Asp Asp Arg Tyr Ile Cys Asp Arg Phe Tyr Pro Asn
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Asp Leu Trp Val Val Val Phe Gln Phe Gln His Ile Met Val Gly Leu
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Ile Leu Pro Gly Ile Val Ile Leu Ser Cys Tyr Cys Ile Ile Ile Ser
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Lys Leu Ser His Ser Lys Gly His Gln Lys Arg Lys Ala Leu Lys Thr
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Thr Val Ile Leu Ile Leu Ala Phe Phe Ala Cys Trp Leu Pro Tyr Tyr
                245                 250                 255

Ile Gly Ile Ser Ile Asp Ser Phe Ile Leu Leu Glu Ile Ile Lys Gln
            260                 265                 270

Gly Cys Glu Phe Glu Asn Thr Val His Lys Trp Ile Ser Ile Thr Glu
        275                 280                 285

Ala Leu Ala Phe Phe His Cys Cys Leu Asn Pro Ile Leu Tyr Ala Phe
    290                 295                 300

Leu Gly Ala Lys Phe Lys Thr Ser Ala Gln His Ala Leu Thr Ser Val
305                 310                 315                 320

Ser Arg Gly Ser Ser Leu Lys Ile Leu Ser Lys Gly Lys Arg Gly Gly
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Phe Arg Glu Glu Asn Ala Asn Phe Asn Lys Ile Phe Leu Pro Thr Ile
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Tyr Ser Ile Ile Phe Leu Thr Gly Ile Val Gly Asn Gly Leu Val Ile
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Leu Val Met Gly Tyr Gln Lys Lys Leu Arg Ser Met Thr Asp Lys Tyr
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Phe Trp Ala Val Asp Ala Val Ala Asn Trp Tyr Phe Gly Asn Phe Leu
            100                 105                 110

Cys Lys Ala Val His Val Ile Tyr Thr Val Asn Leu Tyr Ser Ser Val
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Leu Ile Leu Ala Phe Ile Ser Leu Asp Arg Tyr Leu Ala Ile Val His
    130                 135                 140

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

Tyr Val Gly Val Trp Ile Pro Ala Leu Leu Leu Thr Ile Pro Asp Phe
                165                 170                 175

Ile Phe Ala Asn Val Ser Glu Ala Asp Asp Arg Tyr Ile Cys Asp Arg
            180                 185                 190

Phe Tyr Pro Asn Asp Leu Trp Val Val Val Phe Gln Phe Gln His Ile
        195                 200                 205

Met Val Gly Leu Ile Leu Pro Gly Ile Val Ile Leu Ser Cys Tyr Cys
    210                 215                 220

Ile Ile Ile Ser Lys Leu Ser His Ser Lys Gly His Gln Lys Arg Lys
225                 230                 235                 240

Ala Leu Lys Thr Thr Val Ile Leu Ile Leu Ala Phe Phe Ala Cys Trp
                245                 250                 255

Leu Pro Tyr Tyr Ile Gly Ile Ser Ile Asp Ser Phe Ile Leu Leu Glu
            260                 265                 270

Ile Ile Lys Gln Gly Cys Glu Phe Glu Asn Thr Val His Lys Trp Ile
        275                 280                 285

Ser Ile Thr Glu Ala Leu Ala Phe Phe His Cys Cys Leu Asn Pro Ile
    290                 295                 300

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

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

Tyr Phe Val Val Ile Ile Tyr Ala Leu Val Phe Leu Leu Ser Leu Leu
50 55 60

Gly Asn Ser Leu Val Met Leu Val Ile Leu Tyr Ser Arg Val Gly Arg
65 70 75 80

Ser Val Thr Asp Val Tyr Leu Leu Asn Leu Ala Leu Ala Asp Leu Leu
85 90 95

Phe Ala Leu Thr Leu Pro Ile Trp Ala Ala Ser Lys Val Asn Gly Trp
100 105 110

Ile Phe Gly Thr Phe Leu Cys Lys Val Val Ser Leu Leu Lys Glu Val
115 120 125

Asn Phe Tyr Ser Gly Ile Leu Leu Leu Ala Cys Ile Ser Val Asp Arg
130 135 140

Tyr Leu Ala Ile Val His Ala Thr Arg Thr Leu Thr Gln Lys Arg Tyr
145 150 155 160

Leu Val Lys Phe Ile Cys Leu Ser Ile Trp Gly Leu Ser Leu Leu Leu
165 170 175

Ala Leu Pro Val Leu Leu Phe Arg Arg Thr Val Tyr Ser Ser Asn Val
180 185 190

Ser Pro Ala Cys Tyr Glu Asp Met Gly Asn Asn Thr Ala Asn Trp Arg
195 200 205

eolf-seql

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Met Leu Leu Arg Ile Leu Pro Gln Ser Phe Gly Phe Ile Val Pro Leu
    210                 215                 220

Leu Ile Met Leu Phe Cys Tyr Gly Phe Thr Leu Arg Thr Leu Phe Lys
225                 230                 235                 240

Ala His Met Gly Gln Lys His Arg Ala Met Arg Val Ile Phe Ala Val
                245                 250                 255

Val Leu Ile Phe Leu Leu Cys Trp Leu Pro Tyr Asn Leu Val Leu Leu
            260                 265                 270

Ala Asp Thr Leu Met Arg Thr Gln Val Ile Gln Glu Thr Cys Glu Arg
        275                 280                 285

Arg Asn His Ile Asp Arg Ala Leu Asp Ala Thr Glu Ile Leu Gly Ile
    290                 295                 300

Leu His Ser Cys Leu Asn Pro Leu Ile Tyr Ala Phe Ile Gly Gln Lys
305                 310                 315                 320

Phe Arg His Gly Leu Leu Lys Ile Leu Ala Ile His Gly Leu Ile Ser
                325                 330                 335

Lys Asp Ser Leu Pro Lys Asp Ser Arg Pro Ser Phe Val Gly Ser Ser
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Ser Gly His Thr Ser Thr Thr Leu
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<400> 33

Ala Arg Gly Arg Gln Phe Gly Phe Asp Tyr
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<210> 34
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Glu Lys Val Thr Met Arg Cys Lys Ser Ser Gln Ser Leu Phe Asn Ser
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Arg Thr Arg Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln
35 40 45

Ser Pro Lys Leu Leu Ile Phe Trp Ala Ser Ile Arg Glu Ser Gly Val
50 55 60

Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
65 70 75 80

Ile Ser Ser Val Gln Ala Glu Asp Leu Ala Val Tyr Tyr Cys Lys Gln
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Ser Tyr Asn Leu Arg Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
100 105 110

<210> 35
<211> 116
<212> PRT
<213> Mus musculus

<400> 35

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20 25 30

Gly Val Tyr Trp Val Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Leu
35 40 45

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Gly Met Ile Trp Gly Asp Gly Thr Thr Asp Tyr Asn Ser Ala Leu Lys
    50                  55                  60

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

Lys Met Asn Thr Leu Gln Thr Asp Asp Thr Ala Arg Tyr Tyr Cys Ala
                85                  90                  95

Arg Gly Arg Gln Phe Gly Phe Asp Tyr Trp Gly Gln Gly Thr Thr Leu
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Thr Val Ser Ser
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<400> 37

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<400> 38

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<400> 45
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tggtaccaac agaaaccagg gcagtctcct aaactgctga tcttctgggc atccattagg 180

gaatctgggg tccctgatcg cttcacaggc agtggatctg ggacagattt cactctcacc 240

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cggacgttcg gtggaggcac caagctggaa atcaaa 336

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ccaggaaagg gtctggagtg gctgggaatg atatggggtg atggaaccac agactataat 180

tcagctctca aatccagact gagcatcagt aaggacaact ccaagagcca agttttctta 240

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Tyr Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
35 40 45

