

SEQUENCE LISTING

<110> PORTOLA PHARMACEUTICALS, INC.

<120> PREPARATION OF FACTOR XA DERIVATIVES

<130> 37JE-225786-W0

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<160> 11

<170> PatentIn version 3.5

<210> 1

<211> 448

<212> PRT

<213> Homo sapiens

<400> 1

Ala	Asn	Ser	Phe	Leu	Glu	Glu	Met	Lys	Lys	Gly	His	Leu	Glu	Arg	Glu
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Cys	Met	Glu	Glu	Thr	Cys	Ser	Tyr	Glu	Glu	Ala	Arg	Glu	Val	Phe	Glu
		20						25					30		

Asp	Ser	Asp	Lys	Thr	Asn	Glu	Phe	Trp	Asn	Lys	Tyr	Lys	Asp	Gly	Asp
		35					40					45			

Gln	Cys	Glu	Thr	Ser	Pro	Cys	Gln	Asn	Gln	Gly	Lys	Cys	Lys	Asp	Gly
	50					55					60				

Leu	Gly	Glu	Tyr	Thr	Cys	Thr	Cys	Leu	Glu	Gly	Phe	Glu	Gly	Lys	Asn
65					70					75					80

Cys	Glu	Leu	Phe	Thr	Arg	Lys	Leu	Cys	Ser	Leu	Asp	Asn	Gly	Asp	Cys
				85					90					95	

Asp	Gln	Phe	Cys	His	Glu	Glu	Gln	Asn	Ser	Val	Val	Cys	Ser	Cys	Ala
			100					105					110		

Arg	Gly	Tyr	Thr	Leu	Ala	Asp	Asn	Gly	Lys	Ala	Cys	Ile	Pro	Thr	Gly
		115					120					125			

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

Ala	Gln	Ala	Thr	Ser	Ser	Ser	Gly	Glu	Ala	Pro	Asp	Ser	Ile	Thr	Trp
145					150					155					160

Lys	Pro	Tyr	Asp	Ala	Ala	Asp	Leu	Asp	Pro	Thr	Glu	Asn	Pro	Phe	Asp
				165					170					175	

Leu	Leu	Asp	Phe	Asn	Gln	Thr	Gln	Pro	Glu	Arg	Gly	Asp	Asn	Asn	Leu
			180					185					190		

Thr	Arg	Ile	Val	Gly	Gly	Gln	Glu	Cys	Lys	Asp	Gly	Glu	Cys	Pro	Trp
		195					200					205			

Gln	Ala	Leu	Leu	Ile	Asn	Glu	Glu	Asn	Glu	Gly	Phe	Cys	Gly	Gly	Thr
	210					215					220				

Ile	Leu	Ser	Glu	Phe	Tyr	Ile	Leu	Thr	Ala	Ala	His	Cys	Leu	Tyr	Gln
225					230					235					240

Ala	Lys	Arg	Phe	Lys	Val	Arg	Val	Gly	Asp	Arg	Asn	Thr	Glu	Gln	Glu
				245					250					255	

Glu	Gly	Gly	Glu	Ala	Val	His	Glu	Val	Glu	Val	Val	Ile	Lys	His	Asn
			260					265					270		

Arg	Phe	Thr	Lys	Glu	Thr	Tyr	Asp	Phe	Asp	Ile	Ala	Val	Leu	Arg	Leu
		275					280					285			

Lys	Thr	Pro	Ile	Thr	Phe	Arg	Met	Asn	Val	Ala	Pro	Ala	Cys	Leu	Pro
	290					295					300				

Glu	Arg	Asp	Trp	Ala	Glu	Ser	Thr	Leu	Met	Thr	Gln	Lys	Thr	Gly	Ile
305					310					315					320

