

SEQUENCE LISTING

<110> Regeneron Pharmaceuticals, Inc.
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<120> ANTI-PCRV ANTIBODIES THAT BIND PCRV, COMPOSITIONS COMPRISING
ANTI-PCRV ANTIBODIES, AND METHODS OF USE THEREOF

<130> 10494W001

<140> TBD

<141> 2020-06-10

<150> 62/860,146

<151> 2019-06-11

<160> 86

<170> PatentIn version 3.5

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ccagggaagg ggctggagtg gatttcatac attggtagtg gtgttggttac catgtactac	180
gcagactctg tgagggggccg attcaccatc tccagagaca acgccaagaa aacactgtat	240
ttgcaaatga acagcctgag agccgaggac acggctgttt attactgtgc gcgagatcga	300
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Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Asp His
20 25 30

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

Ser Tyr Ile Gly Ser Gly Val Val Thr Met Tyr Tyr Ala Asp Ser Val
50 55 60

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

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

Ala Arg Asp Arg Gly Tyr Tyr Phe Gly Ser Glu Ala Phe His Tyr Trp
100 105 110

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

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Gly Phe Thr Phe Ser Asp His Glu
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Ile Gly Ser Gly Val Val Thr Met
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Ala Arg Asp Arg Gly Tyr Tyr Phe Gly Ser Glu Ala Phe His Tyr

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atcacttgctc gggccagtca gagtattagt aactggttgg cctggatatca gcagaaacca 120
gggaaagccc ctaagctcct gatctataag tcgtctagtt tagaaagtgg agtcccatca 180
aggttcagcg gcagtggatc tgggacagaa ttcactctca ccatcagcag cctacagcct 240
gatgattttg caacttatta ctgccaacag tataagagtt attcgctcac tttcggcgga 300
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Asp Ile Gln Met Thr Gln Ser Pro Ser Thr Leu Ser Ala Ser Val Gly
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Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Ser Ile Ser Asn Trp
20 25 30

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

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

Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
65 70 75 80

Asp Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Tyr Lys Ser Tyr Ser Leu
85 90 95

Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys Arg
100 105

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Gln Ser Ile Ser Asn Trp
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Lys Ser Ser
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caacagtata agagttattc gctcact

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Gln Gln Tyr Lys Ser Tyr Ser Leu Thr
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tcctgtaaaag cctctggatt caccttttagc acctttgccca tgaactgggt ccgtcaggct 120

ccagggaggg gcctggagtg ggtctcagct attggtgcta gtgggttatag tacatactac 180

gtagactcca tgaagggccg cttcaccatc tccagagaca attccaagaa cacgctgtat 240

ctgcagatga acagcctggg agccgaggac acggccgtat attactgtgc gaaagaatat 300

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

Ser Leu Arg Leu Ser Cys Lys Ala Ser Gly Phe Thr Phe Ser Thr Phe
20 25 30

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

Ser Ala Ile Gly Ala Ser Gly Tyr Ser Thr Tyr Tyr Val Asp Ser Met
50 55 60

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

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

Ala Lys Glu Tyr Ser Val Ser Ser Asn Tyr Tyr Tyr Gly Met Asp Val
100 105 110

Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
115 120

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24

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Gly Phe Thr Phe Ser Thr Phe Ala
1 5

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attggtgcta gtggttatag taca

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<400> 22

Ile Gly Ala Ser Gly Tyr Ser Thr
1 5

<210> 23
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gcgaaagaat atagtgtctc gtcaaactac tactacggta tggacgtc

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Ala	Lys	Glu	Tyr	Ser	Val	Ser	Ser	Asn	Tyr	Tyr	Tyr	Gly	Met	Asp	Val
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gggaaagccc	ctaagctcct	gatctatgct	gcatccagtt	tgtaaagtgg	cgcccttca	180
aggttcagtg	ccagtggatc	tgggacagat	ttcactctca	ccatcagcag	tctgcaacct	240
gaagattttt	caacttacta	ctgtcaacag	acttacagta	ttccgatcac	cttcggccaa	300
gggacacgac	tggagattaa	acga				324

