

SEQUENCE LISTING

<110> Regeneron Pharmaceuticals, Inc.

<120> MICE THAT MAKE HEAVY CHAIN ANTIBODIES

<130> 0761A-WO

<140> To be assigned

<141> 2010-12-10

<150> 61/285,250

<151> 2009-12-10

<160> 64

<170> FastSEQ for Windows Version 4.0

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<212> DNA

<213> Artificial Sequence

<220>

<223> synthetic

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<213> Artificial Sequence

<220>

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cagaagtttc agggcagggg caccatgacc ggggacacgt ccatcagcac agcctacatg 300
gagctgagca ggctgagatc tgacgacacg gccgtgtatt actgtgagag aggctcctta 360
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tcaaagcttt ccaaaacaac acccccatca gtctatccac tggcccctgg gtgtggagat 480
acaactgggt cctccgtgac tctgggatgc ctggtcaagg gctacttccc tgagtcagtg 540
actgtgactt ggaactctgg atccctgtcc agcagtgtgc acaccttccc agctctcctg 600
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cagaccgtca cctgcagcgt tgctcaccca gccagcagca ccacgggtgga caaaaaactt 720
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atatatagca agctcaatat gaaaacaagc aagtgggaga aaacagattc cttctcatgc 1380
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<210> 6
<211> 482
<212> PRT
<213> Artificial Sequence

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Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
35 40 45
Thr Gly Tyr Tyr Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
50 55 60
Glu Trp Met Gly Trp Ile Asn Pro Asn Ser Gly Gly Thr Asn Tyr Ala
65 70 75 80
Gln Lys Phe Gln Gly Arg Val Thr Met Thr Gly Asp Thr Ser Ile Ser
85 90 95
Thr Ala Tyr Met Glu Leu Ser Arg Leu Arg Ser Asp Asp Thr Ala Val
100 105 110

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Tyr Tyr Cys Ala Arg Gly Ser Leu Tyr Cys Thr Asn Gly Val Cys Phe
 115 120 125
 Asp Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Lys Leu Ser
 130 135 140
 Lys Thr Thr Pro Pro Ser Val Tyr Pro Leu Ala Pro Gly Cys Gly Asp
 145 150 155 160
 Thr Thr Gly Ser Ser Val Thr Leu Gly Cys Leu Val Lys Gly Tyr Phe
 165 170 175
 Pro Glu Ser Val Thr Val Thr Trp Asn Ser Gly Ser Leu Ser Ser Ser
 180 185 190
 Val His Thr Phe Pro Ala Leu Leu Gln Ser Gly Leu Tyr Thr Met Ser
 195 200 205
 Ser Ser Val Thr Val Pro Ser Ser Thr Trp Pro Ser Gln Thr Val Thr
 210 215 220
 Cys Ser Val Ala His Pro Ala Ser Ser Thr Thr Val Asp Lys Lys Leu
 225 230 235 240
 Val Arg Ser Glu Pro Ser Gly Pro Ile Ser Thr Ile Asn Pro Cys Pro
 245 250 255
 Pro Cys Lys Glu Cys His Lys Cys Pro Ala Pro Asn Leu Glu Gly Gly
 260 265 270
 Pro Ser Val Phe Ile Phe Pro Pro Asn Ile Lys Asp Val Leu Met Ile
 275 280 285
 Ser Leu Thr Pro Lys Val Thr Cys Val Val Val Asp Val Ser Glu Asp
 290 295 300
 Asp Pro Asp Val Gln Ile Ser Trp Phe Val Asn Asn Val Glu Val His
 305 310 315 320
 Thr Ala Gln Thr Gln Thr His Arg Glu Asp Tyr Asn Ser Thr Ile Arg
 325 330 335
 Val Val Ser Thr Leu Pro Ile Gln His Gln Asp Trp Met Ser Gly Lys
 340 345 350
 Glu Phe Lys Cys Lys Val Asn Asn Lys Asp Leu Pro Ser Pro Ile Glu
 355 360 365
 Arg Thr Ile Ser Lys Ile Lys Gly Leu Val Arg Ala Pro Gln Val Tyr
 370 375 380
 Ile Leu Pro Pro Pro Ala Glu Gln Leu Ser Arg Lys Asp Val Ser Leu
 385 390 395 400
 Thr Cys Leu Val Val Gly Phe Asn Pro Gly Asp Ile Ser Val Glu Trp
 405 410 415
 Thr Ser Asn Gly His Thr Glu Glu Asn Tyr Lys Asp Thr Ala Pro Val
 420 425 430
 Leu Asp Ser Asp Gly Ser Tyr Phe Ile Tyr Ser Lys Leu Asn Met Lys
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 Thr Ser Lys Trp Glu Lys Thr Asp Ser Phe Ser Cys Asn Val Arg His
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 465 470 475 480
 Gly Lys

<210> 7

<211> 1449

<212> DNA

<213> Artificial Sequence

<220>

<223> synthetic

<400> 7

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cagaagtttc agggcagggt caccatgacc ggggacacgt ccatcagcac agcctacatg 300
gagctgagca ggctgagatc tgacgacacg gccgtgtatt actgtgagag aggtctctta 360
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tcaaagcttt ccaaaacaac acccccatca gtctatccac tggcccctgg gtgtggagat 480
acaactgggt cctccgtgac tctgggatgc ctggtcaagg gctacttccc tgagtcagtg 540
actgtgactt ggaactctgg atccctgtcc agcagtgtgc acaccttccc agctctcctg 600
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gtccggagcg agcccagcgg gccatttca acaatcaacc cctgtcctcc atgcaaggag 780
tgtcacaagt gcccagctcc taacctcgag ggtggaccat ccgtcttcat cttccctcca 840
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gtgagcagag atgaccaga cgtccagatc agctgggttg tgaacaacgt ggaagtacac 960
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ctccccatcc agcaccagga ctggatgagt ggcaaggagt tcaaagtcaa ggtcaacaac 1080
aaagacctcc catcacccat cgagagaacc atctcaaaaa ttaaagggtc agtcagagct 1140
ccacaagtat acatcttgcc gccaccagca gagcagttgt ccaggaaaga tgtcagtctc 1200
acttgccctg tcgtgggctt caaccctgga gacatcagtg tggagtggac cagcaatggg 1260
catacagagg agaactacaa ggacaccgca ccagtcctgg actctgacgg ttcttacttc 1320
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<210> 8