Val Ser Gly Phe Gly Arg Thr His Glu Lys Gly Arg Gln Ser Thr Arg
 325 330 335
 Leu Lys Met Leu Glu Val Pro Tyr Val Asp Arg Asn Ser Cys Lys Leu
 340 345 350
 Ser Ser Ser Phe Ile Ile Thr Gln Asn Met Phe Cys Ala Gly Tyr Asp
 355 360 365
 Thr Lys Gln Glu Asp Ala Cys Gln Gly Asp Ser Gly Gly Pro His Val
 370 375 380
 Thr Arg Phe Lys Asp Thr Tyr Phe Val Thr Gly Ile Val Ser Trp Gly
 385 390 395 400
 Glu Gly Cys Ala Arg Lys Gly Lys Tyr Gly Ile Tyr Thr Lys Val Thr
 405 410 415
 Ala Phe Leu Lys Trp Ile Asp Arg Ser Met Lys Thr Arg Gly Leu Pro
 420 425 430
 Lys Ala Lys Ser His Ala Pro Glu Val Ile Thr Ser Ser Pro Leu Lys
 435 440 445
 <210> 2
 <211> 365
 <212> PRT
 <213> Artificial Sequence
 <220>
 <223> Description of Artificial Sequence: Synthetic
 polypeptide
 <400> 2
 Ala Asn Ser Phe Leu Phe Trp Asn Lys Tyr Lys Asp Gly Asp Gln Cys
 1 5 10 15
 Glu Thr Ser Pro Cys Gln Asn Gln Gly Lys Cys Lys Asp Gly Leu Gly
 20 25 30
 Glu Tyr Thr Cys Thr Cys Leu Glu Gly Phe Glu Gly Lys Asn Cys Glu
 35 40 45
 Leu Phe Thr Arg Lys Leu Cys Ser Leu Asp Asn Gly Asp Cys Asp Gln
 50 55 60
 Phe Cys His Glu Glu Gln Asn Ser Val Val Cys Ser Cys Ala Arg Gly
 65 70 75 80
 Tyr Thr Leu Ala Asp Asn Gly Lys Ala Cys Ile Pro Thr Gly Pro Tyr
 85 90 95
 Pro Cys Gly Lys Gln Thr Leu Glu Arg Arg Lys Arg Arg Lys Arg Ile
 100 105 110
 Val Gly Gly Gln Glu Cys Lys Asp Gly Glu Cys Pro Trp Gln Ala Leu
 115 120 125
 Leu Ile Asn Glu Glu Asn Glu Gly Phe Cys Gly Gly Thr Ile Leu Ser
 130 135 140
 Glu Phe Tyr Ile Leu Thr Ala Ala His Cys Leu Tyr Gln Ala Lys Arg
 145 150 155 160
 Phe Lys Val Arg Val Gly Asp Arg Asn Thr Glu Gln Glu Glu Gly Gly
 165 170 175
 Glu Ala Val His Glu Val Glu Val Val Ile Lys His Asn Arg Phe Thr
 180 185 190
 Lys Glu Thr Tyr Asp Phe Asp Ile Ala Val Leu Arg Leu Lys Thr Pro
 195 200 205
 Ile Thr Phe Arg Met Asn Val Ala Pro Ala Cys Leu Pro Glu Arg Asp
 210 215 220
 Trp Ala Glu Ser Thr Leu Met Thr Gln Lys Thr Gly Ile Val Ser Gly
 225 230 235 240

Phe Gly Arg Thr His Glu Lys Gly Arg Gln Ser Thr Arg Leu Lys Met
 245 250 255
 Leu Glu Val Pro Tyr Val Asp Arg Asn Ser Cys Lys Leu Ser Ser Ser
 260 265 270
 Phe Ile Ile Thr Gln Asn Met Phe Cys Ala Gly Tyr Asp Thr Lys Gln
 275 280 285
 Glu Asp Ala Cys Gln Gly Asp Ala Gly Gly Pro His Val Thr Arg Phe
 290 295 300
 Lys Asp Thr Tyr Phe Val Thr Gly Ile Val Ser Trp Gly Glu Gly Cys
 305 310 315 320
 Ala Arg Lys Gly Lys Tyr Gly Ile Tyr Thr Lys Val Thr Ala Phe Leu
 325 330 335
 Lys Trp Ile Asp Arg Ser Met Lys Thr Arg Gly Leu Pro Lys Ala Lys
 340 345 350
 Ser His Ala Pro Glu Val Ile Thr Ser Ser Pro Leu Lys
 355 360 365