Gly Phe Ile Arg Asn Lys Ala Asn Gly Tyr Thr Thr Glu Tyr Ala Ala
50 55 60

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

Ala Tyr Leu Gln Met Asn Ser Leu Lys Thr Glu Asp Thr Ala Val Tyr
85 90 95

Tyr Cys Ala Arg Asp Val Gly Ser Asn Tyr Phe Asp Tyr Trp Gly Gln
100 105 110

Gly Thr Leu Val Thr Val Ser Ser Gln Leu Lys Ser Ser Gly Ser Gly
115 120 125

Ser Glu Ser Lys Ser Thr Asp Ile Val Met Thr Gln Ser Pro Ser Ser
130 135 140

Leu Ala Val Ser Leu Gly Glu Arg Ala Thr Met Ser Cys Lys Ser Ser
145 150 155 160

Gln Ser Leu Phe Asn Ser Arg Thr Arg Lys Asn Tyr Leu Ala Trp Tyr
165 170 175

Gln Gln Lys Pro Gly Gln Ser Pro Lys Leu Leu Ile Tyr Trp Ala Ser
180 185 190

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

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Thr Tyr Phe Thr Leu Thr Ile Ser Arg Val Gln Ala Glu Asp Leu Ala
    210                 215                 220

Val Tyr Tyr Cys Met Gln Ser Phe Asn Leu Arg Thr Phe Gly Gln Gly
225                 230                 235                 240

Thr Lys Val Glu Ile Lys Thr Arg Thr Val Ala Ala Pro Ser Val Phe
                245                 250                 255

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

Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala Lys Val Gln Trp
        275                 280                 285

Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln Glu Ser Val Thr
    290                 295                 300

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

Leu Ser Lys Ala Asp Tyr Glu Lys His Lys Val Tyr Ala Cys Glu Val
                325                 330                 335

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

Glu His His His His His His
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gagtacgccg ccagcgtgaa gggccggttc accatcagcc gggacgacag caagagcatt     240

gcctacctgc agatgaacag cctgaaaacc gaggacaccg ccgtgtacta ctgcgccagg     300

gacgtgggca gcaactactt cgactactgg ggccagggca cactggtgac cgtgtctagc     360

caattgaaaa gcagcggcag cggtagcgaa agcaagtcga ccgacatcgt gatgacccag     420

agccccagca gcctggccgt gtctctgggc gagcgggcca ccatgagctg caagagcagc     480

cagagcctgt tcaacagccg gacccggaag aactacctgg cctggtatca gcagaagccc     540

ggccagtccc ccaagctgct gatctactgg gccagcgcca gagatagcgg cgtgcccgct     600

cgctttaccg gcagcggcag cgagacctac ttcaccctga ccatcagccg ggtgcaggcc     660
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<400> 56

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Tyr Met Ser Trp Val Arg Gln Pro Pro Gly Lys Ala Leu Glu Trp Leu
35 40 45

Gly Phe Ile Arg Asn Lys Ala Asn Gly Tyr Thr Thr Asp Tyr Ser Ala
50 55 60

Ser Val Arg Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Gln Ser Ile
65 70 75 80

Leu Tyr Leu Gln Met Asn Ala Leu Arg Ala Glu Asp Ser Ala Thr Tyr
85 90 95

Tyr Cys Ala Arg Asp Val Gly Ser Asn Tyr Phe Asp Tyr Trp Gly Gln
100 105 110

Gly Thr Thr Leu Thr Val Ser Ser Ala Ser Thr Lys Gly Pro Ser Val
115 120 125

Phe Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala
130 135 140

Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser
145 150 155 160

Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val
165 170 175

Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro

180 185 190

Ser Ser Ser Leu Gly Thr Lys Thr Tyr Thr Cys Asn Val Asp His Lys
195 200 205

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

Pro Cys Pro Ser Cys Pro Ala Pro Glu Phe Leu Gly Gly Pro Ser Val
225 230 235 240

Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr
245 250 255

Pro Glu Val Thr Cys Val Val Val Asp Val Ser Gln Glu Asp Pro Glu
260 265 270

Val Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys
275 280 285

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

Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys
305 310 315 320

Cys Lys Val Ser Asn Lys Gly Leu Pro Ser Ser Ile Glu Lys Thr Ile
325 330 335

Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro
340 345 350

Pro Ser Gln Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu
355 360 365

Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn
370 375 380

Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser
385 390 395 400

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

Trp Gln Glu Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu
420 425 430

His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Leu Gly
435 440 445

<210> 57

<211> 446
<212> PRT
<213> Mus musculus

<400> 57

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

Ser Leu Arg Leu Ser Cys Ala Thr Ser Gly Phe Thr Phe Thr Asp Asn
            20                  25                  30

Tyr Met Ser Trp Val Arg Gln Pro Pro Gly Lys Ala Leu Glu Trp Leu
        35                  40                  45

Gly Phe Ile Arg Asn Lys Ala Asn Gly Tyr Thr Thr Asp Tyr Ser Ala
    50                  55                  60

Ser Val Arg Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Gln Ser Ile
65                  70                  75                  80

Leu Tyr Leu Gln Met Asn Ala Leu Arg Ala Glu Asp Ser Ala Thr Tyr
                85                  90                  95

Tyr Cys Ala Arg Asp Val Gly Ser Asn Tyr Phe Asp Tyr Trp Gly Gln
            100                 105                 110

Gly Thr Thr Leu Thr Val Ser Ser Ala Ser Thr Lys Gly Pro Ser Val
        115                 120                 125

Phe Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala
    130                 135                 140

Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser
145                 150                 155                 160

Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val
                165                 170                 175

Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro
            180                 185                 190

Ser Ser Ser Leu Gly Thr Lys Thr Tyr Thr Cys Asn Val Asp His Lys
        195                 200                 205

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

Pro Cys Pro Pro Cys Pro Ala Pro Glu Phe Leu Gly Gly Pro Ser Val
225                 230                 235                 240

Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr
                245                 250                 255
```

Pro Glu Val Thr Cys Val Val Val Asp Val Ser Gln Glu Asp Pro Glu
260 265 270

Val Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys
275 280 285

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

Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys
305 310 315 320

Cys Lys Val Ser Asn Lys Gly Leu Pro Ser Ser Ile Glu Lys Thr Ile
325 330 335

Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro
340 345 350

Pro Ser Gln Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu
355 360 365

Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn
370 375 380

Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser
385 390 395 400

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

Trp Gln Glu Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu
420 425 430

His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Leu Gly
435 440 445

<210> 58
<211> 445
<212> PRT
<213> Mus musculus

<400> 58

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

Ser Leu Arg Leu Ser Cys Ala Thr Ser Gly Phe Thr Phe Thr Asp Asn
20 25 30

Tyr Met Ser Trp Val Arg Gln Pro Pro Gly Lys Ala Leu Glu Trp Leu
35 40 45

Gly Phe Ile Arg Asn Lys Ala Asn Gly Tyr Thr Thr Asp Tyr Ser Ala
50 55 60

Ser Val Arg Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Gln Ser Ile
65 70 75 80

Leu Tyr Leu Gln Met Asn Ala Leu Arg Ala Glu Asp Ser Ala Thr Tyr
85 90 95

Tyr Cys Ala Arg Asp Val Gly Ser Asn Tyr Phe Asp Tyr Trp Gly Gln
100 105 110

Gly Thr Thr Leu Thr Val Ser Ser Ala Ser Thr Lys Gly Pro Ser Val
115 120 125

Phe Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala
130 135 140

Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser
145 150 155 160

Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val
165 170 175

Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro
180 185 190

Ser Ser Asn Phe Gly Thr Gln Thr Tyr Thr Cys Asn Val Asp His Lys
195 200 205

Pro Ser Asn Thr Lys Val Asp Lys Thr Val Glu Arg Lys Cys Cys Val
210 215 220

Glu Cys Pro Pro Cys Pro Ala Pro Pro Val Ala Gly Pro Ser Val Phe
225 230 235 240

Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro
245 250 255

Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val
260 265 270

Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr
275 280 285

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

Leu Thr Val Val His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys
305 310 315 320

```
Lys Val Ser Asn Lys Gly Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser
                325                 330                 335

Lys Thr Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro
            340                 345                 350

Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val
        355                 360                 365

Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly
    370                 375                 380

Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Met Leu Asp Ser Asp
385                 390                 395                 400

Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp
                405                 410                 415

Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His
            420                 425                 430

Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly
        435                 440                 445
```

<210> 59
<211> 219
<212> PRT
<213> Mus musculus

<400> 59

```
Asp Ile Val Met Ser Gln Ser Pro Ser Ser Leu Ala Val Ser Ala Gly
1               5                   10                  15

Glu Lys Val Thr Met Ser Cys Lys Ser Ser Gln Ser Leu Phe Asn Ser
            20                  25                  30

Arg Thr Arg Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln
        35                  40                  45

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

Pro Ala Arg Phe Thr Gly Ser Gly Ser Glu Thr Tyr Phe Thr Leu Thr
65                  70                  75                  80

Ile Ser Arg Val Gln Ala Glu Asp Leu Ala Val Tyr Tyr Cys Met Gln
                85                  90                  95

Ser Phe Asn Leu Arg Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
            100                 105                 110
```

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Arg Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu
115 120 125

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

Tyr Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln
145 150 155 160

Ser Gly Asn Ser Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser
165 170 175

Thr Tyr Ser Leu Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu
180 185 190

Lys His Lys Val Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser
195 200 205

Pro Val Thr Lys Ser Phe Asn Arg Gly Glu Cys
210 215

<210> 60
<211> 1341
<212> DNA
<213> Mus musculus

<400> 60
gaagtgaacc tggtggagtc tggcggcgga ctggtgcagc ctgggggcag cctgagactg 60

agctgcgcca cctccggctt caccttcacc gacaactaca tgagctgggt gcgccagccc 120

cctggcaagg ccctggaatg gctgggcttc atccggaaca aggccaacgg ctacaccacc 180

gactacagcg ccagcgtgcg gggcagattc accatcagcc gggacaacag ccagagcatc 240

ctgtacctgc agatgaacgc cctgcgggcc gaggacagcg ccacctacta ctgtgcccgg 300

gacgtgggca gcaactactt cgactactgg ggccagggca ccacactgac cgtgtccagc 360

gccagcacca agggcccaag cgtgttcccc ctggcccccc gctccagaag caccagcgag 420

agcacagccg ccctgggctg cctggtgaag gactacttcc ccgagcccgt gaccgtgtcc 480

tggaacagcg gagccctgac cagcggcgtg cacaccttcc ccgccgtgct gcagagcagc 540

ggcctgtaca gcctgagcag cgtggtgacc gtgcccagca gcagcctggg caccaagacc 600

tacacctgta acgtggacca caagcccagc aacaccaagg tggacaagag ggtggagagc 660

aagtacggcc caccctgccc agctgccca gcccccgagt tcctgggcgg acccagcgtg 720

ttcctgttcc ccccaagcc caaggacacc ctgatgatca gcagaacccc cgaggtgacc 780

tgtgtggtgg tggacgtgtc ccaggaggac cccgaggtcc agttcaactg gtacgtggac 840

ggcgtggagg tgcacaacgc caagaccaag cccagagagg agcagtttaa cagcacctac 900

cgggtggtgt ccgtgctgac cgtgctgcac caggactggc tgaacggcaa agagtacaag 960

tgtaaggtct ccaacaaggg cctgccaagc agcatcgaaa agaccatcag caaggccaag 1020

ggccagccta gagagcccca ggtctacacc ctgccaccca gccaagagga gatgaccaag 1080

aaccaggtgt ccctgacctg tctggtgaag ggcttctacc caagcgacat cgccgtggag 1140

tgggagagca acggccagcc cgagaacaac tacaagacca ccccccccagt gctggacagc 1200

gacggcagct tcttcctgta cagcaggctg accgtggaca agtccagatg gcaggagggc 1260

aacgtcttta gctgctccgt gatgcacgag gccctgcaca accactacac ccagaagagc 1320

ctgagcctgt ccctgggctg a 1341

<210> 61
<211> 1341
<212> DNA
<213> Mus musculus

<400> 61
gaagtgaacc tggtggagtc tggcggcgga ctggtgcagc ctgggggcag cctgagactg 60

agctgcgcca cctccggctt caccttcacc gacaactaca tgagctgggt gcgccagccc 120

cctggcaagg ccctggaatg gctgggcttc atccggaaca aggccaacgg ctacaccacc 180

gactacagcg ccagcgtgcg gggcagattc accatcagcc gggacaacag ccagagcatc 240

ctgtacctgc agatgaacgc cctgcgggcc gaggacagcg ccacctacta ctgtgcccgg 300

gacgtgggca gcaactactt cgactactgg ggccagggca ccacactgac cgtgtccagc 360

gccagcacca agggcccaag cgtgttcccc ctggcccccct gctccagaag caccagcgag 420

agcacagccg ccctgggctg cctggtgaag gactacttcc ccgagcccgt gaccgtgtcc 480

tggaacagcg gagccctgac cagcggcgtg cacaccttcc ccgccgtgct gcagagcagc 540

ggcctgtaca gcctgagcag cgtggtgacc gtgcccagca gcagcctggg caccaagacc 600

tacacctgta acgtggacca caagcccagc aacaccaagg tggacaagag ggtggagagc 660

aagtacggcc caccctgccc cccctgccca gcccccgagt tcctgggcgg acccagcgtg 720

ttcctgttcc cccccaagcc caaggacacc ctgatgatca gcagaacccc cgaggtgacc 780

tgtgtggtgg tggacgtgtc ccaggaggac cccgaggtcc agttcaactg gtacgtggac 840

ggcgtggagg tgcacaacgc caagaccaag cccagagagg agcagtttaa cagcacctac 900

cgggtggtgt ccgtgctgac cgtgctgcac caggactggc tgaacggcaa agagtacaag 960

tgtaaggtct ccaacaaggg cctgccaagc agcatcgaaa agaccatcag caaggccaag 1020

ggccagccta gagagcccca ggtctacacc ctgccaccca gccaagagga gatgaccaag 1080

aaccaggtgt ccctgacctg tctggtgaag ggcttctacc caagcgacat cgccgtggag 1140

tgggagagca acggccagcc cgagaacaac tacaagacca ccccccccagt gctggacagc 1200

gacggcagct tcttcctgta cagcaggctg accgtggaca agtccagatg gcaggagggc 1260

aacgtcttta gctgctccgt gatgcacgag gccctgcaca accactacac ccagaagagc 1320

ctgagcctgt ccctgggctg a 1341

<210> 62
<211> 1338

<212> DNA
<213> Mus musculus

<400> 62
gaagtgaacc tggtggagtc tggcggcgga ctggtgcagc ctgggggcag cctgagactg 60

agctgcgcca cctccggctt caccttcacc gacaactaca tgagctgggt gcgccagccc 120

cctggcaagg ccctggaatg gctgggcttc atccggaaca aggccaacgg ctacaccacc 180

gactacagcg ccagcgtgcg gggcagattc accatcagcc gggacaacag ccagagcatc 240

ctgtacctgc agatgaacgc cctgcgggcc gaggacagcg ccacctacta ctgtgcccgg 300

gacgtgggca gcaactactt cgactactgg ggccagggca ccacactgac cgtgtccagc 360

gccagcacca agggcccaag cgtgttcccc ctggcccccc gctccagaag caccagcgag 420

agcacagccg ccctgggctg cctggtgaag gactacttcc ccgagcccgt gaccgtgtcc 480

tggaacagcg gagccctgac cagcggcgtg cacaccttcc ccgccgtgct gcagagcagc 540

ggcctgtaca gcctgagcag cgtggtgacc gtgccaagca gcaacttcgg cacccagacc 600

tacacctgta acgtggacca caagcccagc aacaccaagg tggacaagac cgtggagagg 660

aagtgctgtg tggagtgccc cccctgccca gccccccag tggccggacc cagcgtgttc 720

ctgttccccc ccaagcccaa ggacaccctg atgatcagca gaaccccga ggtgacctgt 780

gtggtggtgg acgtgtccca cgaggacccc gaggtgcagt tcaactggta cgtggacggc 840

gtggaggtgc acaacgccaa gaccaagccc agagaggagc agtttaacag caccttccgg 900

gtggtgtccg tgctgaccgt ggtgcaccag gactggctga acggcaagga gtacaagtgt 960

aaggtctcca acaagggcct gccagccccc atcgaaaaga ccatcagcaa gaccaaggga 1020

cagccaagag agccacaggt ctacaccctg ccccccagca gggaggagat gaccaagaac 1080

caggtgtccc tgacctgtct ggtgaagggc ttctacccaa gcgacatcgc cgtggagtgg 1140

gagagcaacg gccagcccga gaacaactac aagaccaccc ccccaatgct ggacagcgac 1200

ggcagcttct tcctgtacag caagctgaca gtggacaaga gcagatggca gcagggcaac 1260

gtgttcagct gctccgtgat gcacgaggcc ctgcacaacc actacaccca gaagagcctg 1320

agcctgtccc caggctga 1338

<210> 63
<211> 660
<212> DNA
<213> Mus musculus

<400> 63
gacatcgtga tgagccagag ccccagcagc ctggccgtgt ctgccggcga gaaagtgacc 60

atgagctgca agagcagcca gagcctgttc aacagccgga cccggaagaa ctacctggcc 120

tggtatcagc agaagcccgg ccagtccccc aagctgctga tctactgggc cagcgccaga 180

gacagcggcg tgcccgccag attcaccggc agcggcagcg agacatactt caccctgacc 240

atcagccggg tgcaggccga ggatctggcc gtgtactact gcatgcagag cttcaacctg 300

cggacctttg gcggcggaac aaagctggaa atcaagcgta cggtggccgc tcccagcgtg 360

ttcatcttcc ccccaagcga cgagcagctg aagagcggca ccgccagcgt ggtgtgtctg 420

ctgaacaact tctaccccag ggaggccaag gtgcagtgga aggtggacaa cgccctgcag 480

agcggcaaca gccaggagag cgtcaccgag caggacagca aggactccac ctacagcctg 540

agcagcaccc tgaccctgag caaggccgac tacgagaagc acaaggtgta cgcctgtgag 600

gtgacccacc agggcctgtc cagccccgtg accaagagct tcaacagggg cgagtgctga 660

<210> 64
<211> 120
<212> PRT
<213> Mus musculus

<400> 64

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

Ser Leu Arg Leu Ser Cys Thr Ala Ser Gly Phe Thr Phe Thr Asp Asn
20 25 30

Tyr Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
35 40 45

Gly Phe Ile Arg Asn Lys Ala Asn Gly Tyr Thr Thr Glu Tyr Ala Ala
50 55 60

Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Ser Ile
65 70 75 80

Ala Tyr Leu Gln Met Asn Ser Leu Lys Thr Glu Asp Thr Ala Val Tyr
85 90 95

Tyr Cys Ala Arg Asp Val Gly Ser Asn Tyr Phe Asp Tyr Trp Gly Gln
100 105 110

Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 65
<211> 112
<212> PRT
<213> Mus musculus

<400> 65

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

Glu Arg Ala Thr Met Ser Cys Lys Ser Ser Gln Ser Leu Phe Asn Ser
20 25 30

Arg Thr Arg Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln
35 40 45

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

Pro Ala Arg Phe Thr Gly Ser Gly Ser Glu Thr Tyr Phe Thr Leu Thr
65                  70                  75                  80

Ile Ser Arg Val Gln Ala Glu Asp Leu Ala Val Tyr Tyr Cys Met Gln
                85                  90                  95

Ser Phe Asn Leu Arg Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
            100                 105                 110
```

