

SEQUENCE LISTING

<110> TRIUMVIRA IMMUNOLOGICS USA, INC.

<120> CLAUDIN 18.2 T CELL-ANTIGEN COUPLERS AND USES THEREOF

<130> TMV-006W0

<150> US 63/202,211

<151> 2021-06-01

<150> US 63/263,809

<151> 2021-11-09

<150> US 63/362,594

<151> 2022-04-06

<160> 75

<170> PatentIn version 3.5

<210> 1

<211> 1542

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 1

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ctgtcttgctg ccgccagcgg cagcatcttc aatatccccg tgatgggctg gtacagacag	180
gcccctggaa agcagagaga gctggttgcc ggaatctcta ccggcggcac cacaaattac	240
ggcgacagcg tgaagggcag attcaccatc agccgggaca acgccaagaa caccgtgtac	300
ctgcagatga acagcctgaa gcctgaggac accgccgtgt actactgcaa tgtgctggtg	360
gtgtctggca tcggcagcac actggaagtt tggggccagg gcacactggt cacagtgtct	420
agcgagcaga agctgatctc cgaggaagat ctgaatccag gcggaggcgg aggaagtggc	480
ggcggaggta gcggaggtgg tggaagcggg ggcggcggat ctggatctat ggatatccag	540
atgacccagt ccccgagctc cctgtccgcc tctgtgggcg atagggtcac catcacctgc	600
cgtgccagtc aggacatccg taattatctg aactggatatc aacagaaacc aggaaaagct	660
ccgaaactac tgatttacta tacctccgcg ctggagtctg gagtcccttc tcgcttctct	720

ggttctggtt ctgggacgga ttacactctg accatcagca gtctgcaacc ggaagacttc 780
gcaacttatt actgtcagca aggtaatact ctgccgtgga cgttcggaca gggcaccaag 840
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gttcagctgg tggagtctgg cggtaggcctg gtgcagccag ggggctcact ccgtttgtcc 960
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ggtaagggcc tggaatgggt tgcactgatt aatccttata aaggtgttag tacctacaac 1080
cagaagttca aggaccgttt cactataagc gtagataaat ccaaaaacac agcctacctg 1140
caaatgaaca gcctgcgtgc tgaggacact gccgtctatt attgtgctag aagcggatac 1200
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tcgacatcag gtgggtggcgg atctctggaa tctggccagg tgctgctgga atccaacatc 1320
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gttgccggcc tgctgctggt tatcggcctg ggcattcttct tttgcgtgcg gtgcagacat 1440
cggcggagac aggctgagag aatgagccag atcaagcggc tgctgagcga gaagaaaacc 1500
tgtcagtgcc ctcaccgggt ccagaaaaca tgcagcccca tc 1542

<210> 2
<211> 18
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 2

Met Asp Phe Gln Val Gln Ile Phe Ser Phe Leu Leu Ile Ser Ala Ser
1 5 10 15

Val Ile

<210> 3
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 3
gaacagaaac tgattagcga agaagacctg 30

<210> 4
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 4

Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu
1 5 10

<210> 5
<211> 75
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 5
aaccccggggg gaggaggagg gagcggggga ggaggcagcg gcgggggagg ctctggagga 60

ggagggagcg gatcc 75

<210> 6
<211> 25
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 6

Asn Pro Gly Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly
1 5 10 15

Gly Ser Gly Gly Gly Gly Ser Gly Ser
20 25

<210> 7
<211> 750
<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic polynucleotide

<400> 7

atggacatcc agatgactca gaccacaagc tccctgtctg caagtctggg cgaccgggtg	60
acaatctcct gcagagcctc tcaggatatt aggaactacc tgaattggta tcagcagaaa	120
cctgatggca cagtcaagct gctgatctac tataccagcc ggctgcactc aggcgtgcca	180
agcaaattct caggaagcgg ctccgggact gactactccc tgaccatctc taacctggag	240
caggaagata ttgctaccta tttctgccag cagggaata cactgccctg gacttttgcc	300
ggaggcacca aactggagat caagggggga ggcgggagtg gaggcggggg atcaggagga	360
ggaggcagcg gaggaggagg gtccgaggtc cagctgcagc agagcggacc agaactggtg	420
aagcccggag caagtatgaa aatctcctgt aaggcctcag gatacagctt caccggctat	480
acaatgaact gggtgaaaca gtcccatggc aagaacctgg aatggatggg gctgattaat	540
ccttaciaaag gcgtcagcac ctataatcag aagtttaaag acaaggccac actgactgtg	600
gataagtcta gttcaaccgc ttacatggag ctgctgtccc tgacatctga agacagtgcc	660
gtgtactatt gtgctcggtc tggctactat ggggacagtg attggtactt cgatgtctgg	720
ggacagggca ctaccctgac cgtgttttct	750

<210> 8

<211> 250

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic polypeptide

<400> 8

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

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

Tyr	Leu	Asn	Trp	Tyr	Gln	Gln	Lys	Pro	Asp	Gly	Thr	Val	Lys	Leu	Leu
		35					40					45			

Ile Tyr Tyr Thr Ser Arg Leu His Ser Gly Val Pro Ser Lys Phe Ser
50 55 60

Gly Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu
65 70 75 80

Gln Glu Asp Ile Ala Thr Tyr Phe Cys Gln Gln Gly Asn Thr Leu Pro
85 90 95

Trp Thr Phe Ala Gly Gly Thr Lys Leu Glu Ile Lys Gly Gly Gly Gly
100 105 110

Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
115 120 125

Glu Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Lys Pro Gly Ala
130 135 140

Ser Met Lys Ile Ser Cys Lys Ala Ser Gly Tyr Ser Phe Thr Gly Tyr
145 150 155 160

Thr Met Asn Trp Val Lys Gln Ser His Gly Lys Asn Leu Glu Trp Met
165 170 175

Gly Leu Ile Asn Pro Tyr Lys Gly Val Ser Thr Tyr Asn Gln Lys Phe
180 185 190

Lys Asp Lys Ala Thr Leu Thr Val Asp Lys Ser Ser Ser Thr Ala Tyr
195 200 205

Met Glu Leu Leu Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
210 215 220

Ala Arg Ser Gly Tyr Tyr Gly Asp Ser Asp Trp Tyr Phe Asp Val Trp
225 230 235 240

Gly Gln Gly Thr Thr Leu Thr Val Phe Ser
245 250

<211> 27
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic oligonucleotide

 <400> 9
 actagtggcg gaggaggatc actcgag 27

<210> 10
 <211> 9
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic peptide

 <400> 10

Thr Ser Gly Gly Gly Gly Ser Leu Glu
 1 5

<210> 11
 <211> 252
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic polynucleotide

 <400> 11
 agcggacagg tgctgctgga atccaatatc aaagtcctgc ccacttggtc taccgccgtg 60
 cagcctatgg ctctgattgt gctgggagga gtcgcaggac tgctgctgtt tatcgggctg 120
 ggaattttct tttgcgtgcg ctgccggcac cggagaaggc aggccgagcg catgagccag 180
 atcaagcgac tgctgagcga gaagaaaacc tgtcagtgctc cccatagatt ccagaagacc 240
 tgttcaccca tt 252

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

 <220>
 <223> Description of Artificial Sequence: Synthetic polypeptide

 <400> 12

Ser Gly Gln Val Leu Leu Glu Ser Asn Ile Lys Val Leu Pro Thr Trp
1 5 10 15

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

Gly Leu Leu Leu Phe Ile Gly Leu Gly Ile Phe Phe Cys Val Arg Cys
35 40 45

Arg His Arg Arg Arg Gln Ala Glu Arg Met Ser Gln Ile Lys Arg Leu
50 55 60

Leu Ser Glu Lys Lys Thr Cys Gln Cys Pro His Arg Phe Gln Lys Thr
65 70 75 80

Cys Ser Pro Ile

<210> 13
<211> 66
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 13
agcggacagg tgctgctgga atccaatatc aaagtcctgc ccacttggtc taccgccgtg 60
cagcct 66

<210> 14
<211> 22
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 14
Ser Gly Gln Val Leu Leu Glu Ser Asn Ile Lys Val Leu Pro Thr Trp
1 5 10 15

Ser Thr Pro Val Gln Pro

<210> 15
 <211> 769
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic polynucleotide