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Asp	Ile	Gln	Met	Thr	Gln	Ser	Pro	Ser	Ser	Leu	Ser	Ala	Ser	Val	Gly
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Asp	Arg	Val	Thr	Ile	Thr	Cys	Arg	Ala	Ser	Gln	Thr	Ile	Arg	Arg	Tyr
			20					25					30		

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

Tyr Ala Ala Ser Ser Leu Leu Ser Gly Val Pro Ser Arg Phe Ser Ala
50 55 60

Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
65 70 75 80

Glu Asp Phe Ser Thr Tyr Tyr Cys Gln Gln Thr Tyr Ser Ile Pro Ile
85 90 95

Thr Phe Gly Gln Gly Thr Arg Leu Glu Ile Lys Arg
100 105

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cagaccatta ggagatat

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<400> 28

Gln Thr Ile Arg Arg Tyr
1 5

<210> 29
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<400> 29
gctgcatcc

9

<210> 30
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Ala Ala Ser
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<210> 31
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27

<210> 32
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<400> 32

Gln Gln Thr Tyr Ser Ile Pro Ile Thr
1 5

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 ccagggaagg ggctggagtg ggtctcaagt attagaggta gtggttatag ttcagactac 180
 gcagactccg tgaagggccg gttcaccatc tccagagaca attccgagaa cacggtttat 240
 ctgcaaatga acagactgag agccgaggac acggccgttt attactgtgc gaaagagagg 300
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Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
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Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser Tyr
 20 25 30

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

Ser Ser Ile Arg Gly Ser Gly Tyr Ser Ser Asp Tyr Ala Asp Ser Val
 50 55 60

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

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

Ala Lys Glu Arg Ser Val Thr Ala Tyr Tyr Tyr Tyr Gly Met Asp Val
 100 105 110

Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser

115

120

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24

<210> 36
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<400> 36

Gly Phe Thr Phe Ser Ser Tyr Ala
1 5

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attagaggtg gtggttatag ttca

24

<210> 38
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<220>
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<400> 38

Ile Arg Gly Ser Gly Tyr Ser Ser
1 5

<210> 39
<211> 48
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<210> 40
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gggatagccc ctaagctcct gatctatact gcatccactt tacaaagtgg ggtcccatca 180
aggttcagcg gcagtggatc tgggacagaa ttcactctca caatcagcag cctgcagcca 240
gaagattttg caacttatta ctgtcaacaa cttaaaagtt acccgctcac tttcggcgga 300
gggaccaagg tggagatcaa acga 324

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

Asp Arg Val Thr Ile Thr Cys Trp Ala Ser Gln Asp Ile Ser Ser Phe
20 25 30

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

Tyr Thr Ala Ser Thr Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
65 70 75 80

Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Leu Lys Ser Tyr Pro Leu
85 90 95

Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys Arg
100 105

<210> 43

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<212> DNA

<213> Artificial Sequence

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<400> 43

caggacatta gcagtttt

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<210> 44

<211> 6

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<220>

<223> synthetic

<400> 44

Gln Asp Ile Ser Ser Phe
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<210> 45
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<212> DNA
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actgcatcc

9

<210> 46
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<400> 46

Thr Ala Ser
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<210> 47
<211> 27
<212> DNA
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<400> 47
caacaactta aaagttaccc gctcact

27

<210> 48
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Gln Gln Leu Lys Ser Tyr Pro Leu Thr

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 tcctgtgcag cctctggatt cacctttaac acctatgcca tgaattgggt ccgccaggct 120
 ccagggaagg ggctggagtg ggtcgcagtt attggtggta gtggttacag cacaaactac 180
 gcagactccg tgaagggccg gttcaccatc tccagagaca attccaagaa cagctgttat 240
 ctgcaaatga acagcctgag gaccgaggac acggccgtat attactgtgc gaaagaaggg 300
 aatatcgtgg ctctctactg gtacttcgat ctctggggcc gtggcaccct ggtcaccgtc 360
 tcctca 366

