

SEQUENCE LISTING

<110> Takayuki SHIRATSHUCHI
Moriya TSUJI

<120> MODIFICATION OF RECOMBINANT ADENOVIRUS WITH IMMUNOGENIC
PLASMODIUM CIRCUMSPOROZOITE PROTEIN EPITOPES

<130> 71624.8001.WO01

<140> PCT/US10/045952

<141> 2010-08-18

<150> PCT/US09/054212

<151> 2009-08-18

<160> 66

<170> PatentIn version 3.5

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<212> DNA

<213> Artificial Sequence

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Lys Leu Tyr His Val Leu Asn Ser Lys Asn Gly Lys Ile Tyr Asn Arg

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Leu Glu Phe Val Lys Gln Ile Ser Ser Gln Leu Thr Glu Glu Trp Ser			
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aat tta tat aac gaa ctg gag atg aat tac tat ggt aag cag gaa aat 195			
Asn Leu Tyr Asn Glu Leu Glu Met Asn Tyr Tyr Gly Lys Gln Glu Asn			
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Trp Tyr Ser Leu Lys Lys Asn Ser Arg Ser Leu Gly Glu Asn Asp Asp			
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 225 230 235

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 240 245 250

gcc aat ccg aac gca aat cct aat gct aat cct aac gct aac ccc aac 819
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 255 260 265

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 270 275 280 285

cca aat gac cct aac cgg aat gtc gac gag aat gca aat gcc aat agc 915
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 290 295 300

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 305 310 315

gaa tat ttg aac aag att caa aac tcc ctc tca aca gaa tgg tct cct 1011
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 320 325 330

tgc agc gtg act tgt gga aat ggc atc cag gtt cgt att aaa cca ggt 1059
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 335 340 345

agt gcc aac aag ccc aag gat gaa cta gac tat gcg aat gat ata gag 1107
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Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala

20 25 30

cgc gcc acc gag acg tac ttc agc ctg aat aac aag ttt aga aac ccc 144

Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro

35 40 45

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Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu

50 55 60

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Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr

65 70 75 80

aag gcg cgg ttc acc cta gct gtg ggt gat aac cgt gtg ctg gac atg 288

Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met

85 90 95

gct tcc acg tac ttt gac atc cgc ggc gtg ctg gac agg ggc cct act 336

Ala Ser Thr Tyr Phe Asp Ile Arg Gly Val Leu Asp Arg Gly Pro Thr

100 105 110

ttt aag ccc tac tct ggc act gcc tac aac gcc ctg gct ccc aag ggt 384

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly

115 120 125

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130 135 140

gga cca ggt gca cct caa ggg cct gga gcc cct aaa act cac gta ttt 480

Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Lys Thr His Val Phe

145 150 155 160

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165 170 175

ata ggt gtc gaa ggt caa aca cct aaa tat gcc gat aaa aca ttt caa 576

Ile Gly Val Glu Gly Gln Thr Pro Lys Tyr Ala Asp Lys Thr Phe Gln

180 185 190

cct gaa cct caa ata gga gaa tct cag tgg tac gaa aca gaa att aat 624
 Pro Glu Pro Gln Ile Gly Glu Ser Gln Trp Tyr Glu Thr Glu Ile Asn
 195 200 205

cat gca gct ggg aga gtc cta aaa aag act acc cca atg aaa cca tgt 672
 His Ala Ala Gly Arg Val Leu Lys Lys Thr Thr Pro Met Lys Pro Cys
 210 215 220

tac ggt tca tat gca aaa ccc aca aat gaa aat gga ggg caa ggc att 720
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 225 230 235 240

ctt gta aag caa caa aat gga aag cta gaa agt caa gtg gaa atg caa 768
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 260 265 270

cct aaa gtg gta ttg tac agt gaa gat gta gat ata gaa acc cca gac 864
 Pro Lys Val Val Leu Tyr Ser Glu Asp Val Asp Ile Glu Thr Pro Asp
 275 280 285