<400> 15
 atggccgaca tcgtgctgac acagagcccc gccatcatgt ctgccagccc tggcgagaaa 60
 gtgaccatga cctgtagcgc cagcagcagc gtgtcctaca tgaactggta tcagcagaag 120
 tccggcacca gcccgaagcg gtggatctac gacacaagca agctggcctc tggcgtgccc 180
 gcccacttta gaggctctgg cagcggcaca agctacagcc tgaccatcag cggcatggaa 240
 gccgaggatg ccgccaccta ctactgccag cagtgggtcca gcaaccctt cacctttggc 300
 tccggcacia agctggaaat caaccgggcc gacaccgccc ctacaggcgg cggaggatct 360
 ggcgaggcgg gatctggggg cggaggaagt ggggggggag gatctatggc tcaggtgcag 420
 ctgcagcagt ctggcgccga actggctaga cctggcgcct ccgtgaagat gagctgcaag 480
 gccagcggct acaccttcac ccggtacacc atgcactggg tcaagcagag gcctggacag 540
 ggcttggaaat ggatcggcta catcaacccc agccggggct acaccaacta caaccagaag 600
 ttcaaggaca aggccaccct gaccaccgac aagagcagca gcaccgccta catgcagctg 660
 tcctccctga ccagcgagga cagcgccgtg tactactgcg cccggtacta cgacgaccac 720
 tactccctgg actactgggg ccagggcacc aactgaccg tgtctagta 769

<210> 16
 <211> 256
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic polypeptide

<400> 16

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

Pro Gly Glu Lys Val Thr Met Thr Cys Ser Ala Ser Ser Ser Val Ser

20

25

30

Tyr Met Asn Trp Tyr Gln Gln Lys Ser Gly Thr Ser Pro Lys Arg Trp
 35 40 45

Ile Tyr Asp Thr Ser Lys Leu Ala Ser Gly Val Pro Ala His Phe Arg
 50 55 60

Gly Ser Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Ser Gly Met Glu
 65 70 75 80

Ala Glu Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Trp Ser Ser Asn Pro
 85 90 95

Phe Thr Phe Gly Ser Gly Thr Lys Leu Glu Ile Asn Arg Ala Asp Thr
 100 105 110

Ala Pro Thr Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly
 115 120 125

Gly Ser Gly Gly Gly Gly Ser Met Ala Gln Val Gln Leu Gln Gln Ser
 130 135 140

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

Ala Ser Gly Tyr Thr Phe Thr Arg Tyr Thr Met His Trp Val Lys Gln
 165 170 175

Arg Pro Gly Gln Gly Leu Glu Trp Ile Gly Tyr Ile Asn Pro Ser Arg
 180 185 190

Gly Tyr Thr Asn Tyr Asn Gln Lys Phe Lys Asp Lys Ala Thr Leu Thr
 195 200 205

Thr Asp Lys Ser Ser Ser Thr Ala Tyr Met Gln Leu Ser Ser Leu Thr
 210 215 220

Ser Glu Asp Ser Ala Val Tyr Tyr Cys Ala Arg Tyr Tyr Asp Asp His
 225 230 235 240

Tyr Ser Leu Asp Tyr Trp Gly Gln Gly Thr Thr Leu Thr Val Ser Ser
245 250 255

<210> 17
<211> 747
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polynucleotide

<400> 17
cagaccgtgg tgaccagga gcccagcctg accgtgagcc ccggcggcac cgtgaccctg 60
acctgctggca gcagcaccgg cgccgtgacc agcggctact accccaactg ggtgcagcag 120
aagcccggcc aggccccag gggcctgata ggcggcacca agttcctggc ccccggcacc 180
cccgccaggt tcagcggcag cctgctgggc ggcaaggccg ccctgaccct gagcggcgtg 240
cagcccagg acgaggccga gtactactgc gccctgtggt acagcaacag gtgggtgttc 300
ggcggcggca ccaagctgac cgtgctgggc ggcggcggca gcggcggcgg cggcagcggc 360
ggcggcggca gcgaggtgca gctgctggag agcggcggcg gcctggtgca gcccggcggc 420
agcctgaagc tgagctgcgc cgccagcggc ttcaccttca acatctacgc catgaactgg 480
gtgaggcagg cccccggcaa gggcctggag tgggtggcca ggatcaggag caagtacaac 540
aactacgcca cctactacgc cgacagcgtg aagagcaggt tcaccatcag cagggacgac 600
agcaagaaca ccgcctacct gcagatgaac aacctgaaga ccgaggacac cgccgtgtac 660
tactgctga ggcacggcaa cttcggcaac agctacgtga gcttcttcgc ctactggggc 720
cagggcaccc tggtgaccgt gagcagc 747

<210> 18
<211> 249
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polypeptide

<400> 18

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

Thr Val Thr Leu Thr Cys Gly Ser Ser Thr Gly Ala Val Thr Ser Gly
20 25 30

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

Leu Ile Gly Gly Thr Lys Phe Leu Ala Pro Gly Thr Pro Ala Arg Phe
50 55 60

Ser Gly Ser Leu Leu Gly Gly Lys Ala Ala Leu Thr Leu Ser Gly Val
65 70 75 80

Gln Pro Glu Asp Glu Ala Glu Tyr Tyr Cys Ala Leu Trp Tyr Ser Asn
85 90 95

Arg Trp Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly Gly Gly
100 105 110

Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Glu Val Gln Leu
115 120 125

Leu Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly Ser Leu Lys Leu
130 135 140

Ser Cys Ala Ala Ser Gly Phe Thr Phe Asn Ile Tyr Ala Met Asn Trp
145 150 155 160

Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val Ala Arg Ile Arg
165 170 175

Ser Lys Tyr Asn Asn Tyr Ala Thr Tyr Tyr Ala Asp Ser Val Lys Ser
180 185 190

Arg Phe Thr Ile Ser Arg Asp Asp Ser Lys Asn Thr Ala Tyr Leu Gln
195 200 205

Met Asn Asn Leu Lys Thr Glu Asp Thr Ala Val Tyr Tyr Cys Val Arg
210 215 220

His Gly Asn Phe Gly Asn Ser Tyr Val Ser Phe Phe Ala Tyr Trp Gly

225

230

235

240

Gln Gly Thr Leu Val Thr Val Ser Ser
245

<210> 19

<211> 720

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic polynucleotide

<400> 19

gacatccagc tgaccagag ccccgccatc atgagcgcca gccccggcga gaaggtgacc 60

atgacctgca gggccagcag cagcgtgagc tacatgaact ggtaccagca gaagagcggc 120

accagcccca agaggtggat ctacgacacc agcaaggtgg ccagcggcgt gccctacagg 180

ttcagcggca gcggcagcgg caccagctac agcctgacca tcagcagcat ggaggccgag 240

gacgccgcca cctactactg ccagcagtgg agcagcaacc ccctgacctt cggcgccggc 300

accaagctgg agctgaaggg cggcgggcggc agcggcgggc gcggcagcgg cggcgggcggc 360

agcgacatca agctgcagca gagcggcgcc gagctggcca ggcccggcgc cagcgtgaag 420

atgagctgca agaccagcgg ctacaccttc accaggtaca ccatgcactg ggtgaagcag 480

aggcccggcc agggcctgga gtggatcggc tacatcaacc ccagcagggg ctacaccaac 540

tacaaccaga agttcaagga caaggccacc ctgaccaccg acaagagcag cagcaccgcc 600

tacatgcagc tgagcagcct gaccagcag gacagcgccg tgtactactg cgccaggtac 660

tacgacgacc actactgcct ggactactgg ggccagggca ccaccctgac cgtgagcagc 720

<210> 20

<211> 240

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic polypeptide

<400> 20

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

Glu Lys Val Thr Met Thr Cys Arg Ala Ser Ser Ser Val Ser Tyr Met
20 25 30

Asn Trp Tyr Gln Gln Lys Ser Gly Thr Ser Pro Lys Arg Trp Ile Tyr
35 40 45

Asp Thr Ser Lys Val Ala Ser Gly Val Pro Tyr Arg Phe Ser Gly Ser
50 55 60

Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Ser Ser Met Glu Ala Glu
65 70 75 80

Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Trp Ser Ser Asn Pro Leu Thr
85 90 95