<210> 66
<211> 112
<212> PRT
<213> Mus musculus

<400> 66

```
Asp Ile Val Met Thr Gln Ser Pro Asp Ser Leu Ala Val Ser Leu Gly
1               5                   10                  15

Glu Arg Ala Thr Met Ser Cys Lys Ser Ser Gln Ser Leu Phe Asn Ser
            20                  25                  30

Arg Thr Arg Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln
        35                  40                  45

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

Pro Asp Arg Phe Ser Gly Ser Gly Ser Glu Thr Tyr Phe Thr Leu Thr
65                  70                  75                  80

Ile Ser Arg Val Gln Ala Glu Asp Leu Ala Val Tyr Tyr Cys Met Gln
                85                  90                  95

Ser Phe Asn Leu Arg Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
            100                 105                 110
```

<210> 67
<211> 446
<212> PRT
<213> Mus musculus

<400> 67

```
Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Arg
1               5                   10                  15

Ser Leu Arg Leu Ser Cys Thr Ala Ser Gly Phe Thr Phe Thr Asp Asn
            20                  25                  30
```

```
Tyr Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
        35                  40                  45

Gly Phe Ile Arg Asn Lys Ala Asn Gly Tyr Thr Thr Glu Tyr Ala Ala
    50                  55                  60

Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Ser Ile
65                  70                  75                  80

Ala Tyr Leu Gln Met Asn Ser Leu Lys Thr Glu Asp Thr Ala Val Tyr
                85                  90                  95

Tyr Cys Ala Arg Asp Val Gly Ser Asn Tyr Phe Asp Tyr Trp Gly Gln
            100                 105                 110

Gly Thr Leu Val Thr Val Ser Ser Ala Ser Thr Lys Gly Pro Ser Val
        115                 120                 125

Phe Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala
    130                 135                 140

Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser
145                 150                 155                 160

Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val
                165                 170                 175

Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro
            180                 185                 190

Ser Ser Ser Leu Gly Thr Lys Thr Tyr Thr Cys Asn Val Asp His Lys
        195                 200                 205

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

Pro Cys Pro Ser Cys Pro Ala Pro Glu Phe Leu Gly Gly Pro Ser Val
225                 230                 235                 240

Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr
                245                 250                 255

Pro Glu Val Thr Cys Val Val Val Asp Val Ser Gln Glu Asp Pro Glu
            260                 265                 270

Val Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys
        275                 280                 285

Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Tyr Arg Val Val Ser
    290                 295                 300
```

```
Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys
305                 310                 315                 320

Cys Lys Val Ser Asn Lys Gly Leu Pro Ser Ser Ile Glu Lys Thr Ile
                325                 330                 335

Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro
            340                 345                 350

Pro Ser Gln Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu
        355                 360                 365

Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn
    370                 375                 380

Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser
385                 390                 395                 400

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

Trp Gln Glu Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu
            420                 425                 430

His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Leu Gly
        435                 440                 445
```

<210> 68
<211> 446
<212> PRT
<213> Mus musculus

<400> 68

```
Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Arg
1               5                   10                  15

Ser Leu Arg Leu Ser Cys Thr Ala Ser Gly Phe Thr Phe Thr Asp Asn
            20                  25                  30

Tyr Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
        35                  40                  45

Gly Phe Ile Arg Asn Lys Ala Asn Gly Tyr Thr Thr Glu Tyr Ala Ala
    50                  55                  60

Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Ser Ile
65                  70                  75                  80

Ala Tyr Leu Gln Met Asn Ser Leu Lys Thr Glu Asp Thr Ala Val Tyr
                85                  90                  95

Tyr Cys Ala Arg Asp Val Gly Ser Asn Tyr Phe Asp Tyr Trp Gly Gln
```