<211> 482

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic

<400> 8

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

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Cys	Ser	Val	Ala	His	Pro	Ala	Ser	Ser	Thr	Thr	Val	Asp	Lys	Lys	Leu
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			245						250					255	
Pro	Cys	Lys	Glu	Cys	His	Lys	Cys	Pro	Ala	Pro	Asn	Leu	Glu	Gly	Gly
		260					265						270		
Pro	Ser	Val	Phe	Ile	Phe	Pro	Pro	Asn	Ile	Lys	Asp	Val	Leu	Met	Ile
	275					280					285				
Ser	Leu	Thr	Pro	Lys	Val	Thr	Cys	Val	Val	Val	Asp	Val	Ser	Glu	Asp
290					295						300				
Asp	Pro	Asp	Val	Gln	Ile	Ser	Trp	Phe	Val	Asn	Asn	Val	Glu	Val	His
305				310						315					320
Thr	Ala	Gln	Thr	Gln	Thr	His	Arg	Glu	Asp	Tyr	Asn	Ser	Thr	Ile	Arg
			325						330					335	
Val	Val	Ser	Thr	Leu	Pro	Ile	Gln	His	Gln	Asp	Trp	Met	Ser	Gly	Lys
		340					345						350		
Glu	Phe	Lys	Cys	Lys	Val	Asn	Asn	Lys	Asp	Leu	Pro	Ser	Pro	Ile	Glu
	355						360					365			
Arg	Thr	Ile	Ser	Lys	Ile	Lys	Gly	Leu	Val	Arg	Ala	Pro	Gln	Val	Tyr
370					375						380				
Ile	Leu	Pro	Pro	Pro	Ala	Glu	Gln	Leu	Ser	Arg	Lys	Asp	Val	Ser	Leu
385				390						395					400
Thr	Cys	Leu	Val	Val	Gly	Phe	Asn	Pro	Gly	Asp	Ile	Ser	Val	Glu	Trp
		405					410						415		
Thr	Ser	Asn	Gly	His	Thr	Glu	Glu	Asn	Tyr	Lys	Asp	Thr	Ala	Pro	Val
		420					425						430		
Leu	Asp	Ser	Asp	Gly	Ser	Tyr	Phe	Ile	Tyr	Ser	Lys	Leu	Asn	Met	Lys
	435					440						445			
Thr	Ser	Lys	Trp	Glu	Lys	Thr	Asp	Ser	Phe	Ser	Cys	Asn	Val	Arg	His
450					455						460				
Glu	Gly	Leu	Lys	Asn	Tyr	Tyr	Leu	Lys	Lys	Thr	Ile	Ser	Arg	Ser	Pro
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Gly	Lys														

<210> 9
 <211> 1149
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> synthetic

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 ggacaagggc ttgagtggat gggatggatc aaccctaaca gtggtggcac aaactatgca 240
 cagaagtttc agggcagggt caccatgacc ggggacacgt ccacagcac agcctacatg 300
 gagctgagca ggctgagatc tgacgacacg gccgtgtatt actgtgagag aggtctctta 360
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 aatatcaagg atgtactcat gatctccctg acaccaagg tcacgtgtgt ggtggtggat 600
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catacagagg agaactacaa ggacaccgca ccagtcctgg actctgacgg ttcttacttc 1020
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<211> 382

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic

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			20					25					30		
Pro	Gly	Ala	Ser	Val	Lys	Val	Ser	Cys	Lys	Ala	Ser	Gly	Tyr	Thr	Phe
		35					40					45			
Thr	Gly	Tyr	Tyr	Met	His	Trp	Val	Arg	Gln	Ala	Pro	Gly	Gln	Gly	Leu
	50					55					60				
Glu	Trp	Met	Gly	Trp	Ile	Asn	Pro	Asn	Ser	Gly	Gly	Thr	Asn	Tyr	Ala
65					70					75					80
Gln	Lys	Phe	Gln	Gly	Arg	Val	Thr	Met	Thr	Gly	Asp	Thr	Ser	Ile	Ser
			85						90					95	
Thr	Ala	Tyr	Met	Glu	Leu	Ser	Arg	Leu	Arg	Ser	Asp	Asp	Thr	Ala	Val
			100					105					110		
Tyr	Tyr	Cys	Ala	Arg	Gly	Ser	Leu	Tyr	Cys	Thr	Asn	Gly	Val	Cys	Phe
		115					120					125			
Asp	Tyr	Trp	Gly	Gln	Gly	Thr	Leu	Val	Thr	Val	Ser	Ser	Ser	Gly	Glu
	130					135						140			
Pro	Ser	Gly	Pro	Ile	Ser	Thr	Ile	Asn	Pro	Cys	Pro	Pro	Cys	Lys	Glu
145					150					155					160
Cys	His	Lys	Cys	Pro	Ala	Pro	Asn	Leu	Glu	Gly	Gly	Pro	Ser	Val	Phe
			165						170					175	
Ile	Phe	Pro	Pro	Asn	Ile	Lys	Asp	Val	Leu	Met	Ile	Ser	Leu	Thr	Pro
			180					185					190		
Lys	Val	Thr	Cys	Val	Val	Val	Asp	Val	Ser	Glu	Asp	Asp	Pro	Asp	Val
		195					200					205			
Gln	Ile	Ser	Trp	Phe	Val	Asn	Asn	Val	Glu	Val	His	Thr	Ala	Gln	Thr
	210					215					220				
Gln	Thr	His	Arg	Glu	Asp	Tyr	Asn	Ser	Thr	Ile	Arg	Val	Val	Ser	Thr
225					230					235					240
Leu	Pro	Ile	Gln	His	Gln	Asp	Trp	Met	Ser	Gly	Lys	Glu	Phe	Lys	Cys
			245						250					255	
Lys	Val	Asn	Asn	Lys	Asp	Leu	Pro	Ser	Pro	Ile	Glu	Arg	Thr	Ile	Ser
		260						265					270		
Lys	Ile	Lys	Gly	Leu	Val	Arg	Ala	Pro	Gln	Val	Tyr	Ile	Leu	Pro	Pro
		275					280					285			
Pro	Ala	Glu	Gln	Leu	Ser	Arg	Lys	Asp	Val	Ser	Leu	Thr	Cys	Leu	Val
		290				295					300				
Val	Gly	Phe	Asn	Pro	Gly	Asp	Ile	Ser	Val	Glu	Trp	Thr	Ser	Asn	Gly
305					310					315					320
His	Thr	Glu	Glu	Asn	Tyr	Lys	Asp	Thr	Ala	Pro	Val	Leu	Asp	Ser	Asp
			325						330					335	
Gly	Ser	Tyr	Phe	Ile	Tyr	Ser	Lys	Leu	Asn	Met	Lys	Thr	Ser	Lys	Trp
		340						345					350		
Glu	Lys	Thr	Asp	Ser	Phe	Ser	Cys	Asn	Val	Arg	His	Glu	Gly	Leu	Lys
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Asn	Tyr	Tyr	Leu	Lys	Lys	Thr	Ile	Ser	Arg	Ser	Pro	Gly	Lys		