Phe Gly Ala Gly Thr Lys Leu Glu Leu Lys Gly Gly Gly Gly Ser Gly
100 105 110

Gly Gly Gly Ser Gly Gly Gly Gly Ser Asp Ile Lys Leu Gln Gln Ser
115 120 125

Gly Ala Glu Leu Ala Arg Pro Gly Ala Ser Val Lys Met Ser Cys Lys
130 135 140

Thr Ser Gly Tyr Thr Phe Thr Arg Tyr Thr Met His Trp Val Lys Gln
145 150 155 160

Arg Pro Gly Gln Gly Leu Glu Trp Ile Gly Tyr Ile Asn Pro Ser Arg
165 170 175

Gly Tyr Thr Asn Tyr Asn Gln Lys Phe Lys Asp Lys Ala Thr Leu Thr
180 185 190

Thr Asp Lys Ser Ser Ser Thr Ala Tyr Met Gln Leu Ser Ser Leu Thr
195 200 205

Ser Glu Asp Ser Ala Val Tyr Tyr Cys Ala Arg Tyr Tyr Asp Asp His
210 215 220

Tyr Cys Leu Asp Tyr Trp Gly Gln Gly Thr Thr Leu Thr Val Ser Ser

225

230

235

240

<210> 21

<211> 51

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 21

gccgaagcag cagcaaagga ggccgcagcg aaggaagcag ctgcgaaggc c

51

<210> 22

<211> 17

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 22

Ala Glu Ala Ala Ala Lys Glu Ala Ala Ala Lys Glu Ala Ala Ala Lys

1

5

10

15

Ala

<210> 23

<211> 81

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 23

gccgaggcag ctgcaaagga agctgcggcg aaggaggccg cagcgaaaga agcagcggca

60

aaagaagcag ccgccaaagc c

81

<210> 24

<211> 27

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 24

Ala Glu Ala Ala Ala Lys Glu Ala Ala Ala Lys Glu Ala Ala Ala Lys
1 5 10 15

Glu Ala Ala Ala Lys Glu Ala Ala Ala Lys Ala
20 25

<210> 25

<211> 576

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic polynucleotide

<400> 25

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atcgtagtgt tggcatttca aaaagcgtct agcatcgtct ataagaagga aggtgaacaa      60
gtcgagtttt ctttccccct tgcattttacg gtggaaaagc ttacgggtag cggcgagctg      120
tggtggcaag ctgaacgggc ttcaagctca aaatcttgga ttacttttga cttgaagaac      180
aaagaggtga gtgtcaaaag agttactcag gacccaaagc ttcaaattggg gaagaaactt      240
ccgctgcacc tgacgttgcc tcaggccctg cctcaatatg ccggctcagg caatctgacc      300
ctcgcgctgg aagctaagac cggaaaattg caccaggaag tcaatttggt tgtgatgcgc      360
gccactcagc tccaaaaaaa tctcacttgc gaggtatggg ggcctacgag cccaaaactt      420
atgctgtctt tgaagcttga aaacaaggaa gcgaaagttt ctaagcgcgga gaaagcggta      480
tggtgttttga atcctgaggc tggaatgtgg caatgcctcc tgagcgatag cgggcaggtg      540
ctgttggaga gcaacatcaa ggtttttgcca gcagcc                                576
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<210> 26

<211> 192

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic polypeptide

<400> 26

Ile Val Val Leu Ala Phe Gln Lys Ala Ser Ser Ile Val Tyr Lys Lys
1 5 10 15

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

Lys Leu Thr Gly Ser Gly Glu Leu Trp Trp Gln Ala Glu Arg Ala Ser
35 40 45

Ser Ser Lys Ser Trp Ile Thr Phe Asp Leu Lys Asn Lys Glu Val Ser
50 55 60

Val Lys Arg Val Thr Gln Asp Pro Lys Leu Gln Met Gly Lys Lys Leu
65 70 75 80

Pro Leu His Leu Thr Leu Pro Gln Ala Leu Pro Gln Tyr Ala Gly Ser
85 90 95

Gly Asn Leu Thr Leu Ala Leu Glu Ala Lys Thr Gly Lys Leu His Gln
100 105 110

Glu Val Asn Leu Val Val Met Arg Ala Thr Gln Leu Gln Lys Asn Leu
115 120 125

Thr Cys Glu Val Trp Gly Pro Thr Ser Pro Lys Leu Met Leu Ser Leu
130 135 140

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

Trp Val Leu Asn Pro Glu Ala Gly Met Trp Gln Cys Leu Leu Ser Asp
165 170 175

Ser Gly Gln Val Leu Leu Glu Ser Asn Ile Lys Val Leu Pro Ala Ala
180 185 190

<210> 27

<211> 237

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic polynucleotide

<400> 27

ctcgagctga ggcccgaggc ttctagacct gctgccggcg gagccgtgca caccagaggc	60
ctggacttcg ccagcgacat ctacatctgg gccctctgg ccggcacctg tggcgtgctg	120
ctgctgagcc tggatcatcac cctgtactgc aaccaccgga accggcggag agtgtgcaag	180
tgccccagac ccgtggtcaa gagcggcgac aagcccagcc tgagcgccag atacgtg	237

<210> 28
 <211> 79
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic polypeptide

<400> 28

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

His	Thr	Arg	Gly	Leu	Asp	Phe	Ala	Ser	Asp	Ile	Tyr	Ile	Trp	Ala	Pro
			20					25					30		

Leu	Ala	Gly	Thr	Cys	Gly	Val	Leu	Leu	Leu	Ser	Leu	Val	Ile	Thr	Leu
		35					40					45			

Tyr	Cys	Asn	His	Arg	Asn	Arg	Arg	Arg	Val	Cys	Lys	Cys	Pro	Arg	Pro
	50					55					60				

Val	Val	Lys	Ser	Gly	Asp	Lys	Pro	Ser	Leu	Ser	Ala	Arg	Tyr	Val
65					70				75					

<210> 29
 <211> 234
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic polynucleotide

<400> 29

ctcgagctga ggcccgaggc ttctagacct gctgccggcg gagccgtgca caccagaggc	60
ctggacttcg ccagcgacat ctacatctgg gccctctgg ccggcacctg tggcgtgctg	120
ctgctgagcc tggatcatcac cctgtacctg tgctgcagac ggcggagagt gtgcaagtgc	180

cccagacccg tggtaagag cggcgacaag cccagcctga gcgccagata cgtg 234

<210> 30
<211> 78
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polypeptide

<400> 30

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

His Thr Arg Gly Leu Asp Phe Ala Ser Asp Ile Tyr Ile Trp Ala Pro
20 25 30

Leu Ala Gly Thr Cys Gly Val Leu Leu Leu Ser Leu Val Ile Thr Leu
35 40 45

Tyr Leu Cys Cys Arg Arg Arg Arg Val Cys Lys Cys Pro Arg Pro Val
50 55 60

Val Lys Ser Gly Asp Lys Pro Ser Leu Ser Ala Arg Tyr Val
65 70 75

<210> 31
<211> 213
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polynucleotide

<400> 31

ctcgagaaga agtccaccct gaagaaacgg gtgtcccggc tgcccagacc cgagacacag 60

aagggccccc tgagcagccc tatcaccctg ggactgctgg tggccggcgt gctggtgctg 120

ctggtgtctc tgggagtggc catccacctg tgctgccggc ggagaagggc ctgcaagtgc 180

cccagactgc ggttcataaa gcagttctac aag 213

<210> 32
<211> 71
<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic polypeptide

<400> 32

Leu Glu Lys Lys Ser Thr Leu Lys Lys Arg Val Ser Arg Leu Pro Arg
1 5 10 15

Pro Glu Thr Gln Lys Gly Pro Leu Ser Ser Pro Ile Thr Leu Gly Leu
20 25 30

Leu Val Ala Gly Val Leu Val Leu Leu Val Ser Leu Gly Val Ala Ile
35 40 45

His Leu Cys Cys Arg Arg Arg Arg Ala Cys Lys Cys Pro Arg Leu Arg
50 55 60

Phe Met Lys Gln Phe Tyr Lys
65 70

<210> 33

<211> 735

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic polynucleotide

<400> 33

atggatatcc agatgaccca gtccccgagc tccctgtccg cctctgtggg cgatagggtc	60
accatcacct gccgtgccag tcaggacatc cgtaattatc tgaactggta tcaacagaaa	120
ccaggaaaag ctccgaaact actgatttac tatacctccc gcctggagtc tggagtcctt	180
tctcgcttct ctggttctgg ttctgggacg gattacactc tgaccatcag cagtctgcaa	240
ccggaagact tcgcaactta ttactgtcag caaggtata ctctgccgtg gacgttcgga	300
cagggcacca aggtggagat caaaggcggc ggcggaagtg gaggaggagg ctcaggcgga	360
ggagggagcg aggttcagct ggtggagtct ggcggtggcc tgggtgcagcc agggggctca	420
ctccgtttgt cctgtgcagc ttctggctac tcctttaccg gctacactat gaactgggtg	480
cgtcaggccc caggttaagg cctggaatgg gttgcactga ttaatcctta taaaggtgtt	540

agtacctaca accagaagtt caaggaccgt ttcactataa gcgtagataa atccaaaaac 600
 acagcctacc tgcaaatgaa cagcctgcgt gctgaggaca ctgccgtcta ttattgtgct 660
 agaagcggat actacggcga tagtgactgg tattttgacg tgtgggggtca aggaaccctg 720
 gtcaccgtct cctcg 735

<210> 34
 <211> 245
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic polypeptide
 <400> 34