<210> 3
 <211> 359
 <212> PRT
 <213> Artificial Sequence

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

<400> 3
 Ala Asn Ser Phe Leu Phe Trp Asn Lys Tyr Lys Asp Gly Asp Gln Cys
 1 5 10 15
 Glu Thr Ser Pro Cys Gln Asn Gln Gly Lys Cys Lys Asp Gly Leu Gly
 20 25 30
 Glu Tyr Thr Cys Thr Cys Leu Glu Gly Phe Glu Gly Lys Asn Cys Glu
 35 40 45
 Leu Phe Thr Arg Lys Leu Cys Ser Leu Asp Asn Gly Asp Cys Asp Gln
 50 55 60
 Phe Cys His Glu Glu Gln Asn Ser Val Val Cys Ser Cys Ala Arg Gly
 65 70 75 80
 Tyr Thr Leu Ala Asp Asn Gly Lys Ala Cys Ile Pro Thr Gly Pro Tyr
 85 90 95
 Pro Cys Gly Lys Gln Thr Leu Glu Arg Ile Val Gly Gly Gln Glu Cys
 100 105 110
 Lys Asp Gly Glu Cys Pro Trp Gln Ala Leu Leu Ile Asn Glu Glu Asn
 115 120 125
 Glu Gly Phe Cys Gly Gly Thr Ile Leu Ser Glu Phe Tyr Ile Leu Thr
 130 135 140
 Ala Ala His Cys Leu Tyr Gln Ala Lys Arg Phe Lys Val Arg Val Gly
 145 150 155 160
 Asp Arg Asn Thr Glu Gln Glu Glu Gly Gly Glu Ala Val His Glu Val
 165 170 175
 Glu Val Val Ile Lys His Asn Arg Phe Thr Lys Glu Thr Tyr Asp Phe
 180 185 190
 Asp Ile Ala Val Leu Arg Leu Lys Thr Pro Ile Thr Phe Arg Met Asn
 195 200 205
 Val Ala Pro Ala Cys Leu Pro Glu Arg Asp Trp Ala Glu Ser Thr Leu
 210 215 220
 Met Thr Gln Lys Thr Gly Ile Val Ser Gly Phe Gly Arg Thr His Glu
 225 230 235 240
 Lys Gly Arg Gln Ser Thr Arg Leu Lys Met Leu Glu Val Pro Tyr Val

245

250

Asp Arg Asn Ser Cys Lys Leu Ser Ser Ser Phe Ile Ile Thr Gln Asn
260 265 270

Met Phe Cys Ala Gly Tyr Asp Thr Lys Gln Glu Asp Ala Cys Gln Gly
275 280 285

Asp Ala Gly Gly Pro His Val Thr Arg Phe Lys Asp Thr Tyr Phe Val
290 295 300

Thr Gly Ile Val Ser Trp Gly Glu Gly Cys Ala Arg Lys Gly Lys Tyr
305 310 315 320

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

Met Lys Thr Arg Gly Leu Pro Lys Ala Lys Ser His Ala Pro Glu Val
340 345 350

Ile Thr Ser Ser Pro Leu Lys
355

<210> 4
<211> 105
<212> PRT
<213> Artificial Sequence

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

<400> 4
Ala Asn Ser Phe Leu Phe Trp Asn Lys Tyr Lys Asp Gly Asp Gln Cys
1 5 10 15