370

375

380

<210> 11
 <211> 1149
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> synthetic

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 tgcaaggctt ctggatacac cttcaccggc tactatatgc actggtttcg acaggcccct 180
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 aatatcaagg atgtactcat gatctccctg acaccaagg tcacgtgtgt ggtggtggat 600
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 ggtaaatga 1149

<210> 12
 <211> 382
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic

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 35 40 45
 Thr Gly Tyr Tyr Met His Trp Phe Arg Gln Ala Pro Gly Gln Glu Cys
 50 55 60
 Glu Leu Met Gly Trp Ile Asn Pro Asn Ser Gly Gly Thr Asn Tyr Ala
 65 70 75 80
 Gln Lys Phe Gln Gly Arg Val Thr Met Thr Gly Asp Thr Ser Ile Ser
 85 90 95
 Thr Ala Tyr Met Glu Leu Ser Arg Leu Arg Ser Asp Asp Thr Ala Val
 100 105 110
 Tyr Tyr Cys Ala Arg Gly Ser Leu Tyr Cys Thr Asn Gly Val Cys Phe
 115 120 125
 Asp Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Ser Gly Glu
 130 135 140
 Pro Ser Gly Pro Ile Ser Thr Ile Asn Pro Cys Pro Pro Cys Lys Glu

145		150		155		160
Cys	His	Lys	Cys	Pro	Ala	Pro
				165		170
Ile	Phe	Pro	Pro	Asn	Ile	Lys
				180		185
Lys	Val	Thr	Cys	Val	Val	Val
				195		200
Gln	Ile	Ser	Trp	Phe	Val	Asn
				210		215
Gln	Thr	His	Arg	Glu	Asp	Tyr
				225		230
Leu	Pro	Ile	Gln	His	Gln	Asp
				245		250
Lys	Val	Asn	Asn	Lys	Asp	Leu
				260		265
Lys	Ile	Lys	Gly	Leu	Val	Arg
				275		280
Pro	Ala	Glu	Gln	Leu	Ser	Arg
				290		295
Val	Gly	Phe	Asn	Pro	Gly	Asp
				305		310
His	Thr	Glu	Glu	Asn	Tyr	Lys
				325		330
Gly	Ser	Tyr	Phe	Ile	Tyr	Ser
				340		345
Glu	Lys	Thr	Asp	Ser	Phe	Ser
				355		360
Asn	Tyr	Thr	Leu	Lys	Lys	Thr
				370		375
						380

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<220>
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19

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21

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<400> 16
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<210> 17
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 tcctgcaaga cttctggata tacattcaca agctacggta taaactgggt gaagcagagg 120
 cctggacagg gcctggaatg gattggatat atttatattg gaaatgggta tactgagtac 180
 aatgagaagt tcaagggcaa ggccacactg acttcagaca catcctccag cacagcctac 240
 atgcagctca gcagcctgac atctgaggac tctgcaatct atttcctgtc aagaggacgg 300
 gtcggcccggt actactttga ctactggggc caaggcacca ctctcacagt ctcctcagtc 360
 ccagaagtat catctgtctt catc 384

<210> 19
 <211> 128
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic

<400> 19
 Glu Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Val Arg Pro Gly Ser
 1 5 10 15
 Ser Val Lys Met Ser Cys Lys Thr Ser Gly Tyr Thr Phe Thr Ser Tyr
 20 25 30
 Gly Ile Asn Trp Val Lys Gln Arg Pro Gly Gln Gly Leu Glu Trp Ile
 35 40 45
 Gly Tyr Ile Tyr Ile Gly Asn Gly Tyr Thr Glu Tyr Asn Glu Lys Phe
 50 55 60
 Lys Gly Lys Ala Thr Leu Thr Ser Asp Thr Ser Ser Ser Thr Ala Tyr
 65 70 75 80

Met	Gln	Leu	Ser	Ser	Leu	Thr	Ser	Glu	Asp	Ser	Ala	Ile	Tyr	Phe	Arg
				85					90					95	
Ala	Arg	Gly	Arg	Val	Gly	Pro	Tyr	Tyr	Phe	Asp	Tyr	Trp	Gly	Gln	Gly
			100					105					110		
Thr	Thr	Leu	Thr	Val	Ser	Ser	Val	Pro	Glu	Val	Ser	Ser	Val	Phe	Ile
		115					120					125			

<210> 20
 <211> 381
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> synthetic

<400> 20
 gaggtccagc tgcaacagtc tggacgtgag ctggtcaagc ctggggccttc agtgaatgata 60
 tcttgtaagg cttctggata cacgttcatt gactacttca taaactggat gaagcggagc 120
 catggacaga gccttgagtg gattggagat attaataccta acaatgggtg ttctaactac 180
 aaccagaagt tcaagggcaa ggccacattg actgtagaca agtcctccag cacagcctac 240
 atggatctcc gcagcctgac atctgaagac tctgcagtct attactgtgc aaaactggga 300
 cgggactggt acttcgatgt ctggggcaca gggaccacgg tcaccgtctc ctcagtccca 360
 gaagtatcat ctgtcttcat c 381