100 105 110

Gly Thr Leu Val Thr Val Ser Ser Ala Ser Thr Lys Gly Pro Ser Val
115 120 125

Phe Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala
130 135 140

Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser
145 150 155 160

Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val
165 170 175

Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro
180 185 190

Ser Ser Ser Leu Gly Thr Lys Thr Tyr Thr Cys Asn Val Asp His Lys
195 200 205

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

Pro Cys Pro Pro Cys Pro Ala Pro Glu Phe Leu Gly Gly Pro Ser Val
225 230 235 240

Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr
245 250 255

Pro Glu Val Thr Cys Val Val Val Asp Val Ser Gln Glu Asp Pro Glu
260 265 270

Val Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys
275 280 285

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

Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys
305 310 315 320

Cys Lys Val Ser Asn Lys Gly Leu Pro Ser Ser Ile Glu Lys Thr Ile
325 330 335

Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro
340 345 350

Pro Ser Gln Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu
355 360 365

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

370 375 380

Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser
385 390 395 400

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

Trp Gln Glu Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu
420 425 430

His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Leu Gly
435 440 445

<210> 69
<211> 445
<212> PRT
<213> Mus musculus

<400> 69

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

Ser Leu Arg Leu Ser Cys Thr Ala Ser Gly Phe Thr Phe Thr Asp Asn
20 25 30

Tyr Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
35 40 45

Gly Phe Ile Arg Asn Lys Ala Asn Gly Tyr Thr Thr Glu Tyr Ala Ala
50 55 60

Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Ser Ile
65 70 75 80

Ala Tyr Leu Gln Met Asn Ser Leu Lys Thr Glu Asp Thr Ala Val Tyr
85 90 95

Tyr Cys Ala Arg Asp Val Gly Ser Asn Tyr Phe Asp Tyr Trp Gly Gln
100 105 110

Gly Thr Leu Val Thr Val Ser Ser Ala Ser Thr Lys Gly Pro Ser Val
115 120 125

Phe Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala
130 135 140

Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser
145 150 155 160

Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val
165 170 175

Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro
180 185 190

Ser Ser Asn Phe Gly Thr Gln Thr Tyr Thr Cys Asn Val Asp His Lys
195 200 205

Pro Ser Asn Thr Lys Val Asp Lys Thr Val Glu Arg Lys Cys Cys Val
210 215 220

Glu Cys Pro Pro Cys Pro Ala Pro Pro Val Ala Gly Pro Ser Val Phe
225 230 235 240

Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro
245 250 255

Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val
260 265 270

Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr
275 280 285

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

Leu Thr Val Val His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys
305 310 315 320

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

Lys Thr Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro
340 345 350

Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val
355 360 365

Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly
370 375 380

Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Met Leu Asp Ser Asp
385 390 395 400

Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp
405 410 415

Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His
420 425 430

Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly
435 440 445

<210> 70
<211> 219
<212> PRT
<213> Mus musculus

<400> 70

```
Asp Ile Val Met Thr Gln Ser Pro Ser Ser Leu Ala Val Ser Leu Gly
1               5                  10                  15

Glu Arg Ala Thr Met Ser Cys Lys Ser Ser Gln Ser Leu Phe Asn Ser
            20                  25                  30

Arg Thr Arg Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln
        35                  40                  45

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

Pro Ala Arg Phe Thr Gly Ser Gly Ser Glu Thr Tyr Phe Thr Leu Thr
65                  70                  75                  80

Ile Ser Arg Val Gln Ala Glu Asp Leu Ala Val Tyr Tyr Cys Met Gln
                85                  90                  95

Ser Phe Asn Leu Arg Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
            100                 105                 110

Arg Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu
        115                 120                 125

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

Tyr Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln
145                 150                 155                 160

Ser Gly Asn Ser Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser
                165                 170                 175

Thr Tyr Ser Leu Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu
            180                 185                 190

Lys His Lys Val Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser
        195                 200                 205

Pro Val Thr Lys Ser Phe Asn Arg Gly Glu Cys
    210                 215
```

<210> 71
<211> 219
<212> PRT

<213> Mus musculus

<400> 71

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

Glu Arg Ala Thr Met Ser Cys Lys Ser Ser Gln Ser Leu Phe Asn Ser
            20                  25                  30

Arg Thr Arg Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln
        35                  40                  45

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

Pro Asp Arg Phe Ser Gly Ser Gly Ser Glu Thr Tyr Phe Thr Leu Thr
65                  70                  75                  80

Ile Ser Arg Val Gln Ala Glu Asp Leu Ala Val Tyr Tyr Cys Met Gln
                85                  90                  95

Ser Phe Asn Leu Arg Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
            100                 105                 110

Arg Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu
        115                 120                 125

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

Tyr Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln
145                 150                 155                 160

Ser Gly Asn Ser Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser
                165                 170                 175

Thr Tyr Ser Leu Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu
            180                 185                 190

Lys His Lys Val Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser
        195                 200                 205