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

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

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

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

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

65		70		75		80									
Leu	Gln	Met	Asn	Ser	Leu	Arg	Thr	Glu	Asp	Thr	Ala	Val	Tyr	Tyr	Cys
			85					90					95		
Ala	Lys	Glu	Gly	Asn	Ile	Val	Ala	Leu	Tyr	Trp	Tyr	Phe	Asp	Leu	Trp
		100					105					110			
Gly	Arg	Gly	Thr	Leu	Val	Thr	Val	Ser	Ser						
		115					120								

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<400> 51
 ggattcacct ttaacaccta tgcc

24

<210> 52
 <211> 8
 <212> PRT
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<220>
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<400> 52

Gly	Phe	Thr	Phe	Asn	Thr	Tyr	Ala
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<400> 53
 attggtggta gtggttacag caca

24

<210> 54

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

<220>
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<400> 54

Ile Gly Gly Ser Gly Tyr Ser Thr
1 5

<210> 55
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<212> DNA
<213> Artificial Sequence

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<400> 55
gcgaaagaag ggaatatcgt ggctctctac tggctacttcg atctc

45

<210> 56
<211> 15
<212> PRT
<213> Artificial Sequence

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<400> 56

Ala Lys Glu Gly Asn Ile Val Ala Leu Tyr Trp Tyr Phe Asp Leu
1 5 10 15

<210> 57
<211> 324
<212> DNA
<213> Artificial Sequence

<220>
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<400> 57
gacatccaga tgaccagtc tccatcctcc ctgtctgcat ctgtaggaga cagagtcacc

60

atcacttgcc gggcaagtca gagcattagc agatatttaa attggtatca acagaaacca

120

gggaaagccc ctaagctcct gatctatgct gcatccagtt tgcaaggtgg ggtcccatca

180

aaattcagtg gcagtggatc tgggacagat ttcactctca ccatcagcag tctacaacct 240
gaagattttg caacttacta ctgtcaacag agttccacta ccccgctcac tttcggcgga 300
gggaccaagg tggagatcaa acga 324

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<400> 58

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

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

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

Tyr Ala Ala Ser Ser Leu Gln Gly Gly Val Pro Ser Lys Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
65 70 75 80

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

Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys Arg
100 105

<210> 59
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<400> 59

cagagcatta gcagatat

18

<210> 60
<211> 6
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<220>
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<400> 60

Gln Ser Ile Ser Arg Tyr
1 5

<210> 61
<211> 9
<212> DNA
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<400> 61
gctgcatcc

9

<210> 62
<211> 3
<212> PRT
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<400> 62

Ala Ala Ser
1

<210> 63
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
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<400> 63
caacagagtt ccactacccc gtcact

27

<210> 64
<211> 9
<212> PRT
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<400> 64

Gln Gln Ser Ser Thr Thr Pro Leu Thr
1 5

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<400> 65

Glu 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 Phe Thr Phe Ser Asp His
20 25 30

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

Ser Tyr Ile Gly Ser Gly Val Val Thr Met Tyr Tyr Ala Asp Ser Val
50 55 60

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

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

Ala Arg Asp Arg Gly Tyr Tyr Phe Gly Ser Glu Ala Phe His Tyr Trp
100 105 110

Gly Gln Gly Thr Leu Val Thr Val Ser Ser Ala Ser Thr Lys Gly Pro

115

120

125

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

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

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

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

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

His Lys Pro Ser Asn Thr Lys Val Asp Lys Lys Val Glu Pro Lys Ser
 210 215 220

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

Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu
 245 250 255

Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser
 260 265 270

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

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

Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn
 305 310 315 320

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

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

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

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

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

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

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

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

Ser Pro Gly Lys
450

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<211> 214
<212> PRT
<213> Artificial Sequence

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<400> 66

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

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

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

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

Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
65 70 75 80

Asp Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Tyr Lys Ser Tyr Ser Leu
85 90 95

Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys Arg Thr Val Ala Ala
100 105 110

Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly
115 120 125

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

Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln
145 150 155 160

Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser
165 170 175

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

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

Phe Asn Arg Gly Glu Cys
210

<210> 67
<211> 453
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic

<400> 67

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

Ser Leu Arg Leu Ser Cys Lys Ala Ser Gly Phe Thr Phe Ser Thr Phe
20 25 30

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

Ser Ala Ile Gly Ala Ser Gly Tyr Ser Thr Tyr Tyr Val Asp Ser Met
50 55 60

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

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

Ala Lys Glu Tyr Ser Val Ser Ser Asn Tyr Tyr Tyr Gly Met Asp Val
100 105 110

Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser Ala Ser Thr Lys Gly
115 120 125