<210> 21
 <211> 127
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic

Glu	Val	Gln	Leu	Gln	Gln	Ser	Gly	Arg	Glu	Leu	Val	Lys	Pro	Gly	Ala
1				5				10					15		
Ser	Val	Met	Ile	Ser	Cys	Thr	Ala	Ser	Gly	Tyr	Thr	Phe	Ile	Asp	Tyr
		20					25					30			
Phe	Ile	Asn	Trp	Met	Lys	Arg	Ser	His	Gly	Gln	Ser	Leu	Glu	Trp	Ile
	35				40						45				
Gly	Asp	Ile	Asn	Pro	Asn	Asn	Gly	Gly	Ser	Asn	Tyr	Asn	Gln	Lys	Phe
	50				55					60					
Lys	Gly	Lys	Ala	Thr	Leu	Thr	Val	Asp	Lys	Ser	Ser	Ser	Thr	Ala	Tyr
65				70				75					80		
Met	Asp	Leu	Arg	Ser	Leu	Thr	Ser	Glu	Asp	Ser	Ala	Val	Tyr	Tyr	Cys
			85					90					95		
Ala	Lys	Leu	Gly	Arg	Asp	Trp	Tyr	Phe	Asp	Val	Trp	Gly	Thr	Gly	Thr
		100					105					110			
Thr	Val	Thr	Val	Ser	Ser	Val	Pro	Glu	Val	Ser	Ser	Val	Phe	Ile	
		115					120					125			

<210> 22
 <211> 375
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> synthetic

<400> 22

cagggtccaac tgcagcagcc tggggctgag cttgtgaagc ctggggcctc agtgaagctg 60
tcttgcaagg cttctggcta caccttcacc agctactgga tgcagtgggt aaaacagagg 120
cctggacagg gccttgagtg gatcggagag attgatacctt ctgatagcta tactaactac 180
aatcaaaagt tcaagggcaa ggccacattg actgtagaca catcctccag cacagcctac 240
atgcagctca gcagcctgac acctgaggac tctgcggtct attactgtgc aagatgtagg 300
tactactttg actactgggg ccaaggcacc actctcacag tctcctcagt cccagaagta 360
tcactctgtct tcac 375

<210> 23
<211> 125
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic

<400> 23
Gln Val Gln Leu Gln Gln Pro Gly Ala Glu Leu Val Lys 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 Met Gln Trp Val Lys Gln Arg Pro Gly Gln Gly Leu Glu Trp Ile
35 40 45
Gly Glu Ile Asp Pro Ser Asp Ser Tyr Thr Asn Tyr Asn Gln Lys Phe
50 55 60
Lys Gly Lys Ala Thr Leu Thr Val Asp Thr Ser Ser Ser Thr Ala Tyr
65 70 75 80
Met Gln Leu Ser Ser Leu Thr Pro Glu Asp Ser Ala Val Tyr Tyr Cys
85 90 95
Ala Arg Cys Arg Tyr Tyr Phe Asp Tyr Trp Gly Gln Gly Thr Thr Leu
100 105 110
Thr Val Ser Ser Val Pro Glu Val Ser Ser Val Phe Ile
115 120 125

<210> 24
<211> 393
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic

<400> 24
gaggttcagt tgcagcagtc tggggcagag attgtgaagt caggggcctc agtcaagttg 60
tcttgcaagc cttctggctt caacatgaaa gactacttta tccactgggt gaagcagagg 120
actgaacagg gcctggagtg gattggaagg cttgatacctg aggatggtaa aactaaatat 180
gccccgaaat tccagggcaa ggccactata acagcagaca catcctccaa cacagcctac 240
ctgcacotca gcagcctgac atctgaggac actgccgtct attactgtgc tagaggggga 300
ctgggacgtg aggaatacta tgctgtggac tactggggtc aaggaacctc agtcaccgtc 360
tctcagttcc cagaagtatc atctgtcttc atc 393

<210> 25
<211> 131
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic

<400> 25

Glu Val Gln Leu Gln Gln Ser Gly Ala Glu Ile Val Lys Ser Gly Ala
 1 5 10 15
 Ser Val Lys Leu Ser Cys Thr Ala Ser Gly Phe Asn Met Lys Asp Tyr
 20 25 30
 Phe Ile His Trp Val Lys Gln Arg Thr Glu Gln Gly Leu Glu Trp Ile
 35 40 45
 Gly Arg Leu Asp Pro Glu Asp Gly Lys Thr Lys Tyr Ala Pro Lys Phe
 50 55 60
 Gln Gly Lys Ala Thr Ile Thr Ala Asp Thr Ser Ser Asn Thr Ala Tyr
 65 70 75 80
 Leu His Leu Ser Ser Leu Thr Ser Glu Asp Thr Ala Val Tyr Tyr Cys
 85 90 95
 Ala Arg Gly Gly Leu Gly Arg Glu Glu Tyr Tyr Ala Val Asp Tyr Trp
 100 105 110
 Gly Gln Gly Thr Ser Val Thr Val Ser Ser Val Pro Glu Val Ser Ser
 115 120 125
 Val Phe Ile
 130

<210> 26
 <211> 387
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> synthetic

<400> 26
 gatgtacagc ttcaggagtc aggacctggc ctctgtgaaac cttctcagtc tctgtctctc 60
 acctgctctg tcaactggcta ctccatcacc agtgggttatt actggaactg gatccggcag 120
 tttccaggaa acaaaactgga atggatgggc tacataagct acgatggtag gaataactac 180
 aacccatctc tcaaaaatcg aatctccatc actcgtgaca catctaagaa ccagtttttc 240
 ctgaagttga attctgtgac tactgaggac acagccacat attactgtgc aatccatacg 300
 gtagtagggg actatgttat ggactactgg ggtcaaggaa cctcagtcac cgtctctctca 360
 gtcccagaag tatcatctgt cttcatc 387