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

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

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

Ile Tyr Tyr Thr Ser Arg Leu Glu Ser Gly Val Pro Ser Arg Phe Ser
 50 55 60

Gly Ser Gly Ser Gly Thr Asp Tyr Thr Leu Thr Ile Ser Ser Leu Gln
 65 70 75 80

Pro Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Gly Asn Thr Leu Pro
 85 90 95

Trp Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Gly Gly Gly Gly
 100 105 110

Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Glu Val Gln Leu Val
 115 120 125

Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser
 130 135 140

Cys Ala Ala Ser Gly Tyr Ser Phe Thr Gly Tyr Thr Met Asn Trp Val
145 150 155 160

Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val Ala Leu Ile Asn Pro
165 170 175

Tyr Lys Gly Val Ser Thr Tyr Asn Gln Lys Phe Lys Asp Arg Phe Thr
180 185 190

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

Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys Ala Arg Ser Gly Tyr
210 215 220

Tyr Gly Asp Ser Asp Trp Tyr Phe Asp Val Trp Gly Gln Gly Thr Leu
225 230 235 240

Val Thr Val Ser Ser
245

<210> 35
<211> 735
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polynucleotide

<400> 35
atggatatcc agatgaccca gtccccgagc tccctgtccg cctctgtggg cgatagggtc 60
accatcacct gccgtgccag tcaggacatc cgtaattatc tgaactggta tcaacagaaa 120
ccaggaaaag ctccgaaact actgatttac tatacctccc gcctggagtc tggagtcctt 180
tctcgcttct ctggttctgg ttctgggacg gattacactc tgaccatcag cagtctgcaa 240
ccggaagact tcgcaactta ttactgtcag caaggtaata ctctgccgtg gacgttcgga 300
cagggcacca aggtggagat caaaggcggc ggcggaagtg gaggaggagg ctcaggcgga 360
ggagggagcg aggttcagct ggtggagtct ggcggtggcc tggtgcagcc agggggctca 420
ctccgtttgt cctgtgcagc ttctggctac tcctttaccg gctacactat gaactgggtg 480

cgtcaggccc caggtaaggg cctggaatgg gttgcactga ttaatcctac caaaggtggt 540
 agtacctaca accagaagtt caaggaccgt ttcactataa gcgtagataa atccaaaaac 600
 acagcctacc tgcaaatgaa cagcctgcgt gctgaggaca ctgccgtcta ttattgtgct 660
 agaagcggat actacggcga tagtgactgg tattttgacg tgtgggggtca aggaaccctg 720
 gtcaccgtct cctcg 735

<210> 36
 <211> 245
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic polypeptide

<400> 36

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

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

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

Ile Tyr Tyr Thr Ser Arg Leu Glu Ser Gly Val Pro Ser Arg Phe Ser
 50 55 60

Gly Ser Gly Ser Gly Thr Asp Tyr Thr Leu Thr Ile Ser Ser Leu Gln
 65 70 75 80

Pro Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Gly Asn Thr Leu Pro
 85 90 95

Trp Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Gly Gly Gly Gly
 100 105 110

Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Glu Val Gln Leu Val
 115 120 125

Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser

130

135

140

Cys Ala Ala Ser Gly Tyr Ser Phe Thr Gly Tyr Thr Met Asn Trp Val
 145 150 155 160

Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val Ala Leu Ile Asn Pro
 165 170 175

Thr Lys Gly Val Ser Thr Tyr Asn Gln Lys Phe Lys Asp Arg Phe Thr
 180 185 190

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

Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys Ala Arg Ser Gly Tyr
 210 215 220

Tyr Gly Asp Ser Asp Trp Tyr Phe Asp Val Trp Gly Gln Gly Thr Leu
 225 230 235 240

Val Thr Val Ser Ser
 245

<210> 37
 <211> 60
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 37
 atggagaccc ccgcccagct gctgttcctg ctgctgctgt ggctgcccga caccaccggc 60

<210> 38
 <211> 20
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic peptide

<400> 38

Met Glu Thr Pro Ala Gln Leu Leu Phe Leu Leu Leu Trp Leu Pro

1 5 10 15

Asp Thr Thr Gly
20

<210> 39
<211> 63
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 39
atggcctttgc ctgtcacggc tcttctgctc cctctggccc tgcttctgca cgcggcgcca 60
ccc 63

<210> 40
<211> 21
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 40
Met Ala Leu Pro Val Thr Ala Leu Leu Leu Pro Leu Ala Leu Leu Leu
1 5 10 15

His Ala Ala Arg Pro
20

<210> 41
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 41
Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly
1 5 10 15

Gly Gly Gly Ser

<210> 42
 <211> 60
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 42
 ggaggaggag ggagcggggg aggaggcagc ggcgggggag gctctggagg aggagggagc 60

<210> 43
 <211> 750
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic polynucleotide

<400> 43
 atggacatcc agatgactca gaccacaagc tccctgtctg caagtctggg cgaccgggtg 60
 acaatctcct gcagagcctc tcaggatatt aggaactacc tgaattggta tcagcagaaa 120
 cctgatggca cagtcaagct gctgatctac tataccagcc ggctgcactc aggcgtgcca 180
 agcaaattct caggaagcgg ctccgggact gactactccc tgaccatctc taacctggag 240
 caggaagata ttgctaccta tttctgccag cagggcaata cactgccctg gacttttgcc 300
 ggaggcacca aactggagat caagggggga ggcgggagtg gaggcggggg atcaggagga 360
 ggaggcagcg gaggaggagg gtccgaggtc cagctgcagc agagcggacc agaactggtg 420
 aagcccggag caagtatgaa aatctcctgt aaggcctcag gatacagctt caccggctat 480
 acaatgaact gggtgaaaca gtcccatggc aagaacctgg aatggatggg gctgattaat 540
 cctaccaaag gcgtcagcac ctataatcag aagtttaaag acaaggccac actgactgtg 600
 gataagtcta gttcaaccgc ttacatggag ctgctgtccc tgacatctga agacagtgcc 660
 gtgtactatt gtgctcggtc tggctactat ggggacagtg attggtactt cgatgtctgg 720
 ggacagggca ctaccctgac cgtgttttct 750

<210> 44
 <211> 250
 <212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic polypeptide

<400> 44

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

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

Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu
35 40 45

Ile Tyr Tyr Thr Ser Arg Leu His Ser Gly Val Pro Ser Lys Phe Ser
50 55 60

Gly Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu
65 70 75 80

Gln Glu Asp Ile Ala Thr Tyr Phe Cys Gln Gln Gly Asn Thr Leu Pro
85 90 95

Trp Thr Phe Ala Gly Gly Thr Lys Leu Glu Ile Lys Gly Gly Gly Gly
100 105 110

Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
115 120 125

Glu Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Lys Pro Gly Ala
130 135 140

Ser Met Lys Ile Ser Cys Lys Ala Ser Gly Tyr Ser Phe Thr Gly Tyr
145 150 155 160

Thr Met Asn Trp Val Lys Gln Ser His Gly Lys Asn Leu Glu Trp Met
165 170 175

Gly Leu Ile Asn Pro Thr Lys Gly Val Ser Thr Tyr Asn Gln Lys Phe
180 185 190

Lys Asp Lys Ala Thr Leu Thr Val Asp Lys Ser Ser Ser Thr Ala Tyr
195 200 205

Met Glu Leu Leu Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
210 215 220

Ala Arg Ser Gly Tyr Tyr Gly Asp Ser Asp Trp Tyr Phe Asp Val Trp
225 230 235 240

Gly Gln Gly Thr Thr Leu Thr Val Phe Ser
245 250

<210> 45
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 45

Gly Gly Gly Gly Ser
1 5

<210> 46
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 46

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
1 5 10 15

<210> 47
<211> 45
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 47

ggcggcggcg gaagtggagg aggaggctca ggcggaggag ggagc

45

<210> 48
<211> 118
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic polypeptide

<400> 48

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

Ser Val Lys Leu Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
20 25 30

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

Gly Asn Ile Tyr Pro Ser Asp Ser Tyr Thr Asn Tyr Asn Gln Lys Phe
50 55 60

Lys Asp Lys Ala Thr Leu Thr Val Asp Lys Ser Ser Ser Thr Ala Tyr
65 70 75 80

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

Thr Arg Ser Trp Arg Gly Asn Ser Phe Asp Tyr Trp Gly Gln Gly Thr
100 105 110

Thr Leu Thr Val Ser Ser
115

<210> 49
<211> 113
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic polypeptide

<400> 49

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

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

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

Pro Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr 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 Gln Asn
85 90 95

Asp Tyr Ser Tyr Pro Phe Thr Phe Gly Ser Gly Thr Lys Leu Glu Ile
100 105 110

Lys

<210> 50
<211> 1125
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic polynucleotide