Pro Val Thr Lys Ser Phe Asn Arg Gly Glu Cys
    210                 215
```

<210> 72
<211> 360
<212> DNA
<213> Mus musculus

<400> 72
gaggtgcagc tggtggagtc tggcggagga ctggtgcagc ccggcagaag cctgagactg 60

agctgcaccg ccagcggctt caccttcacc gacaactaca tgtcctgggt gcgccaggcc 120

cctggaaagg gcctggaatg ggtgggcttc atccggaaca aggccaacgg ctacaccaca 180

gagtacgccg ccagcgtgaa gggccggttc accatcagcc gggacaacag caagagcatt 240

gcctacctgc agatgaacag cctgaaaacc gaggacaccg ccgtgtacta ctgcgccagg 300

gacgtgggca gcaactactt cgactactgg ggccagggca cactggtgac cgtgtctagc 360

<210> 73
<211> 336
<212> DNA
<213> Mus musculus

<400> 73
gacatcgtga tgacccagag ccccagcagc ctggccgtgt ctctgggcga gcgggccacc 60

atgagctgca agagcagcca gagcctgttc aacagccgga cccggaagaa ctacctggcc 120

tggtatcagc agaagcccgg ccagtccccc aagctgctga tctactgggc cagcgccaga 180

gatagcggcg tgcccgctcg ctttaccggc agcggcagcg agacctactt caccctgacc 240

atcagccggg tgcaggccga ggacctcgcc gtgtactact gcatgcagag cttcaacctg 300

cggaccttcg gccagggcac caaggtggag atcaag 336

<210> 74
<211> 336
<212> DNA
<213> Mus musculus

<400> 74
gacatcgtga tgacccagtc ccccgactcc ctggccgtgt ctctgggcga gcgggccacc 60

atgtcctgca agtcctccca gtccctgttc aactcccgga cccggaagaa ctacctggcc 120

tggtatcagc agaagcccgg ccagcccccc aagctgctga tctactgggc ctctgctaga 180

gactctggcg tgcccgacag attctccggc tccggcagcg agacatactt caccctgacc 240

atctcccggg tgcaggccga ggatctggcc gtgtactact gcatgcagtc cttcaacctg 300

cggaccttcg gccagggcac caaggtggaa atcaag 336

<210> 75
<211> 1341
<212> DNA
<213> Mus musculus

<400> 75
gaggtgcagc tggtggagtc tggcggagga ctggtgcagc ccggcagaag cctgagactg 60

agctgcaccg ccagcggctt caccttcacc gacaactaca tgtcctgggt gcgccaggcc 120

cctggaaagg gcctggaatg ggtgggcttc atccggaaca aggccaacgg ctacaccaca 180

gagtacgccg ccagcgtgaa gggccggttc accatcagcc gggacaacag caagagcatt 240

gcctacctgc agatgaacag cctgaaaacc gaggacaccg ccgtgtacta ctgcgccagg 300

gacgtgggca gcaactactt cgactactgg ggccagggca cactggtgac cgtgtctagc 360

gccagcacca agggcccaag cgtgttcccc ctggcccccct gctccagaag caccagcgag 420

agcacagccg ccctgggctg cctggtgaag gactacttcc ccgagcccgt gaccgtgtcc 480
tggaacagcg gagccctgac cagcggcgtg cacaccttcc ccgccgtgct gcagagcagc 540
ggcctgtaca gcctgagcag cgtggtgacc gtgcccagca gcagcctggg caccaagacc 600
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aagtacggcc caccctgccc agctgccca gccccgagt tcctgggcgg acccagcgtg 720
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aaccaggtgt ccctgacctg tctggtgaag ggcttctacc caagcgacat cgccgtggag 1140
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gacggcagct tcttcctgta cagcaggctg accgtggaca agtccagatg gcaggagggc 1260
aacgtcttta gctgctccgt gatgcacgag gccctgcaca accactacac ccagaagagc 1320
ctgagcctgt ccctgggctg a 1341

<210> 76
<211> 1341
<212> DNA
<213> Mus musculus

<400> 76
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agctgcaccg ccagcggctt caccttcacc gacaactaca tgtcctgggt gcgccaggcc 120
cctggaaagg gcctggaatg ggtgggcttc atccggaaca aggccaacgg ctacaccaca 180
gagtacgccg ccagcgtgaa gggccggttc accatcagcc gggacaacag caagagcatt 240
gcctacctgc agatgaacag cctgaaaacc gaggacaccg ccgtgtacta ctgcgccagg 300
gacgtgggca gcaactactt cgactactgg ggccagggca cactggtgac cgtgtctagc 360
gccagcacca agggcccaag cgtgttcccc ctggcccct gctccagaag caccagcgag 420
agcacagccg ccctgggctg cctggtgaag gactacttcc ccgagcccgt gaccgtgtcc 480
tggaacagcg gagccctgac cagcggcgtg cacaccttcc ccgccgtgct gcagagcagc 540
ggcctgtaca gcctgagcag cgtggtgacc gtgcccagca gcagcctggg caccaagacc 600
tacacctgta acgtggacca caagcccagc aacaccaagg tggacaagag ggtggagagc 660
aagtacggcc caccctgccc ccctgccca gccccgagt tcctgggcgg acccagcgtg 720
ttcctgttcc ccccaagcc caaggacacc ctgatgatca gcagaacccc cgaggtgacc 780
tgtgtggtgg tggacgtgtc ccaggaggac cccgaggtcc agttcaactg gtacgtggac 840

ggcgtggagg tgcacaacgc caagaccaag cccagagagg agcagtttaa cagcacctac 900

cgggtggtgt ccgtgctgac cgtgctgcac caggactggc tgaacggcaa agagtacaag 960

tgtaaggtct ccaacaaggg cctgccaagc agcatcgaaa agaccatcag caaggccaag 1020

ggccagccta gagagcccca ggtctacacc ctgccaccca gccaagagga gatgaccaag 1080

aaccaggtgt ccctgacctg tctggtgaag ggcttctacc caagcgacat cgccgtggag 1140

tgggagagca acggccagcc cgagaacaac tacaagacca ccccccccagt gctggacagc 1200

gacggcagct tcttcctgta cagcaggctg accgtggaca agtccagatg gcaggagggc 1260

aacgtcttta gctgctccgt gatgcacgag gccctgcaca accactacac ccagaagagc 1320

ctgagcctgt ccctgggctg a 1341

<210> 77
<211> 1338
<212> DNA
<213> Mus musculus

<400> 77
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agctgcaccg ccagcggctt caccttcacc gacaactaca tgtcctgggt gcgccaggcc 120

cctggaaagg gcctggaatg ggtgggcttc atccggaaca aggccaacgg ctacaccaca 180

gagtacgccg ccagcgtgaa gggccggttc accatcagcc gggacaacag caagagcatt 240

gcctacctgc agatgaacag cctgaaaacc gaggacaccg ccgtgtacta ctgcgccagg 300

gacgtgggca gcaactactt cgactactgg ggccagggca cactggtgac cgtgtctagc 360

gccagcacca agggcccaag cgtgttcccc ctggcccccct gctccagaag caccagcgag 420

agcacagccg ccctgggctg cctggtgaag gactacttcc ccgagcccgt gaccgtgtcc 480

tggaacagcg gagccctgac cagcggcgtg cacaccttcc ccgccgtgct gcagagcagc 540

ggcctgtaca gcctgagcag cgtggtgacc gtgccaagca gcaacttcgg cacccagacc 600

tacacctgta acgtggacca caagcccagc aacaccaagg tggacaagac cgtggagagg 660

aagtgctgtg tggagtgccc cccctgccca gccccccccag tggccggacc cagcgtgttc 720

ctgttccccc ccaagcccaa ggacaccctg atgatcagca gaaccccccga ggtgacctgt 780

gtggtggtgg acgtgtccca cgaggacccc gaggtgcagt tcaactggta cgtggacggc 840

gtggaggtgc acaacgccaa gaccaagccc agagaggagc agtttaacag caccttccgg 900

gtggtgtccg tgctgaccgt ggtgcaccag gactggctga acggcaagga gtacaagtgt 960

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cagccaagag agccacaggt ctacaccctg ccccccagca gggaggagat gaccaagaac 1080

caggtgtccc tgacctgtct ggtgaagggc ttctacccaa gcgacatcgc cgtggagtgg 1140

gagagcaacg gccagcccga gaacaactac aagaccaccc ccccaatgct ggacagcgac 1200

ggcagcttct tcctgtacag caagctgaca gtggacaaga gcagatggca gcagggcaac 1260

gtgttcagct gctccgtgat gcacgaggcc ctgcacaacc actacaccca gaagagcctg 1320

agcctgtccc caggctga 1338

<210> 78
<211> 660
<212> DNA
<213> Mus musculus

<400> 78
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atgagctgca agagcagcca gagcctgttc aacagccgga cccggaagaa ctacctggcc 120

tggtatcagc agaagcccgg ccagtccccc aagctgctga tctactgggc cagcgccaga 180

gatagcggcg tgcccgctcg ctttaccggc agcggcagcg agacctactt caccctgacc 240

atcagccggg tgcaggccga ggacctcgcc gtgtactact gcatgcagag cttcaacctg 300

cggaccttcg gccagggcac caaggtggag atcaagcgta cggtggccgc tcccagcgtg 360

ttcatcttcc ccccaagcga cgagcagctg aagagcggca ccgccagcgt ggtgtgtctg 420

ctgaacaact tctaccccag ggaggccaag gtgcagtgga aggtggacaa cgccctgcag 480

agcggcaaca gccaggagag cgtcaccgag caggacagca aggactccac ctacagcctg 540

agcagcaccc tgaccctgag caaggccgac tacgagaagc acaaggtgta cgcctgtgag 600

gtgacccacc agggcctgtc agccccgtg accaagagct tcaacagggg cgagtgctga 660

<210> 79
<211> 660
<212> DNA
<213> Mus musculus

<400> 79
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atgtcctgca agtcctccca gtccctgttc aactcccgga cccggaagaa ctacctggcc 120

tggtatcagc agaagcccgg ccagcccccc aagctgctga tctactgggc ctctgctaga 180

gactctggcg tgcccgacag attctccggc tccggcagcg agacatactt caccctgacc 240

atctcccggg tgcaggccga ggatctggcc gtgtactact gcatgcagtc cttcaacctg 300

cggaccttcg gccagggcac caaggtggaa atcaagcgta cggtggccgc tcccagcgtg 360

ttcatcttcc ccccaagcga cgagcagctg aagagcggca ccgccagcgt ggtgtgtctg 420

ctgaacaact tctaccccag ggaggccaag gtgcagtgga aggtggacaa cgccctgcag 480

agcggcaaca gccaggagag cgtcaccgag caggacagca aggactccac ctacagcctg 540

agcagcaccc tgaccctgag caaggccgac tacgagaagc acaaggtgta cgcctgtgag 600

gtgacccacc agggcctgtc agccccgtg accaagagct tcaacagggg cgagtgctga 660

<210> 80
<211> 450
<212> PRT
<213> Mus musculus

<400> 80

```
Glu Val Asn Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
1               5                  10                  15

Ser Leu Arg Leu Ser Cys Ala Thr Ser Gly Phe Thr Phe Thr Asp Asn
            20                  25                  30

Tyr Met Ser Trp Val Arg Gln Pro Pro Gly Lys Ala Leu Glu Trp Leu
        35                  40                  45

Gly Phe Ile Arg Asn Lys Ala Asn Gly Tyr Thr Thr Asp Tyr Ser Ala
    50                  55                  60

Ser Val Arg Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Gln Ser Ile
65                  70                  75                  80

Leu Tyr Leu Gln Met Asn Ala Leu Arg Ala Glu Asp Ser Ala Thr Tyr
                85                  90                  95