<210> 27
 <211> 129
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic

<400> 27
 Asp Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Lys Pro Ser Gln
 1 5 10 15
 Ser Leu Ser Leu Thr Cys Ser Val Thr Gly Tyr Ser Ile Thr Ser Gly
 20 25 30
 Tyr Tyr Trp Asn Trp Ile Arg Gln Phe Pro Gly Asn Lys Leu Glu Trp
 35 40 45
 Met Gly Tyr Ile Ser Tyr Asp Gly Arg Asn Asn Tyr Asn Pro Ser Leu
 50 55 60
 Lys Asn Arg Ile Ser Ile Thr Arg Asp Thr Ser Lys Asn Gln Phe Phe
 65 70 75 80
 Leu Lys Leu Asn Ser Val Thr Thr Glu Asp Thr Ala Thr Tyr Tyr Cys
 85 90 95
 Ala Ile His Thr Val Val Gly Asp Tyr Val Met Asp Tyr Trp Gly Gln
 100 105 110
 Gly Thr Ser Val Thr Val Ser Ser Val Pro Glu Val Ser Ser Val Phe

Ile 115 120 125

<210> 28
 <211> 378
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> synthetic

<400> 28
 gaggttcagc tgcagcagtc tggggcagag cttgtgaggc caggggcctc agtcaagttg 60
 tcctgcacag cttctggctt caacattaaa gactactata tacactgggt gaagaagagg 120
 cctgaacagg gcctggagtg gattggaagg attgactctg aggatggtga tactgagtat 180
 gccccgaagt tccagggcaa ggccactatg actgcagaca catcctccaa cacagcctac 240
 cttcagctca gcagcctgac atctgaggac attgccgtct attactgtac tacatctagg 300
 cctttttatt ttgactactg gggccaaggc accactctca cagtctcctc agtcccagaa 360
 gtatcatctg tcttcatc 378

<210> 29
 <211> 126
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic

<400> 29
 Glu Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Val Arg Pro Gly Ala
 1 5 10 15
 Ser Val Lys Leu Ser Cys Thr Ala Ser Gly Phe Asn Ile Lys Asp Tyr
 20 25 30
 Tyr Ile His Trp Val Lys Lys Arg Pro Glu Gln Gly Leu Glu Trp Ile
 35 40 45
 Gly Arg Ile Asp Pro Glu Asp Gly Asp Thr Glu Tyr Ala Pro Lys Phe
 50 55 60
 Gln Gly Lys Ala Thr Met Thr Ala Asp Thr Ser Ser Asn Thr Ala Tyr
 65 70 75 80
 Leu Gln Leu Ser Ser Leu Thr Ser Glu Asp Ile Ala Val Tyr Tyr Cys
 85 90 95
 Thr Thr Ser Arg Pro Phe Tyr Phe Asp Tyr Trp Gly Gln Gly Thr Thr
 100 105 110
 Leu Thr Val Ser Ser Val Pro Glu Val Ser Ser Val Phe Ile
 115 120 125

<210> 30
 <211> 369
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> synthetic

<400> 30
 gaggttcagc tgcagcagtc tgggacagaa cttgtgaagc caggggcctc agccaagttg 60
 tcctgcacag cttctggctt caacgttaaa gactacttta tgcactgggt gaagcagaag 120
 actgaacagg gcctggagtg gattggaagg attgttcctg aggatggtga aactaagtct 180

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gccccgaaat tccaggacag gaccactata agaacagaca catcctccaa cacatctcac 240
ctacaactca acagcctgac atctgaggac actgccgtct attactgtgc tagacctaac 300
cccccttact ggggccaagg gactctggtc actgtctctg tagtcccaga agtatcatct 360
gtcttcac 369

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<210> 31
<211> 123
<212> PRT
<213> Artificial Sequence

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<220>
<223> synthetic

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```

<400> 31
Glu Val Gln Leu Gln Gln Ser Gly Thr Glu Leu Val Lys Pro Gly Ala
 1          5          10          15
Ser Ala Lys Leu Ser Cys Thr Ala Ser Gly Phe Asn Val Lys Asp Tyr
          20          25          30
Phe Met His Trp Val Lys Gln Lys Thr Glu Gln Gly Leu Glu Trp Ile
          35          40          45
Gly Arg Ile Val Pro Glu Asp Gly Glu Thr Lys Ser Ala Pro Lys Phe
          50          55          60
Gln Asp Arg Thr Thr Ile Arg Thr Asp Thr Ser Ser Asn Thr Ser His
65          70          75          80
Leu Gln Leu Asn Ser Leu Thr Ser Glu Asp Thr Ala Val Tyr Tyr Cys
          85          90          95
Ala Arg Pro Asn Pro Pro Tyr Trp Gly Gln Gly Thr Leu Val Thr Val
          100          105          110
Ser Val Val Pro Glu Val Ser Ser Val Phe Ile
          115          120

```

```

<210> 32
<211> 399
<212> DNA
<213> Artificial Sequence

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```

<220>
<223> synthetic

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<400> 32
gaggtgaaac tgggtggaatc tggaggaggc ttggttcagt ctgggcgttc tctgagactc 60
tcctgtgcaa cttctgggtt caccttcagt gatttctaca tggagtgggt ccgccaaact 120
ccagggaagg gactggagtg gattgctaca agtagaaaca aacttaatga ttatacacca 180
gaattcagtg catctgtgaa gggtcgattc atcgtctcca gagacacttc ccaaaacatc 240
ctctaccttc agatgaatgc cctgagacct gaggacactg ccatttatta ctgtgcaaga 300
gcctgtagtg actacgaccg ttactatgct atggactatt ggggtcaagg aacctcagtc 360
accgtctcct cagtcccaga agtatcatct gtcttcac 399

```