<400> 50
gagcagaagc tgatctccga ggaagatctg aatccaggcg gaggcggagg aagtggcggc 60
ggaggtagcg gagtggtgg aagcggaggc ggcggatctg gatctatgga tatccagatg 120
accagtccc cgagctccct gtccgcctct gtgggcgata gggtcaccat cacctgccgt 180
gccagtcagg acatccgtaa ttatctgaac tggtatcaac agaaaccagg aaaagctccg 240
aaactactga ttactatac ctccgcctg gagtctggag tcccttctcg cttctctggt 300
tctggttctg ggacggatta cactctgacc atcagcagtc tgcaaccgga agacttcgca 360

acttattact gtcagcaagg taatactctg ccgtggacgt tcggacaggg caccaaggtg 420
gagatcaaag gcggcggcgg aagtggagga ggaggctcag gcggaggagg gagcgaggtt 480
cagctgggtg agtctggcgg tggcctgggtg cagccagggg gctcactccg tttgtcctgt 540
gcagcttctg gctactcctt taccggctac actatgaact gggtgcgtca ggccccaggt 600
aagggcctgg aatgggttgc actgattaat cttataaag gtgttagtac ctacaaccag 660
aagttcaagg accgtttcac tataagcgta gataaatcca aaaacacagc ctacctgcaa 720
atgaacagcc tgcgtgctga ggacactgcc gtctattatt gtgctagaag cggatactac 780
ggcgatagtg actggtattht tgacgtgtgg ggtcaaggaa ccctgggtcac cgtctcctcg 840
acatcaggtg gtggcggatc tctggaatct ggccaggtgc tgctggaaag caacatcaag 900
gtgctgcca cctgggtctac cccagttcag cctatggctc tgattgtgct tggcggagtt 960
gccggcctgc tgctgtttat cggcctgggc atcttctttt gcgtgcggtg cagacatcgg 1020
cggagacagg ctgagagaat gagccagatc aagcggctgc tgagcgagaa gaaaacctgt 1080
cagtgccctc accggttcca gaaaacatgc agcccatct gatga 1125

<210> 51
<211> 373
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic polypeptide

<400> 51

Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu Asn Pro Gly Gly Gly Gly
1 5 10 15

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

Ser Gly Ser Met Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser
35 40 45

Ala Ser Val Gly Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Asp
50 55 60

Ile Arg Asn Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro

65

70

75

80

Lys Leu Leu Ile Tyr Tyr Thr Ser Arg Leu Glu Ser Gly Val Pro Ser
85 90 95

Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Tyr Thr Leu Thr Ile Ser
100 105 110

Ser Leu Gln Pro Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Gly Asn
115 120 125

Thr Leu Pro Trp Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Gly
130 135 140

Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Glu Val
145 150 155 160

Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly Ser Leu
165 170 175

Arg Leu Ser Cys Ala Ala Ser Gly Tyr Ser Phe Thr Gly Tyr Thr Met
180 185 190

Asn Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val Ala Leu
195 200 205

Ile Asn Pro Tyr Lys Gly Val Ser Thr Tyr Asn Gln Lys Phe Lys Asp
210 215 220

Arg Phe Thr Ile Ser Val Asp Lys Ser Lys Asn Thr Ala Tyr Leu Gln
225 230 235 240

Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys Ala Arg
245 250 255

Ser Gly Tyr Tyr Gly Asp Ser Asp Trp Tyr Phe Asp Val Trp Gly Gln
260 265 270

Gly Thr Leu Val Thr Val Ser Ser Thr Ser Gly Gly Gly Gly Ser Leu
275 280 285

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

Trp Ser Thr Pro Val Gln Pro Met Ala Leu Ile Val Leu Gly Gly Val
305 310 315 320

Ala Gly Leu Leu Leu Phe Ile Gly Leu Gly Ile Phe Phe Cys Val Arg
325 330 335

Cys Arg His Arg Arg Arg Gln Ala Glu Arg Met Ser Gln Ile Lys Arg
340 345 350

Leu Leu Ser Glu Lys Lys Thr Cys Gln Cys Pro His Arg Phe Gln Lys
355 360 365

Thr Cys Ser Pro Ile
370

<210> 52
<211> 1122
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic polynucleotide

<400> 52
gaacagaagc tcatttctga agaagacctc aaccccggag ggggaggggg aagtggggga 60
gggggtagtg gtggcggagg atcaggcggg gggggatcag gatccatgga tatccagatg 120
accagtccc cgagctccct gtccgcctct gtgggcgata gggtcaccat cacctgccgt 180
gccagtcagg acatccgtaa ttatctgaac tggtatcaac agaaaccagg aaaagctccg 240
aaactactga ttactatac ctccgcctg gagtctggag tcccttctcg cttctctggt 300
tctggttctg ggacggatta cactctgacc atcagcagtc tgcaaccgga agacttcgca 360
acttattact gtcagcaagg taatactctg ccgtggacgt tcggacaggg caccaagggtg 420
gagatcaaag gcggcggcgg aagtggagga ggaggctcag gcggaggagg gagcgaggtt 480
cagctggtgg agtctggcgg tggcctggtg cagccagggg gtcactccg tttgtcctgt 540
gcagcttctg gctactcctt taccggctac actatgaact gggtgcgtca ggccccaggt 600

aagggcctgg aatgggttgc actgattaat cctaccaaag gtgttagtac ctacaaccag 660
aagttcaagg accgtttcac tataagcgta gataaatcca aaaacacagc ctacctgcaa 720
atgaacagcc tgcgtgctga ggacactgcc gtctattatt gtgctagaag cggatactac 780
ggcgatagtg actggtattht tgacgtgtgg ggtcaaggaa ccctgggtcac cgtctcctcg 840
actagtggcg gaggaggatc actcgagagc ggacaggtgc tgctggaatc caatatcaaa 900
gtcctgcca cttggtctac ccccggtgcag cctatggctc tgattgtgct gggaggagtc 960
gcaggactgc tgctgtttat cgggctggga attttctttt gcgtgcgctg ccggcaccgg 1020
agaaggcagg ccgagcgcac gagccagatc aagcgactgc tgagcgagaa gaaaacctgt 1080
cagtgtcccc atagattcca gaagacctgt tcacccattt ga 1122

<210> 53
<211> 373
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic polypeptide

<400> 53

Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu Asn Pro Gly Gly Gly Gly
1 5 10 15

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

Ser Gly Ser Met Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser
35 40 45

Ala Ser Val Gly Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Asp
50 55 60

Ile Arg Asn Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro
65 70 75 80

Lys Leu Leu Ile Tyr Tyr Thr Ser Arg Leu Glu Ser Gly Val Pro Ser
85 90 95

Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Tyr Thr Leu Thr Ile Ser

100					105					110					
Ser	Leu	Gln	Pro	Glu	Asp	Phe	Ala	Thr	Tyr	Tyr	Cys	Gln	Gln	Gly	Asn
		115					120					125			
Thr	Leu	Pro	Trp	Thr	Phe	Gly	Gln	Gly	Thr	Lys	Val	Glu	Ile	Lys	Gly
	130					135					140				
Gly	Gly	Gly	Ser	Gly	Gly	Gly	Gly	Ser	Gly	Gly	Gly	Gly	Ser	Glu	Val
145					150					155					160
Gln	Leu	Val	Glu	Ser	Gly	Gly	Gly	Leu	Val	Gln	Pro	Gly	Gly	Ser	Leu
				165					170					175	
Arg	Leu	Ser	Cys	Ala	Ala	Ser	Gly	Tyr	Ser	Phe	Thr	Gly	Tyr	Thr	Met
			180					185					190		
Asn	Trp	Val	Arg	Gln	Ala	Pro	Gly	Lys	Gly	Leu	Glu	Trp	Val	Ala	Leu
		195					200					205			
Ile	Asn	Pro	Thr	Lys	Gly	Val	Ser	Thr	Tyr	Asn	Gln	Lys	Phe	Lys	Asp
	210					215					220				
Arg	Phe	Thr	Ile	Ser	Val	Asp	Lys	Ser	Lys	Asn	Thr	Ala	Tyr	Leu	Gln
225					230					235					240
Met	Asn	Ser	Leu	Arg	Ala	Glu	Asp	Thr	Ala	Val	Tyr	Tyr	Cys	Ala	Arg
				245					250					255	
Ser	Gly	Tyr	Tyr	Gly	Asp	Ser	Asp	Trp	Tyr	Phe	Asp	Val	Trp	Gly	Gln
			260					265					270		
Gly	Thr	Leu	Val	Thr	Val	Ser	Ser	Thr	Ser	Gly	Gly	Gly	Gly	Ser	Leu
		275						280				285			
Glu	Ser	Gly	Gln	Val	Leu	Leu	Glu	Ser	Asn	Ile	Lys	Val	Leu	Pro	Thr
		290				295					300				
Trp	Ser	Thr	Pro	Val	Gln	Pro	Met	Ala	Leu	Ile	Val	Leu	Gly	Gly	Val
305					310					315					320