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

Glu Tyr Thr Cys Thr Cys Leu Glu Gly Phe Glu Gly Lys Asn Cys Glu
35 40 45

Leu Phe Thr Arg Lys Leu Cys Ser Leu Asp Asn Gly Asp Cys Asp Gln
50 55 60

Phe Cys His Glu Glu Gln Asn Ser Val Val Cys Ser Cys Ala Arg Gly
65 70 75 80

Tyr Thr Leu Ala Asp Asn Gly Lys Ala Cys Ile Pro Thr Gly Pro Tyr
85 90 95

Pro Cys Gly Lys Gln Thr Leu Glu Arg
100 105

<210> 5
<211> 254
<212> PRT
<213> Artificial Sequence

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

<400> 5
Ile Val Gly Gly Gln Glu Cys Lys Asp Gly Glu Cys Pro Trp Gln Ala
1 5 10 15

Leu Leu Ile Asn Glu Glu Asn Glu Gly Phe Cys Gly Gly Thr Ile Leu
20 25 30

Ser Glu Phe Tyr Ile Leu Thr Ala Ala His Cys Leu Tyr Gln Ala Lys
35 40 45

Arg Phe Lys Val Arg Val Gly Asp Arg Asn Thr Glu Gln Glu Glu Gly
50 55 60

Gly Glu Ala Val His Glu Val Glu Val Val Ile Lys His Asn Arg Phe
65 70 75 80

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

37JE-225786-W0_SL.TXT
Pro Ile Thr Phe Arg Met Asn Val Ala Pro Ala Cys Leu Pro Glu Arg
100 105 110

Asp Trp Ala Glu Ser Thr Leu Met Thr Gln Lys Thr Gly Ile Val Ser
115 120 125

Gly Phe Gly Arg Thr His Glu Lys Gly Arg Gln Ser Thr Arg Leu Lys
130 135 140

Met Leu Glu Val Pro Tyr Val Asp Arg Asn Ser Cys Lys Leu Ser Ser
145 150 155 160

Ser Phe Ile Ile Thr Gln Asn Met Phe Cys Ala Gly Tyr Asp Thr Lys
165 170 175

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

Phe Lys Asp Thr Tyr Phe Val Thr Gly Ile Val Ser Trp Gly Glu Gly
195 200 205

Cys Ala Arg Lys Gly Lys Tyr Gly Ile Tyr Thr Lys Val Thr Ala Phe
210 215 220

Leu Lys Trp Ile Asp Arg Ser Met Lys Thr Arg Gly Leu Pro Lys Ala
225 230 235 240

Lys Ser His Ala Pro Glu Val Ile Thr Ser Ser Pro Leu Lys
245 250

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

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

<400> 6
Arg Lys Arg Arg Lys Arg
1 5

<210> 7
<211> 1218
<212> DNA
<213> Artificial Sequence

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

<400> 7
atggggcgcc cactgcacct cgtcctgctc agtgcctccc tggctggcct cctgctgctc 60
ggggaaagtc tgttcacccg cagggagcag gccaacaaca tcctggcgag ggtcacgagg 120
gccaattcct ttcttttctg gaataaatac aaagatggcg accagtgtga gaccagtcct 180
tgccagaacc agggcaaagt taaagacggc ctcggggaat acacctgcac ctgttttagaa 240
ggattcgaag gcaaaaactg tgaattattc acacggaagc tctgcagcct ggacaacggg 300
gactgtgacc agttctgcca cgaggaacag aactctgtgg tgtgctcctg cgcccgcggg 360
tacaccctgg ctgacaacgg caaggcctgc attccacag ggccctaccc ctgtgggaaa 420
cagaccctgg aacgcaggaa gaggaggaag aggatcgtgg gaggccagga atgcaaggac 480
ggggagtgtc cctggcaggc cctgctcatc aatgaggaaa acgagggttt ctgtggtgga 540
accattctga gcgagttcta catcctaacg gcagcccact gtctctacca agccaagaga 600
ttcaaggtga gggtagggga ccggaacacg gagcaggagg agggcggtga ggcggtgcac 660
gaggtggagg tggatcatca gcacaaccgg ttcacaaagg agacctatga cttcgacatc 720
gccgtgctcc ggctcaagac ccccatcacc ttccgcatga acgtggcgcc tgcctgcctc 780
cccgagcgtg actgggcca gtccacgctg atgacgcaga agacggggat tgtgagcggc 840
ttcgggcgca cccacgagaa gggccggcag tccaccaggc tcaagatgct ggaggtgccc 900
tacgtggacc gcaacagctg caagctgtcc agcagcttca tcatcaccca gaacatgttc 960
tgtgccggct acgacaccaa gcaggaggat gcctgccagg gggacgcagg gggccgcac 1020
gtcaccgcgt tcaaggacac ctacttcgtg acaggcatcg tcagctgggg agagggctgt 1080
gcccgtaaag ggaagtacgg gatctacacc aaggtcaccg ccttcctcaa gtggatcgac 1140
aggtccatga aaaccagggg cttgccaag gccaagagcc atgccccgga ggtcataacg 1200