Tyr Cys Ala Arg Asp Val Gly Ser Asn Tyr Phe Asp Tyr Trp Gly Gln
            100                 105                 110

Gly Thr Thr Leu Thr Val Ser Ser Ala Ser Thr Lys Gly Pro Ser Val
        115                 120                 125

Phe Pro Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly Gly Thr Ala Ala
    130                 135                 140

Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser
145                 150                 155                 160

Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val
                165                 170                 175

Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro
            180                 185                 190

Ser Ser Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val Asn His Lys
        195                 200                 205

Pro Ser Asn Thr Lys Val Asp Lys Arg Val Glu Pro Lys Ser Cys Asp
    210                 215                 220

Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly
225                 230                 235                 240

Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile
                245                 250                 255

Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu
            260                 265                 270
```

```
Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His
        275                 280                 285

Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg
    290                 295                 300

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

Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu
                325                 330                 335

Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr
            340                 345                 350

Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu
        355                 360                 365

Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp
    370                 375                 380

Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val
385                 390                 395                 400

Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp
                405                 410                 415

Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His
            420                 425                 430

Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro
        435                 440                 445

Gly Lys
    450
```

<210> 81
<211> 1353
<212> DNA
<213> Mus musculus

<400> 81

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gaagtgaacc tggtggagtc tggcggcgga ctggtgcagc ctgggggcag cctgagactg      60

agctgcgcca cctccggctt caccttcacc gacaactaca tgagctgggt gcgccagccc     120

cctggcaagg ccctggaatg gctgggcttc atccggaaca aggccaacgg ctacaccacc     180

gactacagcg ccagcgtgcg gggcagattc accatcagcc gggacaacag ccagagcatc     240

ctgtacctgc agatgaacgc cctgcgggcc gaggacagcg ccacctacta ctgtgcccgg     300

gacgtgggca gcaactactt cgactactgg ggccagggca ccacactgac cgtgtccagc     360

gccagcacca agggcccctc cgtgttcccg ctagccccca gcagcaagag caccagcggc     420
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ggcacagccg ccctgggctg cctggtgaag gactacttcc ccgagcccgt gaccgtgtcc 480

tggaacagcg gagccctgac ctccggcgtg cacaccttcc ccgccgtgct gcagagcagc 540

ggcctgtaca gcctgagcag cgtggtgacc gtgcccagca gcagcctggg cacccagacc 600

tacatctgta acgtgaacca caagcccagc aacaccaagg tggacaagag agtggagccc 660

aagagctgtg acaagaccca cacctgcccc ccctgcccag cccccgagct gctgggcgga 720

cccagcgtgt tcctgttccc ccccaagccc aaggacaccc tgatgatcag cagaaccccc 780

gaggtgacct gtgtggtggt ggacgtgtcc cacgaggacc cagaggtgaa gttcaactgg 840

tacgtggacg gcgtggaggt gcacaacgcc aagaccaagc ccagagagga gcagtacaac 900

agcacctaca gggtggtgtc cgtgctgacc gtgctgcacc aggactggct gaacggcaag 960

gagtacaagt gtaaggtgtc caacaaggcc ctgccagccc caatcgaaaa gaccatcagc 1020

aaggccaagg gccagccaag agagccccag gtgtacaccc tgccacccag cagggaggag 1080

atgaccaaga accaggtgtc cctgacctgt ctggtgaagg gcttctaccc aagcgacatc 1140

gccgtggagt gggagagcaa cggccagccc gagaacaact acaagaccac ccccccagtg 1200

ctggacagcg acggcagctt cttcctgtac agcaagctga ccgtggacaa gagcagatgg 1260

cagcagggca acgtgttcag ctgctccgtg atgcacgagg ccctgcacaa ccactacacc 1320

cagaagagcc tgagcctgtc cccaggcaag tga 1353

<210> 82
<211> 112
<212> PRT
<213> Mus musculus

<400> 82

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

Glu Arg Ala Thr Met Ser Cys Lys Ser Ser Gln Ser Leu Phe Asn Ser
20 25 30

Arg Thr Arg Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln
35 40 45

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

Pro Asp Arg Phe Thr Gly Ser Gly Ser Glu Thr Tyr Phe Thr Leu Thr
65 70 75 80

Ile Ser Arg Val Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys Met Gln
85 90 95

Ser Phe Asn Leu Arg Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
100 105 110

<210> 83
<211> 112
<212> PRT
<213> Mus musculus

<400> 83

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

Glu Arg Ala Thr Met Ser Cys Lys Ser Ser Gln Ser Leu Phe Asn Ser
20 25 30

Arg Thr Arg Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln
35 40 45

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

Pro Asp Arg Phe Thr Gly Ser Gly Ser Glu Thr Tyr Phe Thr Leu Thr
65 70 75 80

Ile Ser Ser Leu Gln Ala Glu Asp Leu Ala Val Tyr Tyr Cys Met Gln
85 90 95

Ser Phe Asn Leu Arg Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
100 105 110

<210> 84
<211> 219
<212> PRT
<213> Mus musculus

<400> 84

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

Glu Arg Ala Thr Met Ser Cys Lys Ser Ser Gln Ser Leu Phe Asn Ser
20 25 30

Arg Thr Arg Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln
35 40 45

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

Pro Asp Arg Phe Thr Gly Ser Gly Ser Glu Thr Tyr Phe Thr Leu Thr
65 70 75 80

Ile Ser Arg Val Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys Met Gln
85 90 95

Ser Phe Asn Leu Arg Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys

100 105 110

Arg Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu
115 120 125

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

Tyr Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln
145 150 155 160

Ser Gly Asn Ser Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser
165 170 175

Thr Tyr Ser Leu Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu
180 185 190

Lys His Lys Val Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser
195 200 205

Pro Val Thr Lys Ser Phe Asn Arg Gly Glu Cys
210 215

<210> 85
<211> 219
<212> PRT
<213> Mus musculus

<400> 85

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

Glu Arg Ala Thr Met Ser Cys Lys Ser Ser Gln Ser Leu Phe Asn Ser
20 25 30

Arg Thr Arg Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln
35 40 45

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

Pro Asp Arg Phe Thr Gly Ser Gly Ser Glu Thr Tyr Phe Thr Leu Thr
65 70 75 80

Ile Ser Ser Leu Gln Ala Glu Asp Leu Ala Val Tyr Tyr Cys Met Gln
85 90 95

Ser Phe Asn Leu Arg Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
100 105 110

Arg Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu
115 120 125

```
Gln Leu Lys Ser Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe
    130                 135                 140

Tyr Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln
145                 150                 155                 160

Ser Gly Asn Ser Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser
                165                 170                 175

Thr Tyr Ser Leu Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu
            180                 185                 190

Lys His Lys Val Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser
        195                 200                 205

Pro Val Thr Lys Ser Phe Asn Arg Gly Glu Cys
    210                 215
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<210> 86
<211> 336
<212> DNA
<213> Mus musculus