Ala Gly Leu Leu Leu Phe Ile Gly Leu Gly Ile Phe Phe Cys Val Arg
325 330 335

Cys Arg His Arg Arg Arg Gln Ala Glu Arg Met Ser Gln Ile Lys Arg
340 345 350

Leu Leu Ser Glu Lys Lys Thr Cys Gln Cys Pro His Arg Phe Gln Lys
355 360 365

Thr Cys Ser Pro Ile
370

<210> 54
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic polynucleotide

<400> 54
ggaggaggag ggagc

15

<210> 55
<211> 120
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic polypeptide

<400> 55

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

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Ser Ile Phe Asn Ile Pro
20 25 30

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

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

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

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

Val Leu Val Val Ser Gly Ile Gly Ser Thr Leu Glu Val Trp Gly Gln
100 105 110

Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 56

<211> 120

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic polypeptide

<400> 56

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

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

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

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

Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Thr Leu Tyr Leu
65 70 75 80

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

Val Leu Val Val Ser Gly Ile Gly Ser Thr Leu Glu Val Trp Gly Gln
100 105 110

Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 57
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic polypeptide

<400> 57

Ile Pro Val Met Gly
1 5

<210> 58
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic polypeptide

<400> 58

Gly Ile Ser Thr Gly Gly Thr Thr Asn Tyr Gly Asp Ser Val Lys Gly
1 5 10 15

<210> 59
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic polypeptide

<400> 59

Leu Val Val Ser Gly Ile Gly Ser Thr Leu Glu Val
1 5 10

<210> 60
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic polypeptide

<400> 60

Gly Ser Ile Phe Asn Ile Pro Val
1 5

<210> 61

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic polypeptide

<400> 61

Ile Ser Thr Gly Gly Thr Thr
1 5

<210> 62

<211> 14

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic polypeptide

<400> 62

Asn Val Leu Val Val Ser Gly Ile Gly Ser Thr Leu Glu Val
1 5 10

<210> 63

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic polypeptide

<400> 63

Gly Ile Ser Arg Gly Gly Thr Thr Asn Tyr Ala Asp Ser Val Lys Gly
1 5 10 15

<210> 64

<211> 8

<212> PRT

<213> Artificial Sequence

<220>
<223> Synthetic polypeptide

<400> 64

Gly Ser Ile Phe His Ile Pro Val
1 5

<210> 65
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic polypeptide

<400> 65

Ile Ser Arg Gly Gly Thr Thr
1 5

<210> 66
<211> 1542
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 66
atggctctgc ctgtgacagc tctgttgctg cctctggctc tgctgctgca tgctgctaga 60
cctcaggtgc agctgggtga atctggcgga ggacttggtc agcctggcgg ctctctgaga 120
ctgtcttgctg ccgccagcgg cagcatcttc aatatccccg tgatgggctg gtacagacag 180
gccccctggaa agcagagaga gctggttgcc ggaatctcta ccggcggcac cacaaattac 240
ggcgacagcg tgaagggcag attcaccatc agccgggaca acgccaagaa caccgtgtac 300
ctgcagatga acagcctgaa gcctgaggac accgccgtgt actactgcaa tgtgctggtg 360
gtgtctggca tcggcagcac actggaagtt tggggccagg gcacactggt cacagtgtct 420
agcgagcaga agctgatctc cgaggaagat ctgaatccag gcggaggcgg aggaagtggc 480
ggcggaggta gcggaggtgg tggaagcgga ggcggcggat ctggatctat ggatatccag 540
atgaccagtc ccccgagctc cctgtccgcc tctgtgggcg atagggtcac catcacctgc 600
cgtgccagtc aggacatccg taattatctg aactggtatc aacagaaacc aggaaaagct 660

ccgaaactac tgatttacta tacctcccg	ctggagtctg gagtcccttc tcgcttctct	720
ggttctgggt ctgggacgga ttacactctg	accatcagca gtctgcaacc ggaagacttc	780
gcaacttatt actgtcagca aggttaatact	ctgccgtgga cgttcggaca gggcaccaag	840
gtggagatca aaggcggcgg cggaagtgga	ggaggaggct caggcggagg agggagcgag	900
gttcagctgg tggagtctgg cgggtggcctg	gtgcagccag ggggctcact ccgtttgtcc	960
tgtgcagctt ctggctactc ctttaccggc	tacactatga actgggtgcg tcaggcccca	1020
ggtaagggcc tggaatgggt tgcactgatt	aatccttata aaggtgttag tacctacaac	1080
cagaagttca aggaccgttt cactataagc	gtagataaat ccaaaaacac agcctacctg	1140
caaatgaaca gcctgcgtgc tgaggacact	gccgtctatt attgtgctag aagcggatac	1200
tacggcgata gtgactggta ttttgacgtg	tgggggtcaag gaaccctgggt caccgtctcc	1260
tcgacatcag gtgggtggcgg atctctggaa	tctggccagg tgctgctgga atccaacatc	1320
aaggtgctgc ccacctggtc taccctcagtt	cagcctatgg ctctgattgt gcttggcgga	1380
gttgccggcc tgctgctggt tatcggcctg	ggcatcttct tttgcgtgcg gtgcagacat	1440
cggcggagac aggctgagag aatgagccag	atcaagcggc tgctgagcga gaagaaaacc	1500
tgctcagtgcc ctcaccggtt ccagaaaaca	tgtagcccca tc	1542

<210> 67
 <211> 514
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Synthetic peptide

<400> 67

Met	Ala	Leu	Pro	Val	Thr	Ala	Leu	Leu	Pro	Leu	Ala	Leu	Leu	Leu
1			5					10					15	

His	Ala	Ala	Arg	Pro	Gln	Val	Gln	Leu	Val	Glu	Ser	Gly	Gly	Gly	Leu
			20					25					30		

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

Ile	Phe	Asn	Ile	Pro	Val	Met	Gly	Trp	Tyr	Arg	Gln	Ala	Pro	Gly	Lys
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

50

55

60

Gln Arg Glu Leu Val Ala Gly Ile Ser Thr Gly Gly Thr Thr Asn Tyr
 65 70 75 80

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

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

Val Tyr Tyr Cys Asn Val Leu Val Val Ser Gly Ile Gly Ser Thr Leu
 115 120 125

Glu Val Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Glu Gln Lys
 130 135 140

Leu Ile Ser Glu Glu Asp Leu Asn Pro Gly Gly Gly Gly Ser Gly
 145 150 155 160

Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Ser
 165 170 175

Met Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val
 180 185 190

Gly Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Asp Ile Arg Asn
 195 200 205

Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu
 210 215 220

Ile Tyr Tyr Thr Ser Arg Leu Glu Ser Gly Val Pro Ser Arg Phe Ser
 225 230 235 240

Gly Ser Gly Ser Gly Thr Asp Tyr Thr Leu Thr Ile Ser Ser Leu Gln
 245 250 255

Pro Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Gly Asn Thr Leu Pro
 260 265 270

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

Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Glu Val Gln Leu Val
290 295 300

Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser
305 310 315 320

Cys Ala Ala Ser Gly Tyr Ser Phe Thr Gly Tyr Thr Met Asn Trp Val
325 330 335

Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val Ala Leu Ile Asn Pro
340 345 350

Tyr Lys Gly Val Ser Thr Tyr Asn Gln Lys Phe Lys Asp Arg Phe Thr
355 360 365

Ile Ser Val Asp Lys Ser Lys Asn Thr Ala Tyr Leu Gln Met Asn Ser
370 375 380

Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys Ala Arg Ser Gly Tyr
385 390 395 400