tcctctccat taaagtga

1218

<210> 8

<211> 253

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic polypeptide

<400> 8

Ile Val Gly Gly Gln Glu Cys Lys Asp Gly Glu Cys Pro Trp Gln Ala
1 5 10 15Leu Leu Ile Asn Glu Glu Asn Glu Gly Phe Cys Gly Gly Thr Ile Leu
20 25 30Ser Glu Phe Tyr Ile Leu Thr Ala Ala His Cys Leu Tyr Gln Ala Lys
35 40 45Arg Phe Lys Val Arg Val Gly Asp Arg Asn Thr Glu Gln Glu Glu Gly
50 55 60Gly Glu Ala Val His Glu Val Glu Val Val Ile Lys His Asn Arg Phe
65 70 75 80Thr Lys Glu Thr Tyr Asp Phe Asp Ile Ala Val Leu Arg Leu Lys Thr
85 90 95Pro Ile Thr Phe Arg Met Asn Val Ala Pro Ala Cys Leu Pro Glu Arg
100 105 110Asp Trp Ala Glu Ser Thr Leu Met Thr Gln Lys Thr Gly Ile Val Ser
115 120 125Gly Phe Gly Arg Thr His Glu Lys Gly Arg Gln Ser Thr Arg Leu Lys
130 135 140Met Leu Glu Val Pro Tyr Val Asp Arg Asn Ser Cys Lys Leu Ser Ser
145 150 155 160Ser Phe Ile Ile Thr Gln Asn Met Phe Cys Ala Gly Tyr Asp Thr Lys
165 170 175Gln Glu Asp Ala Cys Gln Gly Asp Ala Gly Gly Pro His Val Thr Arg
180 185 190Phe Lys Asp Thr Tyr Phe Val Thr Gly Ile Val Ser Trp Gly Glu Gly
195 200 205Cys Ala Arg Lys Gly Lys Tyr Gly Ile Tyr Thr Lys Val Thr Ala Phe
210 215 220Leu Lys Trp Ile Asp Arg Ser Met Lys Thr Arg Gly Leu Pro Lys Ala
225 230 235 240Lys Ser His Ala Pro Glu Val Ile Thr Ser Ser Pro Leu
245 250

<210> 9

<211> 241

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic polypeptide

<400> 9

Ile Val Gly Gly Gln Glu Cys Lys Asp Gly Glu Cys Pro Trp Gln Ala
1 5 10 15Leu Leu Ile Asn Glu Glu Asn Glu Gly Phe Cys Gly Gly Thr Ile Leu
20 25 30Ser Glu Phe Tyr Ile Leu Thr Ala Ala His Cys Leu Tyr Gln Ala Lys
35 40 45Arg Phe Lys Val Arg Val Gly Asp Arg Asn Thr Glu Gln Glu Glu Gly
50 55 60