```

<210> 33
<211> 133
<212> PRT
<213> Artificial Sequence

```

```

<220>
<223> synthetic

```

```

<400> 33
Glu Val Lys Leu Val Glu Ser Gly Gly Gly Leu Val Gln Ser Gly Arg
 1          5          10          15
Ser Leu Arg Leu Ser Cys Ala Thr Ser Gly Phe Thr Phe Ser Asp Phe

```

	20		25		30
Tyr Met Glu Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Ile					
	35		40		45
Ala Thr Ser Arg Asn Lys Leu Asn Asp Tyr Thr Pro Glu Phe Ser Ala					
	50		55		60
Ser Val Lys Gly Arg Phe Ile Val Ser Arg Asp Thr Ser Gln Asn Ile					
65		70		75	80
Leu Tyr Leu Gln Met Asn Ala Leu Arg Pro Glu Asp Thr Ala Ile Tyr					
	85		90		95
Tyr Cys Ala Arg Ala Cys Ser Asp Tyr Asp Arg Tyr Tyr Ala Met Asp					
	100		105		110
Tyr Trp Gly Gln Gly Thr Ser Val Thr Val Ser Ser Val Pro Glu Val					
	115		120		125
Ser Ser Val Phe Ile					
	130				

<210> 34
 <211> 399
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> synthetic

<400> 34
 cagggtccaac tgcagcagcc tggggctgag cttgtgaagc ctggggccttc agtgaagctg 60
 tcttgcaagg cttctggcta caccitcacc agctactgga tgcactgggt gaagcagagg 120
 cctggacgag gccttgagtg gattggaagg attgataccta atagtgggtg tactaagtag 180
 aatgagaagc tcaagaacaa ggccacactg actgtagaca aaccctccag cacagcctac 240
 atgcagctca gcagcctgac atctgaggac tctgcggtct attattgtgc aagagaggag 300
 ataaattact acggtagtac ctacggtgct atggactact ggggtcaagg aacctcagtc 360
 accgtctcct cagtccaga agtatcatct gtcttcac 399

<210> 35
 <211> 133
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic

Gln Val Gln Leu Gln Gln Pro Gly Ala Glu Leu Val Lys 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 Met His Trp Val Lys Gln Arg Pro Gly Arg Gly Leu Glu Trp Ile															
	35						40						45		
Gly Arg Ile Asp Pro Asn Ser Gly Gly Thr Lys Tyr Asn Glu Lys Leu															
	50						55						60		
Lys Asn Lys Ala Thr Leu Thr Val Asp Lys Pro Ser Ser Thr Ala Tyr															
65							70						75		80
Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys															
	85						90						95		
Ala Arg Glu Glu Ile Asn Tyr Tyr Gly Ser Thr Tyr Gly Ala Met Asp															
	100						105						110		
Tyr Trp Gly Gln Gly Thr Ser Val Thr Val Ser Ser Val Pro Glu Val															
	115						120						125		
Ser Ser Val Phe Ile															
	130														

<210> 36
 <211> 375
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> synthetic

<400> 36
 gaggtccagc tgcagcagtc tggacctgag ctggtgaagc ctgggggcttc agtgaagata 60
 tcctgcaagg cttctgggta ctcattcact ggctactaca tgaactgggt gaagcaaagt 120
 cctgaaaaga gccttgagtg gattggagag attaatccta gcactgggtg tactacctac 180
 aaccagaagt tcaaggccaa ggccacattg actgtagaca aatcctccag cacagcctac 240
 atgcagctca agagcctgac atctgaggac tctgcagtct attactgtgc aggtgggttac 300
 tggtaacttcg atgtctgggg cacagggacc acggtcaccg tctcctcagt cccagaagta 360
 tcactctgtct tcatac 375

<210> 37
 <211> 125
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic

<400> 37
 Glu Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Lys Pro Gly Ala
 1 5 10 15
 Ser Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Ser Phe Thr Gly Tyr
 20 25 30
 Tyr Met Asn Trp Val Lys Gln Ser Pro Glu Lys Ser Leu Glu Trp Ile
 35 40 45
 Gly Glu Ile Asn Pro Ser Thr Gly Gly Thr Thr Tyr Asn Gln Lys Phe
 50 55 60
 Lys Ala Lys Ala Thr Leu Thr Val Asp Lys Ser Ser Ser Thr Ala Tyr
 65 70 75 80
 Met Gln Leu Lys Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
 85 90 95
 Ala Gly Gly Tyr Trp Tyr Phe Asp Val Trp Gly Thr Gly Thr Thr Val
 100 105 110
 Thr Val Ser Ser Val Pro Glu Val Ser Ser Val Phe Ile
 115 120 125

<210> 38
 <211> 396
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> synthetic

<400> 38
 gaggtgcagc tgggtggagtc tggggggagac ttagtggagc ctggagggtc cctgaaactc 60
 tcctgtgcag cctctggatt cactttcagt agctatggca tgtcttgggt tcgccagact 120
 ccagacaaga ggcctggagtg ggtcgcaacc attagtagtg gtggtagtta cacctactat 180
 ccagacagtg tgaaggggcg attcaccatc tccagagaca atgccaagaa caccctgtac 240
 ctgcaaatga gcagtctgaa gtctgaggac acagccatgt attactgtgc aagacatgat 300
 tactacggtg gtagctacgg gtggtacttc gatgtctggg gcacagggac caccgtcacc 360

gtctcctcag tcccagaagt atcatctgtc ttcac

396

<210> 39
<211> 132
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic

<400> 39
Glu Val Gln Leu Val Glu Ser Gly Gly Asp Leu Val Glu Pro Gly Gly
1 5 10 15
Ser Leu Lys Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser Tyr
20 25 30
Gly Met Ser Trp Val Arg Gln Thr Pro Asp Lys Arg Leu Glu Trp Val
35 40 45
Ala Thr Ile Ser Ser Gly Gly Ser Tyr Thr Tyr Tyr Pro Asp Ser Val
50 55 60
Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Thr Leu Tyr
65 70 75 80
Leu Gln Met Ser Ser Leu Lys Ser Glu Asp Thr Ala Met Tyr Tyr Cys
85 90 95
Ala Arg His Asp Tyr Tyr Gly Ser Ser Tyr Gly Trp Tyr Phe Asp Val
100 105 110
Trp Gly Thr Gly Thr Thr Val Thr Val Ser Ser Val Pro Glu Val Ser
115 120 125
Ser Val Phe Ile
130

<210> 40
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic

<400> 40
cgatgggggc agggaaagct gcac

24

<210> 41
<211> 16
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic

<400> 41
gtaaaacgac ggccag

16

<210> 42
<211> 17
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic

<400> 42	
caggaaacag ctatgac	17
<210> 43	
<211> 21	
<212> DNA	
<213> Artificial Sequence	
<220>	
<221> variation	
<222> (14)...(14)	
<223> s = c or g	
<220>	
<223> synthetic	
<400> 43	
tcaccatgga ctgsacctgg a	21
<210> 44	
<211> 22	
<212> DNA	
<213> Artificial Sequence	
<220>	
<221> variation	
<222> (17)...(17)	
<223> y = c or t	
<220>	
<223> synthetic	
<400> 44	
ccatggacac actttgytcc ac	22
<210> 45	
<211> 23	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> synthetic	
<400> 45	
tcaccatgga gtttgggctg agc	23
<210> 46	
<211> 25	
<212> DNA	
<213> Artificial Sequence	
<220>	
<221> variation	
<222> (14)...(14)	
<223> y = c or t	
<220>	
<223> synthetic	

<400> 46
 agaacatgaa acayctgtgg ttctt 25

 <210> 47
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> synthetic

 <400> 47
 atgggggtcaa cgcctatcct 20

 <210> 48
 <211> 23
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> synthetic

 <400> 48
 acaatgtctg tctccttcct cat 23

 <210> 49
 <211> 21
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> synthetic

 <400> 49
 gcaaggctta caaccacaat c 21

 <210> 50
 <211> 381
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> synthetic

 <400> 50
 cagggtgcagc tgggtgcagtc tggggctgag gtgaagaagc ctgggggcctc agtgaaggtc 60
 tcttgcaagg cttctggata caccttcacc agttatgata tcaactgggt gcgacaggcc 120
 actggacaag ggcttgagtg gatgggatgg atgaacccta atagtggtaa gacaggctat 180
 gcacagaagt tccagggcag agtcgccatg accaggaaaa cctccataag cacagcctac 240
 atggagctga gcagcctgag atctgaggac acggccgtgt attactgtgc gagagaggac 300
 tacagtaact acggggactt tgactactgg ggccaggga cctgggtcac cgtctcctca 360
 gtgcccaggg attgtggttg t 381

 <210> 51
 <211> 127
 <212> PRT

<213> Artificial Sequence

<220>

<223> synthetic

<400> 51

Gln	Val	Gln	Leu	Val	Gln	Ser	Gly	Ala	Glu	Val	Lys	Lys	Pro	Gly	Ala
1				5					10					15	
Ser	Val	Lys	Val	Ser	Cys	Lys	Ala	Ser	Gly	Tyr	Thr	Phe	Thr	Ser	Tyr
			20					25					30		
Asp	Ile	Asn	Trp	Val	Arg	Gln	Ala	Thr	Gly	Gln	Gly	Leu	Glu	Trp	Met
		35					40					45			
Gly	Trp	Met	Asn	Pro	Asn	Ser	Gly	Lys	Thr	Gly	Tyr	Ala	Gln	Lys	Phe
	50					55					60				
Gln	Gly	Arg	Val	Ala	Met	Thr	Arg	Lys	Thr	Ser	Ile	Ser	Thr	Ala	Tyr
65					70					75					80
Met	Glu	Leu	Ser	Ser	Leu	Arg	Ser	Glu	Asp	Thr	Ala	Val	Tyr	Tyr	Cys
				85					90					95	
Ala	Arg	Glu	Asp	Tyr	Ser	Asn	Tyr	Gly	Asp	Phe	Asp	Tyr	Trp	Gly	Gln
			100					105					110		
Gly	Thr	Leu	Val	Thr	Val	Ser	Ser	Val	Pro	Arg	Asp	Cys	Gly	Cys	
		115					120						125		

<210> 52

<211> 378

<212> DNA

<213> Artificial Sequence

<220>

<223> synthetic

<400> 52

caggttcagc	tgggtgcagtc	tggagctgag	atgaagaagc	ctggggcctc	agtgaaggtc	60
tcttgcaagg	cttctgggta	cacctttacc	agctatggta	tcagctgggt	gcgacaggcc	120
cctggacaag	ggcttgagtg	gatgggatgg	atcagcgctt	acaatggtaa	cacatactat	180
gcacagaacc	tccagggcag	agtcaccatg	accacagaca	catccacgag	cgcagccttc	240
atggacctga	ggagcctgag	atctgacgac	acggccgtgt	attactgtgc	gagagatggg	300
tatagtacct	cgtccttaga	ctactggggc	caggggaacc	tggtcacctg	ctcctcagtg	360
cccagggatt	gtggttgt					378

<210> 53

<211> 126

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic

<400> 53

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

Gln	Gly	Arg	Val	Thr	Met	Thr	Thr	Asp	Thr	Ser	Thr	Ser	Ala	Ala	Phe
65					70					75					80
Met	Asp	Leu	Arg	Ser	Leu	Arg	Ser	Asp	Asp	Thr	Ala	Val	Tyr	Tyr	Cys
				85				90						95	
Ala	Arg	Asp	Gly	Tyr	Ser	Thr	Ser	Ser	Leu	Asp	Tyr	Trp	Gly	Gln	Gly
			100					105					110		
Thr	Leu	Val	Thr	Val	Ser	Ser	Val	Pro	Arg	Asp	Cys	Gly	Cys		
		115					120					125			

<210> 54
 <211> 378
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> synthetic

<400> 54
 caggttcagc tgggtgcagtc tggagctgag atgaagaagc ctgggggcctc agtgaaggctc 60
 tcctgcaagg cttctgggta cacctttacc agctatggta tcagctgggt gcgacaggcc 120
 cctggacaag ggcttgagtg gatgggatgg atcagcgctt acaatggtaa cacatactat 180
 gcacagaacc tccagggcag agtcaccatg accacagaca catccacgag cgcagccttc 240