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

Val Thr Val Ser Ser Thr Ser Gly Gly Gly Gly Ser Leu Glu Ser Gly
420 425 430

Gln Val Leu Leu Glu Ser Asn Ile Lys Val Leu Pro Thr Trp Ser Thr
435 440 445

Pro Val Gln Pro Met Ala Leu Ile Val Leu Gly Gly Val Ala Gly Leu
450 455 460

Leu Leu Phe Ile Gly Leu Gly Ile Phe Phe Cys Val Arg Cys Arg His
465 470 475 480

Arg Arg Arg Gln Ala Glu Arg Met Ser Gln Ile Lys Arg Leu Leu Ser

485

490

495

Glu Lys Lys Thr Cys Gln Cys Pro His Arg Phe Gln Lys Thr Cys Ser
 500 505 510

Pro Ile

<210> 68

<211> 1542

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic oligonucleotide

<400> 68

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ctgtcttggt ccgccagcgg cagcatcttc aatatccccg tgatgggctg gtacagacag	180
gcccctggaa agcagagaga gctggttgcc ggaatctcta ccggcggcac cacaaattac	240
ggcgacagcg tgaagggcag attcaccatc agccgggaca acgccaagaa caccgtgtac	300
ctgcagatga acagcctgaa gcctgaggac accgccgtgt actactgcaa tgtgctgggtg	360
gtgtctggca tcggcagcac actggaagtt tggggccagg gcacactggt cacagtgtct	420
agcgagcaga agctgatctc cgaggaagat ctgaatccag gcggaggcgg aggttctggt	480
ggcggaggaa gtggtagcgg cggatcaggc ggcggtggat ctggatctat ggatatccag	540
atgaccagtc ccccgagctc cctgtccgcc tctgtgggag atagggtcac catcacctgc	600
cgtgccagtc aggacatccg taattatctg aactgggtatc aacagaaacc aggaaaagct	660
ccgaaactac tgatttacta tacctcccgc ctggagtctg gagtcccttc tcgcttctct	720
ggttctggtt ctgggacgga ttacactctg accatcagca gtctgcaacc ggaagacttc	780
gcaacttatt actgtcagca aggtaatact ctgccgtgga cgttcggaca gggcaccaag	840
gtggagatca aaggcggcgg cggaagtgga ggaggaggct caggcggagg agggagcgag	900
gttcagctgg tggagtctgg cggtaggcctg gtgcagccag ggggctcact ccgtttgtcc	960
tgtgcagctt ctggctactc ctttaccggc tacactatga actgggtgcg tcaggcccca	1020

ggtaagggcc tggaatgggt tgcactgatt aatcctacca aaggtgtag tacctacaac 1080
cagaagttca aggaccgttt cactataagc gtagataaat ccaaaaacac agcctacctg 1140
caaatgaaca gcctgcgtgc tgaggacact gccgtctatt attgtgctag aagcggatac 1200
tacggcgata gtgactggta ttttgacgtg tgggggtcaag gaaccctgggt caccgtctcc 1260
tcgacatctg gcggcggagg atctctggaa tctggacagg tgctgctgga aagcaacatc 1320
aaggtgctgc ccacctggtc taccctcagtt cagcctatgg ctctgattgt gcttggaggc 1380
gtggccggcc tgctgctgtt tatcggcctg ggcattcttct tttgcgtgcg gtgcagacat 1440
cggcggagac aggctgagag aatgagccag atcaagcggc tgctgagcga gaagaaaacc 1500
tgtcagtgcc ctcaccgggt ccagaaaaca tgcagcccca tc 1542

<210> 69
<211> 514
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide

<400> 69

Met Ala Leu Pro Val Thr Ala Leu Leu Leu Pro Leu Ala Leu Leu Leu
1 5 10 15

His Ala Ala Arg Pro Gln Val Gln Leu Val Glu Ser Gly Gly Gly Leu
20 25 30

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

Ile Phe Asn Ile Pro Val Met Gly Trp Tyr Arg Gln Ala Pro Gly Lys
50 55 60

Gln Arg Glu Leu Val Ala Gly Ile Ser Thr Gly Gly Thr Thr Asn Tyr
65 70 75 80

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

Asn Thr Val Tyr Leu Gln Met Asn Ser Leu Lys Pro Glu Asp Thr Ala

100

105

110

Val Tyr Tyr Cys Asn Val Leu Val Val Ser Gly Ile Gly Ser Thr Leu
 115 120 125

Glu Val Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Glu Gln Lys
 130 135 140

Leu Ile Ser Glu Glu Asp Leu Asn Pro Gly Gly Gly Gly Gly Ser Gly
 145 150 155 160

Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Ser
 165 170 175

Met Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val
 180 185 190

Gly Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Asp Ile Arg Asn
 195 200 205

Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu
 210 215 220

Ile Tyr Tyr Thr Ser Arg Leu Glu Ser Gly Val Pro Ser Arg Phe Ser
 225 230 235 240

Gly Ser Gly Ser Gly Thr Asp Tyr Thr Leu Thr Ile Ser Ser Leu Gln
 245 250 255

Pro Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Gly Asn Thr Leu Pro
 260 265 270

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

Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Glu Val Gln Leu Val
 290 295 300

Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser
 305 310 315 320

Cys Ala Ala Ser Gly Tyr Ser Phe Thr Gly Tyr Thr Met Asn Trp Val
325 330 335

Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val Ala Leu Ile Asn Pro
340 345 350

Thr Lys Gly Val Ser Thr Tyr Asn Gln Lys Phe Lys Asp Arg Phe Thr
355 360 365

Ile Ser Val Asp Lys Ser Lys Asn Thr Ala Tyr Leu Gln Met Asn Ser
370 375 380

Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys Ala Arg Ser Gly Tyr
385 390 395 400

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

Val Thr Val Ser Ser Thr Ser Gly Gly Gly Gly Ser Leu Glu Ser Gly
420 425 430

Gln Val Leu Leu Glu Ser Asn Ile Lys Val Leu Pro Thr Trp Ser Thr
435 440 445

Pro Val Gln Pro Met Ala Leu Ile Val Leu Gly Gly Val Ala Gly Leu
450 455 460

Leu Leu Phe Ile Gly Leu Gly Ile Phe Phe Cys Val Arg Cys Arg His
465 470 475 480

Arg Arg Arg Gln Ala Glu Arg Met Ser Gln Ile Lys Arg Leu Leu Ser
485 490 495

Glu Lys Lys Thr Cys Gln Cys Pro His Arg Phe Gln Lys Thr Cys Ser
500 505 510

Pro Ile

<211> 1542
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 70
atggctctgc ctgtgacagc tctgttgctg cctctggctc tgctgctgca tgctgctaga 60
cctcaggtgc agctggttga atctggcgga ggacttggtc agcctggcgg ctctctgaga 120
ctgtcttgctg ccgccagcgg cagcatcttt cacatccctg tgatgggctg gtacagacag 180
gcccctggaa aaggactgga actggtggcc ggaatctcta gaggcggcac cacaattac 240
gccgacagcg tgaagggcag attcaccatc agccgggaca acgccaagaa caccctgtac 300
ctgcagatga acagcctgag agccgaggac accgccgtgt actactgtaa tgtgctgggtg 360
gtgtctggca tcggcagcac actggaagtt tggggccagg gcacactggt cacagtgtct 420
agcgagcaga agctgatctc cgaggaagat ctgaatccag gcggaggcgg aggaagtggc 480
ggcggaggta gcggaggtgg tggaagcgga ggcggcggat ctggatctat ggatatccag 540
atgaccagtc ccccgagctc cctgtccgcc tctgtgggcg atagggtcac catcacctgc 600
cgtgccagtc aggacatccg taattatctg aactgggtatc aacagaaacc aggaaaagct 660
ccgaaactac tgatttacta tacctccgc ctggagtctg gagtcccttc tcgcttctct 720
ggttctgggt ctgggacgga ttacactctg accatcagca gtctgcaacc ggaagacttc 780
gcaacttatt actgtcagca aggttaatact ctgccgtgga cgttcggaca gggcaccaag 840
gtggagatca aaggcggcgg cggaagtgga ggaggaggct caggcggagg agggagcgag 900
gttcagctgg tggagtctgg cgggtggcctg gtgcagccag ggggctcact ccgtttgtcc 960
tgtgcagctt ctggctactc ctttaccggc tacactatga actgggtgcg tcaggcccca 1020
ggtaagggcc tggaatgggt tgcactgatt aatccttata aaggtgttag tacctacaac 1080
cagaagttca aggaccgttt cactataagc gtagataaat ccaaaaacac agcctacctg 1140
caaatgaaca gcctgcgtgc tgaggacact gccgtctatt attgtgctag aagcggatac 1200
tacggcgata gtgactggta ttttgacgtg tggggctcaag gaaccctggt caccgtctcc 1260
tcgacatcag gtgggtggcg atctctggaa tctggccagg tgctgctgga aagcaacatc 1320
aaggtgctgc ccacctggct taccctagtt cagcctatgg ctctgattgt gcttggcggg 1380

gttgccggcc tgctgctgtt tatcggcctg ggcattcttct ttgctgtgcg gtgcagacat 1440
 cggcggagac aggctgagag aatgagccag atcaagcggc tgctgagcga gaagaaaacc 1500
 tgtcagtgcc ctcaccggtt ccagaaaaca tgcagcccca tc 1542

<210> 71
 <211> 514
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Synthetic peptide

<400> 71

Met Ala Leu Pro Val Thr Ala Leu Leu Leu Pro Leu Ala Leu Leu Leu
 1 5 10 15

His Ala Ala Arg Pro Gln Val Gln Leu Val Glu Ser Gly Gly Gly Leu
 20 25 30

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

Ile Phe His Ile Pro Val Met Gly Trp Tyr Arg Gln Ala Pro Gly Lys
 50 55 60

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

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

Asn Thr Leu Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala
 100 105 110

Val Tyr Tyr Cys Asn Val Leu Val Val Ser Gly Ile Gly Ser Thr Leu
 115 120 125

Glu Val Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Glu Gln Lys
 130 135 140