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

Lys

<210> 10
 <211> 240
 <212> PRT
 <213> Artificial Sequence

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

<400> 10
 Ile Val Gly Gly Gln Glu Cys Lys Asp Gly Glu Cys Pro Trp Gln Ala
 1 5 10 15
 Leu Leu Ile Asn Glu Glu Asn Glu Gly Phe Cys Gly Gly Thr Ile Leu
 20 25 30
 Ser Glu Phe Tyr Ile Leu Thr Ala Ala His Cys Leu Tyr Gln Ala Lys
 35 40 45
 Arg Phe Lys Val Arg Val Gly Asp Arg Asn Thr Glu Gln Glu Glu Gly
 50 55 60
 Gly Glu Ala Val His Glu Val Glu Val Val Ile Lys His Asn Arg Phe
 65 70 75 80
 Thr Lys Glu Thr Tyr Asp Phe Asp Ile Ala Val Leu Arg Leu Lys Thr
 85 90 95
 Pro Ile Thr Phe Arg Met Asn Val Ala Pro Ala Cys Leu Pro Glu Arg
 100 105 110
 Asp Trp Ala Glu Ser Thr Leu Met Thr Gln Lys Thr Gly Ile Val Ser
 115 120 125
 Gly Phe Gly Arg Thr His Glu Lys Gly Arg Gln Ser Thr Arg Leu Lys
 130 135 140
 Met Leu Glu Val Pro Tyr Val Asp Arg Asn Ser Cys Lys Leu Ser Ser
 145 150 155 160
 Ser Phe Ile Ile Thr Gln Asn Met Phe Cys Ala Gly Tyr Asp Thr Lys
 165 170 175

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

Phe Lys Asp Thr Tyr Phe Val Thr Gly Ile Val Ser Trp Gly Glu Gly
 195 200 205

Cys Ala Arg Lys Gly Lys Tyr Gly Ile Tyr Thr Lys Val Thr Ala Phe
 210 215 220

Leu Lys Trp Ile Asp Arg Ser Met Lys Thr Arg Gly Leu Pro Lys Ala
 225 230 235 240

<210> 11
 <211> 239
 <212> PRT
 <213> Artificial Sequence

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

<400> 11
 Ile Val Gly Gly Gln Glu Cys Lys Asp Gly Glu Cys Pro Trp Gln Ala
 1 5 10 15

Leu Leu Ile Asn Glu Glu Asn Glu Gly Phe Cys Gly Gly Thr Ile Leu
 20 25 30

Ser Glu Phe Tyr Ile Leu Thr Ala Ala His Cys Leu Tyr Gln Ala Lys
 35 40 45

Arg Phe Lys Val Arg Val Gly Asp Arg Asn Thr Glu Gln Glu Glu Gly
 50 55 60

Gly Glu Ala Val His Glu Val Glu Val Val Ile Lys His Asn Arg Phe
 65 70 75 80

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

Pro Ile Thr Phe Arg Met Asn Val Ala Pro Ala Cys Leu Pro Glu Arg
 100 105 110

Asp Trp Ala Glu Ser Thr Leu Met Thr Gln Lys Thr Gly Ile Val Ser
 115 120 125

Gly Phe Gly Arg Thr His Glu Lys Gly Arg Gln Ser Thr Arg Leu Lys
 130 135 140

Met Leu Glu Val Pro Tyr Val Asp Arg Asn Ser Cys Lys Leu Ser Ser
 145 150 155 160

Ser Phe Ile Ile Thr Gln Asn Met Phe Cys Ala Gly Tyr Asp Thr Lys
 165 170 175

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

Phe Lys Asp Thr Tyr Phe Val Thr Gly Ile Val Ser Trp Gly Glu Gly
 195 200 205

Cys Ala Arg Lys Gly Lys Tyr Gly Ile Tyr Thr Lys Val Thr Ala Phe
 210 215 220

Leu Lys Trp Ile Asp Arg Ser Met Lys Thr Arg Gly Leu Pro Lys
 225 230 235