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

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

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

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

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

Asn His Lys Pro Ser Asn Thr Lys Val Asp Lys Lys Val Glu Pro Lys

210

215

220

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

Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr
 245 250 255

Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val
 260 265 270

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

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

Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu
 305 310 315 320

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

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

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

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

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

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

Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser
 420 425 430

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

Leu Ser Pro Gly Lys
450

<210> 68
<211> 214
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic

<400> 68

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

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

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

Tyr Ala Ala Ser Ser Leu Leu Ser Gly Val Pro Ser Arg Phe Ser Ala
50 55 60

Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
65 70 75 80

Glu Asp Phe Ser Thr Tyr Tyr Cys Gln Gln Thr Tyr Ser Ile Pro Ile
85 90 95

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

Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly
115 120 125

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

Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln
145 150 155 160

Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser
165 170 175

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

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

Phe Asn Arg Gly Glu Cys
210

<210> 69
<211> 453
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic

<400> 69

Glu 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 Phe Thr Phe Ser Ser Tyr
20 25 30

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

Ser Ser Ile Arg Gly Ser Gly Tyr Ser Ser Asp Tyr Ala Asp Ser Val
50 55 60

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

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

Ala Lys Glu Arg Ser Val Thr Ala Tyr Tyr Tyr Tyr Gly Met Asp Val
100 105 110

Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser Ala Ser Thr Lys Gly
115 120 125

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

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

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

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

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

Asn His Lys Pro Ser Asn Thr Lys Val Asp Lys Lys Val Glu Pro Lys
210 215 220

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

Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr
245 250 255

Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val
260 265 270

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

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

Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu

305 310 315 320
 Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala
 325 330 335
 Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro
 340 345 350
 Gln Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln
 355 360 365
 Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala
 370 375 380
 Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr
 385 390 395 400
 Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu
 405 410 415
 Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser
 420 425 430
 Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser
 435 440 445
 Leu Ser Pro Gly Lys
 450

 <210> 70
 <211> 214
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> synthetic

 <400> 70

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

 Asp Arg Val Thr Ile Thr Cys Trp Ala Ser Gln Asp Ile Ser Ser Phe

20

25

30

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

Tyr Thr Ala Ser Thr Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly
 50 55 60

Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
 65 70 75 80

Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Leu Lys Ser Tyr Pro Leu
 85 90 95

Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys Arg Thr Val Ala Ala
 100 105 110

Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly
 115 120 125

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

Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln
 145 150 155 160

Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser
 165 170 175

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

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

Phe Asn Arg Gly Glu Cys
 210

<210> 71

<211> 452

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic

<400> 71

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

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

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

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

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

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

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

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

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

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

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

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

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

His Lys Pro Ser Asn Thr Lys Val Asp Lys Lys Val Glu Pro Lys Ser
210 215 220

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

Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu
245 250 255

Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser
260 265 270

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

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

Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn
305 310 315 320

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

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

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

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

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

Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr

405

410

415

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

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

Ser Pro Gly Lys
 450

<210> 72

<211> 214

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic

<400> 72

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

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

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

Tyr Ala Ala Ser Ser Leu Gln Gly Gly Val Pro Ser Lys Phe Ser Gly
 50 55 60

Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
 65 70 75 80

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

Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys Arg Thr Val Ala Ala
 100 105 110

Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly

115

120

125

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

Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln
 145 150 155 160

Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser
 165 170 175

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

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

Phe Asn Arg Gly Glu Cys
 210

<210> 73

<211> 454

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic

<400> 73

Glu Met Gln Leu Leu 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 Phe Thr Phe Ser Ser Tyr
 20 25 30