<400> 86
gacatcgtga tgacccagtc ccccgactcc ctggccgtgt ctctgggcga gcgggccacc 60

atgtcctgca agtcctccca gtccctgttc aactcccgga cccggaagaa ctacctggcc 120

tggtatcagc agaagcccgg ccagcccccc aagctgctga tctactgggc ctctgctaga 180

gactctggcg tgcccgacag attcaccggc tccggcagcg agacatactt caccctgacc 240

atctcccggg tgcaggccga ggatgtggcc gtgtactact gcatgcagtc cttcaacctg 300

cggaccttcg gccagggcac caaggtggaa atcaag 336

<210> 87
<211> 336
<212> DNA
<213> Mus musculus

<400> 87
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atgtcctgca agtcctccca gtccctgttc aactcccgga cccggaagaa ctacctggcc 120

tggtatcagc agaagcccgg ccagcccccc aagctgctga tctactgggc ctctgctaga 180

gactctggcg tgcccgacag attcaccggc tccggcagcg agacatactt caccctgacc 240

atctccagcc tgcaggccga ggatctggcc gtgtactact gcatgcagtc cttcaacctg 300

cggaccttcg gccagggcac caaggtggaa atcaag 336

<210> 88
<211> 657
<212> DNA
<213> Mus musculus

<400> 88
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atgtcctgca agtcctccca gtccctgttc aactcccgga cccggaagaa ctacctggcc 120

tggtatcagc agaagcccgg ccagcccccc aagctgctga tctactgggc ctctgctaga 180

gactctggcg tgcccgacag attcaccggc tccggcagcg agacatactt caccctgacc 240

atctcccggg tgcaggccga ggatgtggcc gtgtactact gcatgcagtc cttcaacctg 300

cggaccttcg gccagggcac caaggtggaa atcaagcgta cggtggccgc tcccagcgtg 360

ttcatcttcc ccccaagcga cgagcagctg aagagcggca ccgccagcgt ggtgtgtctg 420

ctgaacaact tctaccccag ggaggccaag gtgcagtgga aggtggacaa cgccctgcag 480

agcggcaaca gccaggagag cgtcaccgag caggacagca aggactccac ctacagcctg 540

agcagcaccc tgaccctgag caaggccgac tacgagaagc acaaggtgta cgcctgtgag 600

gtgacccacc agggcctgtc agccccgtg accaagagct tcaacagggg cgagtgc 657

<210> 89
<211> 657
<212> DNA
<213> Mus musculus

<400> 89
gacatcgtga tgacccagtc ccccgactcc ctggccgtgt ctctgggcga gcgggccacc 60

atgtcctgca agtcctccca gtccctgttc aactcccgga cccggaagaa ctacctggcc 120

tggtatcagc agaagcccgg ccagcccccc aagctgctga tctactgggc ctctgctaga 180

gactctggcg tgcccgacag attcaccggc tccggcagcg agacatactt caccctgacc 240

atctccagcc tgcaggccga ggatctggcc gtgtactact gcatgcagtc cttcaacctg 300

cggaccttcg gccagggcac caaggtggaa atcaagcgta cggtggccgc tcccagcgtg 360

ttcatcttcc ccccaagcga cgagcagctg aagagcggca ccgccagcgt ggtgtgtctg 420

ctgaacaact tctaccccag ggaggccaag gtgcagtgga aggtggacaa cgccctgcag 480

agcggcaaca gccaggagag cgtcaccgag caggacagca aggactccac ctacagcctg 540

agcagcaccc tgaccctgag caaggccgac tacgagaagc acaaggtgta cgcctgtgag 600

gtgacccacc agggcctgtc agccccgtg accaagagct tcaacagggg cgagtgc 657

<210> 90
<211> 120
<212> PRT
<213> Mus musculus

<400> 90

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

Ser Leu Arg Leu Ser Cys Thr Ala Ser Gly Phe Thr Phe Thr Asp Asn
20 25 30

```
Tyr Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
        35                  40                  45

Gly Phe Ile Arg Asn Lys Ala Asn Gly Tyr Thr Thr Glu Tyr Ala Ala
    50                  55                  60

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

Ala Tyr Leu Gln Met Asn Ser Leu Lys Thr Glu Asp Thr Ala Val Tyr
                85                  90                  95

Tyr Cys Ala Arg Asp Val Gly Ser Asn Tyr Phe Asp Tyr Trp Gly Gln
            100                 105                 110

Gly Thr Leu Val Thr Val Ser Ser
        115                 120
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<210> 91
<211> 360
<212> DNA
<213> Mus musculus

<400> 91
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agctgcaccg ccagcggctt caccttcacc gacaactaca tgtcctgggt gcgccaggcc 120

cctggaaagg gcctggaatg ggtgggcttc atccggaaca aggccaacgg ctacaccaca 180

gagtacgccg ccagcgtgaa gggccggttc accatcagcc gggacgacag caagagcatt 240

gcctacctgc agatgaacag cctgaaaacc gaggacaccg ccgtgtacta ctgcgccagg 300

gacgtgggca gcaactactt cgactactgg ggccagggca cactggtgac cgtgtctagc 360

<210> 92
<211> 450
<212> PRT
<213> Mus musculus

<400> 92

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

Ser Leu Arg Leu Ser Cys Thr Ala Ser Gly Phe Thr Phe Thr Asp Asn
            20                  25                  30

Tyr Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
        35                  40                  45

Gly Phe Ile Arg Asn Lys Ala Asn Gly Tyr Thr Thr Glu Tyr Ala Ala
    50                  55                  60

Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asp Ser Lys Ser Ile
```

65 70 75 80

Ala Tyr Leu Gln Met Asn Ser Leu Lys Thr Glu Asp Thr Ala Val Tyr
85 90 95

Tyr Cys Ala Arg Asp Val Gly Ser Asn Tyr Phe Asp Tyr Trp Gly Gln
100 105 110

Gly Thr Leu Val Thr Val Ser Ser Ala Ser Thr Lys Gly Pro Ser Val
115 120 125

Phe Pro Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly Gly Thr Ala Ala
130 135 140

Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser
145 150 155 160

Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val
165 170 175

Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro
180 185 190

Ser Ser Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val Asn His Lys
195 200 205

Pro Ser Asn Thr Lys Val Asp Lys Arg Val Glu Pro Lys Ser Cys Asp
210 215 220

Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly
225 230 235 240

Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile
245 250 255

Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu
260 265 270

Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His
275 280 285

Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg
290 295 300

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

Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu
325 330 335

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

340 345 350

Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu
355 360 365

Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp
370 375 380

Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val
385 390 395 400

Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp
405 410 415

Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His
420 425 430

Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro
435 440 445

Gly Lys
450

<210> 93
<211> 1350
<212> DNA
<213> Mus musculus

<400> 93
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agctgcaccg ccagcggctt caccttcacc gacaactaca tgtcctgggt gcgccaggcc 120

cctggaaagg gcctggaatg ggtgggcttc atccggaaca aggccaacgg ctacaccaca 180

gagtacgccg ccagcgtgaa gggccggttc accatcagcc gggacgacag caagagcatt 240

gcctacctgc agatgaacag cctgaaaacc gaggacaccg ccgtgtacta ctgcgccagg 300

gacgtgggca gcaactactt cgactactgg ggccagggca cactggtgac cgtgtctagc 360

gccagcacaa agggcccaag cgtgttcccg ctagccccca gcagcaagag caccagcggc 420

ggcacagccg ccctgggctg cctggtgaag gactacttcc ccgagcccgt gaccgtgtcc 480

tggaacagcg gagccctgac ctccggcgtg cacaccttcc ccgccgtgct gcagagcagc 540

ggcctgtaca gcctgagcag cgtggtgacc gtgcccagca gcagcctggg cacccagacc 600

tacatctgta acgtgaacca caagcccagc aacaccaagg tggacaagag agtggagccc 660

aagagctgtg acaagaccca cacctgcccc ccctgcccag cccccgagct gctgggcgga 720

cccagcgtgt tcctgttccc ccccaagccc aaggacaccc tgatgatcag cagaacccca 780

gaggtgacct gtgtggtggt ggacgtgtcc cacgaggacc cagaggtgaa gttcaactgg 840

tacgtggacg gcgtggaggt gcacaacgcc aagaccaagc ccagagagga gcagtacaac 900

agcacctaca gggtggtgtc cgtgctgacc gtgctgcacc aggactggct gaacggcaag 960

gagtacaagt gtaaggtgtc caacaaggcc ctgccagccc caatcgaaaa gaccatcagc 1020

aaggccaagg gccagccaag agagccccag gtgtacaccc tgccacccag cagggaggag 1080

atgaccaaga accaggtgtc cctgacctgt ctggtgaagg gcttctaccc aagcgacatc 1140

gccgtggagt gggagagcaa cggccagccc gagaacaact acaagaccac cccccagtg 1200

ctggacagcg acggcagctt cttcctgtac agcaagctga ccgtggacaa gagcagatgg 1260

cagcagggca acgtgttcag ctgctccgtg atgcacgagg ccctgcacaa ccactacacc 1320

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