 atggacctga ggagcctgag atctgacgac acggccgtgt attactgtgc gagagatggg 300
 tatagtacct cgtccttaga ctactggggc caggaaccc tggtcaccgt ctcctcagtg 360
 cccagggatt gtggttgt 378

<210> 55
 <211> 126
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic

Gln	Val	Gln	Leu	Val	Gln	Ser	Gly	Ala	Glu	Met	Lys	Lys	Pro	Gly	Ala
1				5					10					15	
Ser	Val	Lys	Val	Ser	Cys	Lys	Ala	Ser	Gly	Tyr	Thr	Phe	Thr	Ser	Tyr
			20				25						30		
Gly	Ile	Ser	Trp	Val	Arg	Gln	Ala	Pro	Gly	Gln	Gly	Leu	Glu	Trp	Met
		35					40					45			
Gly	Trp	Ile	Ser	Ala	Tyr	Asn	Gly	Asn	Thr	Tyr	Tyr	Ala	Gln	Asn	Leu
	50					55					60				
Gln	Gly	Arg	Val	Thr	Met	Thr	Thr	Asp	Thr	Ser	Thr	Ser	Ala	Ala	Phe
65					70					75					80
Met	Asp	Leu	Arg	Ser	Leu	Arg	Ser	Asp	Asp	Thr	Ala	Val	Tyr	Tyr	Cys
				85				90						95	
Ala	Arg	Asp	Gly	Tyr	Ser	Thr	Ser	Ser	Leu	Asp	Tyr	Trp	Gly	Gln	Gly
			100					105					110		
Thr	Leu	Val	Thr	Val	Ser	Ser	Val	Pro	Arg	Asp	Cys	Gly	Cys		
		115					120					125			

<210> 56
 <211> 408
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> synthetic

<400> 56
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 tcttgcaagg cttctgggta cacctttacc agctatggta tcagctgggt gcgacaggcc 120
 cctggacaag ggcttgagtg gatgggatgg atcagcgctt acaatggtaa cacaaactat 180
 gcacagaagc tccagggcag agtcaccatg accacagaca catccacgag cacagcctac 240
 atggagctga ggagcctgag atctgacgac acggccgtgt attactgtgc gagagatgat 300
 atgattacgt ttgggggaggt tatcgccaac tactactact acggtatgga cgtctggggc 360
 caagggacca cggtcaccgt cacctcagtg cccagggatt gtggttgt 408

<210> 57
 <211> 136
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic

<400> 57
 Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
 1 5 10 15
 Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
 20 25 30
 Gly Ile Ser Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met
 35 40 45
 Gly Trp Ile Ser Ala Tyr Asn Gly Asn Thr Asn Tyr Ala Gln Lys Leu
 50 55 60
 Gln Gly Arg Val Thr Met Thr Thr Asp Thr Ser Thr Ser Thr Ala Tyr
 65 70 75 80
 Met Glu Leu Arg Ser Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Cys
 85 90 95
 Ala Arg Asp Asp Met Ile Thr Phe Gly Gly Val Ile Ala Asn Tyr Tyr
 100 105 110
 Tyr Tyr Gly Met Asp Val Trp Gly Gln Gly Thr Thr Val Thr Val Thr
 115 120 125
 Ser Val Pro Arg Asp Cys Gly Cys
 130 135

<210> 58
 <211> 372
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> synthetic

<400> 58
 caggttcagt tgctgcagtc tggagctgag gtgaagaagc ctggggcctc agtgaaggtc 60
 tcttacaagg cttctgatta cacctttacc agctatggta tcagctgggt gcgacaggcc 120
 cctggacaag ggcttgagtg gatgggatgg atcagcgctt acaatggtaa cacaaactat 180
 gcacagaacc tccagggcag agtcaccatg accacagaca catccacgag cacagcctac 240
 atggaactga ggagcctgag atctgacgac tcggccgtgt attactgtgc gagagaggag 300
 ctggaacttt ttgactactg gggccaggga accctggtca ccgtctcctc agtgcccagg 360
 gattgtggtt gt 372

<210> 59
 <211> 124
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic

<400> 59
 Gln Val Gln Leu Leu Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
 1 5 10 15
 Ser Val Lys Val Ser Tyr Lys Ala Ser Asp Tyr Thr Phe Thr Ser Tyr
 20 25 30
 Gly Ile Ser Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met
 35 40 45
 Gly Trp Ile Ser Ala Tyr Asn Gly Asn Thr Asn Tyr Ala Gln Asn Leu
 50 55 60
 Gln Gly Arg Val Thr Met Thr Thr Asp Thr Ser Thr Ser Thr Ala Tyr
 65 70 75 80
 Met Glu Leu Arg Ser Leu Arg Ser Asp Asp Ser Ala Val Tyr Tyr Cys
 85 90 95
 Ala Arg Glu Glu Leu Glu Leu Phe Asp Tyr Trp Gly Gln Gly Thr Leu
 100 105 110
 Val Thr Val Ser Ser Val Pro Arg Asp Cys Gly Cys
 115 120

<210> 60
 <211> 378
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> synthetic

<400> 60
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 tcttgcaagg cttctggagg caccttcagc agctatgcta tcagctgggt gcgacaggcc 120
 cctggacaag ggcttgagtg gatgggaggg atcatccta tctttggtac agcaaactac 180
 gcacagaagt tccagggcag agtcacgatt accacggacg aatccacgag cacagcctac 240
 atggagctga gcagcctgag atctgaggac acggccgtgt attactgtgc gagagatggg 300
 tatagtacct cgtccttaga ctactggggc caggaaccc tggtcaccgt ctctcagtg 360
 cccagggatt gtggttgt 378

<210> 61
 <211> 126
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic

<400> 61
 Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ser
 1 5 10 15
 Ser Val Lys Val Ser Cys Lys Ala Ser Gly Gly Thr Phe Ser Ser Tyr
 20 25 30
 Ala Ile Ser Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met

<210> 64
<211> 101
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic

<400> 64
tgacagtgta atcacatata ctttttcttg tagtgcccag ggattgtggt tgtaagcctt 60
gcatatgtac aggtaagtca gtaggccttt caccctgacc c 101