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

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

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

65					70						75				80
Leu	Gln	Met	Asn	Ser	Leu	Arg	Ala	Gly	Asp	Thr	Ala	Val	Tyr	Tyr	Cys
				85					90					95	
Ala	Lys	Glu	Glu	Phe	Leu	Pro	Gly	Thr	His	Tyr	Tyr	Tyr	Gly	Met	Asp
			100					105					110		
Val	Trp	Gly	Gln	Gly	Thr	Thr	Val	Thr	Val	Ser	Ser	Ala	Ser	Thr	Lys
		115					120					125			
Gly	Pro	Ser	Val	Phe	Pro	Leu	Ala	Pro	Ser	Ser	Lys	Ser	Thr	Ser	Gly
	130					135					140				
Gly	Thr	Ala	Ala	Leu	Gly	Cys	Leu	Val	Lys	Asp	Tyr	Phe	Pro	Glu	Pro
145					150					155					160
Val	Thr	Val	Ser	Trp	Asn	Ser	Gly	Ala	Leu	Thr	Ser	Gly	Val	His	Thr
				165					170					175	
Phe	Pro	Ala	Val	Leu	Gln	Ser	Ser	Gly	Leu	Tyr	Ser	Leu	Ser	Ser	Val
			180					185					190		
Val	Thr	Val	Pro	Ser	Ser	Ser	Leu	Gly	Thr	Gln	Thr	Tyr	Ile	Cys	Asn
		195					200					205			
Val	Asn	His	Lys	Pro	Ser	Asn	Thr	Lys	Val	Asp	Lys	Lys	Val	Glu	Pro
	210					215					220				
Lys	Ser	Cys	Asp	Lys	Thr	His	Thr	Cys	Pro	Pro	Cys	Pro	Ala	Pro	Glu
225					230				235						240
Leu	Leu	Gly	Gly	Pro	Ser	Val	Phe	Leu	Phe	Pro	Pro	Lys	Pro	Lys	Asp
				245					250					255	
Thr	Leu	Met	Ile	Ser	Arg	Thr	Pro	Glu	Val	Thr	Cys	Val	Val	Val	Asp
			260					265					270		
Val	Ser	His	Glu	Asp	Pro	Glu	Val	Lys	Phe	Asn	Trp	Tyr	Val	Asp	Gly
		275					280					285			

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

Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp
305 310 315 320

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

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

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

Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile
370 375 380

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

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

Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys
420 425 430

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

Ser Leu Ser Pro Gly Lys
450

<210> 74
<211> 214
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic

<400> 74

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

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

Leu Gly Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Val Ile
35 40 45

Tyr Ser Ala Ser Thr Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Phe Thr Leu Ser Ile Ser Ser Leu Gln Pro
65 70 75 80

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

Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg Thr Val Ala Ala
100 105 110

Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly
115 120 125

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

Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln
145 150 155 160

Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser
165 170 175

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

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

Phe Asn Arg Gly Glu Cys

210

<210> 75
<211> 453
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic

<400> 75

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

Ser Leu Ser Ile Thr Cys Thr Val Ser Gly Phe Ser Leu Thr Ser Tyr
20 25 30

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

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

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

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

Arg Asn Arg Gly Asp Ile Tyr Tyr Asp Phe Thr Tyr Ala Met Asp Tyr
100 105 110

Trp Gly Gln Gly Thr Ser Val Thr Val Ser Ser Ala Ser Thr Lys Gly
115 120 125

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

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

Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe

165

170

175

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

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

Asn His Lys Pro Ser Asn Thr Lys Val Asp Lys Lys Val Glu Pro Lys
 210 215 220

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

Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr
 245 250 255

Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val
 260 265 270

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

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

Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu
 305 310 315 320

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

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

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

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

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

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

Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser
420 425 430

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

Leu Ser Pro Gly Lys
450

<210> 76
<211> 214
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic

<400> 76

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

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

Leu Ala Trp Tyr Gln Gln Thr Gln Gly Lys Ser Pro Gln Leu Leu Val
35 40 45

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

Ser Gly Ser Gly Thr Gln Tyr Ser Leu Lys Ile Asn Ser Leu Gln Pro
65 70 75 80

Glu Asp Phe Gly Ser Tyr Tyr Cys Gln His Phe Trp Ser Thr Pro Tyr
85 90 95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg Thr Val Ala Ala
100 105 110

Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly
115 120 125

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

Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln
145 150 155 160

Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser
165 170 175

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

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

Phe Asn Arg Gly Glu Cys
210

<210> 77
<211> 294
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic

<400> 77

Met Glu Val Arg Asn Leu Asn Ala Ala Arg Glu Leu Phe Leu Asp Glu
1 5 10 15

Leu Leu Ala Ala Ser Ala Ala Pro Ala Ser Ala Glu Gln Glu Glu Leu
20 25 30

Leu Ala Leu Leu Arg Ser Glu Arg Ile Val Leu Ala His Ala Gly Gln
35 40 45

Pro Leu Ser Glu Ala Gln Val Leu Lys Ala Leu Ala Trp Leu Leu Ala
50 55 60

Ala Asn Pro Ser Ala Pro Pro Gly Gln Gly Leu Glu Val Leu Arg Glu
65 70 75 80

Val Leu Gln Ala Arg Arg Gln Pro Gly Ala Gln Trp Asp Leu Arg Glu
85 90 95

Phe Leu Val Ser Ala Tyr Phe Ser Leu His Gly Arg Leu Asp Glu Asp
100 105 110

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

Lys Ala Leu Leu Asp Glu Leu Lys Ala Leu Thr Ala Glu Leu Lys Val
130 135 140

Tyr Ser Val Ile Gln Ser Gln Ile Asn Ala Ala Leu Ser Ala Lys Gln
145 150 155 160

Gly Ile Arg Ile Asp Ala Gly Gly Ile Asp Leu Val Asp Pro Thr Leu
165 170 175

Tyr Gly Tyr Ala Val Gly Asp Pro Arg Trp Lys Asp Ser Pro Glu Tyr
180 185 190

Ala Leu Leu Ser Asn Leu Asp Thr Phe Ser Gly Lys Leu Ser Ile Lys
195 200 205

Asp Phe Leu Ser Gly Ser Pro Lys Gln Ser Gly Glu Leu Lys Gly Leu
210 215 220

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

Ala Thr Thr Val Ser Asp Arg Ser Arg Pro Leu Asn Asp Lys Val Asn
245 250 255

Glu Lys Thr Thr Leu Leu Asn Asp Thr Ser Ser Arg Tyr Asn Ser Ala

260

265

270

Val Glu Ala Leu Asn Arg Phe Ile Gln Lys Tyr Asp Ser Val Leu Arg
 275 280 285

Asp Ile Leu Ser Ala Ile
 290

<210> 78
 <211> 300
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic

<400> 78

Met Glu Val Arg Asn Leu Asn Ala Ala Arg Glu Leu Phe Leu Asp Glu
 1 5 10 15

Leu Leu Ala Ala Ser Ala Ala Pro Ala Ser Ala Glu Gln Glu Glu Leu
 20 25 30

Leu Ala Leu Leu Arg Ser Glu Arg Ile Val Leu Ala His Ala Gly Gln
 35 40 45

Pro Leu Ser Glu Ala Gln Val Leu Lys Ala Leu Ala Trp Leu Leu Ala
 50 55 60

Ala Asn Pro Ser Ala Pro Pro Gly Gln Gly Leu Glu Val Leu Arg Glu
 65 70 75 80

Val Leu Gln Ala Arg Arg Gln Pro Gly Ala Gln Trp Asp Leu Arg Glu
 85 90 95

Phe Leu Val Ser Ala Tyr Phe Ser Leu His Gly Arg Leu Asp Glu Asp
 100 105 110

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

Lys Ala Leu Leu Asp Glu Leu Lys Ala Leu Thr Ala Glu Leu Lys Val

130

135

140

Tyr Ser Val Ile Gln Ser Gln Ile Asn Ala Ala Leu Ser Ala Lys Gln
 145 150 155 160

Gly Ile Arg Ile Asp Ala Gly Gly Ile Asp Leu Val Asp Pro Thr Leu
 165 170 175

Tyr Gly Tyr Ala Val Gly Asp Pro Arg Trp Lys Asp Ser Pro Glu Tyr
 180 185 190

Ala Leu Leu Ser Asn Leu Asp Thr Phe Ser Gly Lys Leu Ser Ile Lys
 195 200 205

Asp Phe Leu Ser Gly Ser Pro Lys Gln Ser Gly Glu Leu Lys Gly Leu