Leu Ile Ser Glu Glu Asp Leu Asn Pro Gly Gly Gly Gly Gly Ser Gly

145		150		155		160
Gly Gly Gly Ser	Gly Gly Gly Gly Ser	Gly Gly Gly Gly Ser	Gly Gly Gly Gly Ser	Gly Gly Gly Gly Ser	Gly Gly Gly Gly Ser	Gly Gly Gly Gly Ser
	165		170		175	
Met Asp Ile Gln	Met Thr Gln Ser	Pro Ser Ser Leu	Ser Ala Ser Val			
	180	185	190			
Gly Asp Arg Val	Thr Ile Thr Cys	Arg Ala Ser Gln	Asp Ile Arg Asn			
	195	200	205			
Tyr Leu Asn Trp	Tyr Gln Gln Lys	Pro Gly Lys Ala	Pro Lys Leu Leu			
	210	215	220			
Ile Tyr Tyr Thr	Ser Arg Leu Glu	Ser Gly Val Pro	Ser Arg Phe Ser			
	225	230	235			240
Gly Ser Gly Ser	Gly Thr Asp Tyr	Thr Leu Thr Ile	Ser Ser Leu Gln			
	245	250	255			
Pro Glu Asp Phe	Ala Thr Tyr Tyr	Cys Gln Gln Gly	Asn Thr Leu Pro			
	260	265	270			
Trp Thr Phe Gly	Gln Gly Thr Lys	Val Glu Ile Lys	Gly Gly Gly Gly			
	275	280	285			
Ser Gly Gly Gly	Gly Ser Gly Gly	Gly Ser Glu Val	Gln Leu Val			
	290	295	300			
Glu Ser Gly Gly	Gly Leu Val Gln	Pro Gly Gly Ser	Leu Arg Leu Ser			
	305	310	315			320
Cys Ala Ala Ser	Gly Tyr Ser Phe	Thr Gly Tyr Thr	Met Asn Trp Val			
	325	330	335			
Arg Gln Ala Pro	Gly Lys Gly Leu	Glu Trp Val Ala	Leu Ile Asn Pro			
	340	345	350			
Tyr Lys Gly Val	Ser Thr Tyr Asn	Gln Lys Phe Lys	Asp Arg Phe Thr			
	355	360	365			

Ile Ser Val Asp Lys Ser Lys Asn Thr Ala Tyr Leu Gln Met Asn Ser
370 375 380

Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys Ala Arg Ser Gly Tyr
385 390 395 400

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

Val Thr Val Ser Ser Thr Ser Gly Gly Gly Gly Ser Leu Glu Ser Gly
420 425 430

Gln Val Leu Leu Glu Ser Asn Ile Lys Val Leu Pro Thr Trp Ser Thr
435 440 445

Pro Val Gln Pro Met Ala Leu Ile Val Leu Gly Gly Val Ala Gly Leu
450 455 460

Leu Leu Phe Ile Gly Leu Gly Ile Phe Phe Cys Val Arg Cys Arg His
465 470 475 480

Arg Arg Arg Gln Ala Glu Arg Met Ser Gln Ile Lys Arg Leu Leu Ser
485 490 495

Glu Lys Lys Thr Cys Gln Cys Pro His Arg Phe Gln Lys Thr Cys Ser
500 505 510

Pro Ile

<210> 72
<211> 1542
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 72
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cctcaggtgc agctggttga atctggcgga ggacttgttc agcctggcgg ctctctgaga 120

ctgtcttgtg ccgccagcgg cagcatcttt cacatccctg tgatgggctg gtacagacag	180
gccccctggaa aaggactgga actggtggcc ggaatctcta gaggcggcac cacaaattac	240
gccgacagcg tgaagggcag attcaccatc agccgggaca acgccaagaa caccctgtac	300
ctgcagatga acagcctgag agccgaggac accgccgtgt actactgtaa tgtgctggtg	360
gtgtctggca tcggcagcac actggaagtt tggggccagg gcacactggt cacagtgtct	420
agcgagcaga agctgatctc cgaggaagat ctgaatccag gcggaggcgg aggttctggt	480
ggcggaggaa gtggtggcgg cggatcaggc ggcggtggat ctggatctat ggatatccag	540
atgaccagtc ccccgagctc cctgtccgcc tctgtgggcg atagggtcac catcacctgc	600
cgtgccagtc aggacatccg taattatctg aactggtatc aacagaaacc agggaaagct	660
ccgaaactac tgatttacta tacctccgc ctggagtctg gagtcccttc tcgcttctct	720
ggttctggtt ctgggacgga ttacactctg accatcagca gtctgcaacc ggaagacttc	780
gcaacttatt actgtcagca aggtaatact ctgccgtgga cgttcggaca gggcaccaag	840
gtggagatca aaggcggcgg cggaagtgga ggaggaggct caggcggagg agggagcgag	900
gttcagctgg tggagtctgg cgggtggcctg gtgcagccag ggggctcact ccgtttgtcc	960
tgtgcagctt ctggctactc ctttaccggc tacactatga actgggtgcg tcaggcccca	1020
ggtaagggcc tggaatgggt tgcactgatt aatcctacca aaggtgttag tacctacaac	1080
cagaagttca aggaccgttt cactataagc gtagataaat ccaaaaacac agcctacctg	1140
caaatgaaca gcctgcgtgc tgaggacact gccgtctatt attgtgctag aagcggatac	1200
tacggcgata gtgactggta ttttgacgtg tggggtcaag gaaccctggt caccgtctcc	1260
tcgacatctg gcggcggagg atctctggaa tctggacagg tgctgctgga aagcaacatc	1320
aaggtgctgc ccacctggtc taccagtt cagcctatgg ctctgattgt gcttggaggc	1380
gtggccggcc tgctgctgtt tatcggcctg ggcattctct tttgcgtgcg gtgcagacat	1440
cggcggagac aggctgagag aatgagccag atcaagcggc tgctgagcga gaagaaaacc	1500
tgtcagtgcc ctcaccggtt ccagaaaaca tgcagcccca tc	1542

<210> 73

<211> 514

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic peptide

<400> 73

Met Ala Leu Pro Val Thr Ala Leu Leu Leu Pro Leu Ala Leu Leu Leu
1 5 10 15

His Ala Ala Arg Pro Gln Val Gln Leu Val Glu Ser Gly Gly Gly Leu
20 25 30

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

Ile Phe His Ile Pro Val Met Gly Trp Tyr Arg Gln Ala Pro Gly Lys
50 55 60

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

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

Asn Thr Leu Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala
100 105 110

Val Tyr Tyr Cys Asn Val Leu Val Val Ser Gly Ile Gly Ser Thr Leu
115 120 125

Glu Val Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Glu Gln Lys
130 135 140

Leu Ile Ser Glu Glu Asp Leu Asn Pro Gly Gly Gly Gly Gly Ser Gly
145 150 155 160

Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Ser
165 170 175

Met Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val
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Gly Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Asp Ile Arg Asn

195

200

205

Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu
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Ile Tyr Tyr Thr Ser Arg Leu Glu Ser Gly Val Pro Ser Arg Phe Ser
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Gly Ser Gly Ser Gly Thr Asp Tyr Thr Leu Thr Ile Ser Ser Leu Gln
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Pro Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Gly Asn Thr Leu Pro
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Trp Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Gly Gly Gly Gly
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Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Glu Val Gln Leu Val
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Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser
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Cys Ala Ala Ser Gly Tyr Ser Phe Thr Gly Tyr Thr Met Asn Trp Val
 325 330 335

Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val Ala Leu Ile Asn Pro
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Thr Lys Gly Val Ser Thr Tyr Asn Gln Lys Phe Lys Asp Arg Phe Thr
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Ile Ser Val Asp Lys Ser Lys Asn Thr Ala Tyr Leu Gln Met Asn Ser
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Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys Ala Arg Ser Gly Tyr
 385 390 395 400

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

Val Thr Val Ser Ser Thr Ser Gly Gly Gly Gly Ser Leu Glu Ser Gly
420 425 430

Gln Val Leu Leu Glu Ser Asn Ile Lys Val Leu Pro Thr Trp Ser Thr
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Pro Val Gln Pro Met Ala Leu Ile Val Leu Gly Gly Val Ala Gly Leu
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Leu Leu Phe Ile Gly Leu Gly Ile Phe Phe Cys Val Arg Cys Arg His
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Arg Arg Arg Gln Ala Glu Arg Met Ser Gln Ile Lys Arg Leu Leu Ser
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Pro Ile

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