 210 215 220

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

Ala Thr Thr Val Ser Asp Arg Ser Arg Pro Leu Asn Asp Lys Val Asn
 245 250 255

Glu Lys Thr Thr Leu Leu Asn Asp Thr Ser Ser Arg Tyr Asn Ser Ala
 260 265 270

Val Glu Ala Leu Asn Arg Phe Ile Gln Lys Tyr Asp Ser Val Leu Arg
 275 280 285

Asp Ile Leu Ser Ala Ile His His His His His His
 290 295 300

<210> 79

<211> 122

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic

<400> 79

Lys Ala Leu Thr Ala Glu Leu Lys Val Tyr Ser Val Ile Gln Ser Gln

1	5	10	15
Ile Asn Ala Ala Leu Ser Ala Lys Gln Gly Ile Arg Ile Asp Ala Gly	20	25	30
Gly Ile Asp Leu Val Asp Pro Thr Leu Tyr Gly Tyr Ala Val Gly Asp	35	40	45
Pro Arg Trp Lys Asp Ser Pro Glu Tyr Ala Leu Leu Ser Asn Leu Asp	50	55	60
Thr Phe Ser Gly Lys Leu Ser Ile Lys Asp Phe Leu Ser Gly Ser Pro	65	70	75
Lys Gln Ser Gly Glu Leu Lys Gly Leu Ser Asp Glu Tyr Pro Phe Glu	85	90	95
Lys Asp Asn Asn Pro Val Gly Asn Phe Ala Thr Thr Val Ser Asp Arg	100	105	110
Ser Arg Pro Leu Asn Asp Lys Val Asn Glu	115	120	

<210> 80
 <211> 128
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic

<400> 80

Lys Ala Leu Thr Ala Glu Leu Lys Val Tyr Ser Val Ile Gln Ser Gln	1	5	10	15
Ile Asn Ala Ala Leu Ser Ala Lys Gln Gly Ile Arg Ile Asp Ala Gly	20	25	30	
Gly Ile Asp Leu Val Asp Pro Thr Leu Tyr Gly Tyr Ala Val Gly Asp	35	40	45	
Pro Arg Trp Lys Asp Ser Pro Glu Tyr Ala Leu Leu Ser Asn Leu Asp				

50

55

60

Thr Phe Ser Gly Lys Leu Ser Ile Lys Asp Phe Leu Ser Gly Ser Pro
 65 70 75 80

Lys Gln Ser Gly Glu Leu Lys Gly Leu Ser Asp Glu Tyr Pro Phe Glu
 85 90 95

Lys Asp Asn Asn Pro Val Gly Asn Phe Ala Thr Thr Val Ser Asp Arg
 100 105 110

Ser Arg Pro Leu Asn Asp Lys Val Asn Glu His His His His His His
 115 120 125

<210> 81

<211> 98

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic

<400> 81

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

Ile Asn Ala Ala Leu Ser Ala Lys Gln Gly Ile Arg Ile Asp Ala Gly
 20 25 30

Gly Ile Asp Leu Val Asp Pro Thr Leu Tyr Gly Tyr Ala Val Gly Asp
 35 40 45

Pro Arg Trp Lys Asp Ser Pro Glu Tyr Ala Leu Leu Ser Asn Leu Asp
 50 55 60

Thr Phe Ser Gly Lys Leu Ser Ile Lys Asp Phe Leu Ser Gly Ser Pro
 65 70 75 80

Lys Gln Ser Gly Glu Leu Lys Gly Leu Ser Asp Glu Tyr Pro Phe Glu
 85 90 95

Lys Asp

<210> 82
<211> 104
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic

<400> 82

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

Ile Asn Ala Ala Leu Ser Ala Lys Gln Gly Ile Arg Ile Asp Ala Gly
20 25 30

Gly Ile Asp Leu Val Asp Pro Thr Leu Tyr Gly Tyr Ala Val Gly Asp
35 40 45

Pro Arg Trp Lys Asp Ser Pro Glu Tyr Ala Leu Leu Ser Asn Leu Asp
50 55 60

Thr Phe Ser Gly Lys Leu Ser Ile Lys Asp Phe Leu Ser Gly Ser Pro
65 70 75 80

Lys Gln Ser Gly Glu Leu Lys Gly Leu Ser Asp Glu Tyr Pro Phe Glu
85 90 95

Lys Asp His His His His His His
100

<210> 83
<211> 454
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic

<400> 83

Glu Val Gln Leu Leu 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 Phe Thr Phe Ser Ser Tyr
20 25 30

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

Ser Ala Ile Thr Met Ser Gly Ile Thr Ala Tyr Tyr Thr Asp Asp Val
50 55 60

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

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

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

Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser Ala Ser Thr Lys
115 120 125

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

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

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

Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val
180 185 190

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

Val Asn His Lys Pro Ser Asn Thr Lys Val Asp Lys Lys Val Glu Pro
210 215 220

Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu

225		230		235		240									
Leu	Leu	Gly	Gly	Pro	Ser	Val	Phe	Leu	Phe	Pro	Pro	Lys	Pro	Lys	Asp
				245					250					255	
Thr	Leu	Met	Ile	Ser	Arg	Thr	Pro	Glu	Val	Thr	Cys	Val	Val	Val	Asp
			260					265					270		
Val	Ser	His	Glu	Asp	Pro	Glu	Val	Lys	Phe	Asn	Trp	Tyr	Val	Asp	Gly
		275					280					285			
Val	Glu	Val	His	Asn	Ala	Lys	Thr	Lys	Pro	Arg	Glu	Glu	Gln	Tyr	Asn
	290					295					300				
Ser	Thr	Tyr	Arg	Val	Val	Ser	Val	Leu	Thr	Val	Leu	His	Gln	Asp	Trp
305					310					315					320
Leu	Asn	Gly	Lys	Glu	Tyr	Lys	Cys	Lys	Val	Ser	Asn	Lys	Ala	Leu	Pro
				325					330					335	
Ala	Pro	Ile	Glu	Lys	Thr	Ile	Ser	Lys	Ala	Lys	Gly	Gln	Pro	Arg	Glu
			340					345					350		
Pro	Gln	Val	Tyr	Thr	Leu	Pro	Pro	Ser	Arg	Asp	Glu	Leu	Thr	Lys	Asn
		355					360					365			
Gln	Val	Ser	Leu	Thr	Cys	Leu	Val	Lys	Gly	Phe	Tyr	Pro	Ser	Asp	Ile
	370					375					380				
Ala	Val	Glu	Trp	Glu	Ser	Asn	Gly	Gln	Pro	Glu	Asn	Asn	Tyr	Lys	Thr
385					390					395					400
Thr	Pro	Pro	Val	Leu	Asp	Ser	Asp	Gly	Ser	Phe	Phe	Leu	Tyr	Ser	Lys
				405					410					415	
Leu	Thr	Val	Asp	Lys	Ser	Arg	Trp	Gln	Gln	Gly	Asn	Val	Phe	Ser	Cys
			420					425					430		
Ser	Val	Met	His	Glu	Ala	Leu	His	Asn	His	Tyr	Thr	Gln	Lys	Ser	Leu
		435					440					445			

Ser Leu Ser Pro Gly Lys
450

<210> 84
<211> 214
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic

<400> 84

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

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

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

Tyr Ser Ala Ser Thr Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
65 70 75 80

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

Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg Thr Val Ala Ala
100 105 110

Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly
115 120 125

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

Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln
145 150 155 160

Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser
165 170 175

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

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

Phe Asn Arg Gly Glu Cys
210

<210> 85
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic

<400> 85

Ala Leu Ser Ala Lys Gln Gly Ile Arg Ile Asp Ala Gly Gly Ile Asp
1 5 10 15

<210> 86
<211> 21
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic

<400> 86

Ser Gln Ile Asn Ala Ala Leu Ser Ala Lys Gln Gly Ile Arg Ile Asp
1 5 10 15

Ala Gly Gly Ile Asp
20