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 290 295 300

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 325 330 335

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ggt gat aga acc agg tac ttt tct atg tgg aat cag gct gtt gac agc 1152
 Gly Asp Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Ala Val Asp Ser
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Ser Asn Val Lys Ile Ser Asp Asn Pro Asn Thr Tyr Asp Tyr Met Asn				
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aag cga gtg gtg gct ccc ggg cta gtg gac tgc tac att aac ctt gga				1536
Lys Arg Val Val Ala Pro Gly Leu Val Asp Cys Tyr Ile Asn Leu Gly				
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Arg Lys Asp Val Asn Met Val Leu Gln Ser Ser Leu Gly Asn Asp Leu				
	580	585	590	
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 625 630 635 640

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 Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val Pro Ile
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 835 840 845

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caa aac ctt ctc tac gcc aac tcc gcc cac gcg cta gac atg act ttt 2688
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 900 905 910

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 915 920 925

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cgc gcc acc gag acg tac ttc agc ctg aat aac aag ttt aga aac ccc 144
Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

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Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
50 55 60

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Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

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Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

gct tcc acg tac ttt gac atc cgc ggc gtg ctg gac agg ggc cct act 336
Ala Ser Thr Tyr Phe Asp Ile Arg Gly Val Leu Asp Arg Gly Pro Thr
100 105 110

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Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

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Ala Pro Asn Pro Cys Glu Trp Asp Glu Gln Gly Pro Gly Ala Pro Gln
130 135 140

gga cca gga gca cca cag gga cca gga gca ccg caa ggt cct ggt gct 480
Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala
145 150 155 160

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Pro Lys Thr His Val Phe Gly Gln Ala Pro Tyr Ser Gly Ile Asn Ile
165 170 175

aca aag gag ggt att caa ata ggt gtc gaa ggt caa aca cct aaa tat 576
Thr Lys Glu Gly Ile Gln Ile Gly Val Glu Gly Gln Thr Pro Lys Tyr
180 185 190

gcc gat aaa aca ttt caa cct gaa cct caa ata gga gaa tct cag tgg 624

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Tyr Glu Thr Glu Ile Asn His Ala Ala Gly Arg Val Leu Lys Lys Thr	
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Thr Pro Met Lys Pro Cys Tyr Gly Ser Tyr Ala Lys Pro Thr Asn Glu	
225 230 235 240	
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Asn Gly Gly Gln Gly Ile Leu Val Lys Gln Gln Asn Gly Lys Leu Glu	
245 250 255	
agt caa gtg gaa atg caa ttt ttc tca act act gag gca gcc gca ggc	816
Ser Gln Val Glu Met Gln Phe Phe Ser Thr Thr Glu Ala Ala Ala Gly	
260 265 270	
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Asn Gly Asp Asn Leu Thr Pro Lys Val Val Leu Tyr Ser Glu Asp Val	
275 280 285	
gat ata gaa acc cca gac act cat att tct tac atg ccc act att aag	912
Asp Ile Glu Thr Pro Asp Thr His Ile Ser Tyr Met Pro Thr Ile Lys	
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Glu Gly Asn Ser Arg Glu Leu Met Gly Gln Gln Ser Met Pro Asn Arg	
305 310 315 320	
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Pro Asn Tyr Ile Ala Phe Arg Asp Asn Phe Ile Gly Leu Met Tyr Tyr	
325 330 335	
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Leu Leu Leu Asp Ser Ile Gly Asp Arg Thr Arg Tyr Phe Ser Met Trp	
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385 390 395 400	

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 Phe Leu Tyr Ser Asn Ile Ala Leu Tyr Leu Pro Asp Lys Leu Lys Tyr
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 Ser Pro Ser Asn Val Lys Ile Ser Asp Asn Pro Asn Thr Tyr Asp Tyr
 465 470 475 480

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 Met Asn Lys Arg Val Val Ala Pro Gly Leu Val Asp Cys Tyr Ile Asn
 485 490 495

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 515 520 525

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 Asp Leu Arg Val Asp Gly Ala Ser Ile Lys Phe Asp Ser Ile Cys Leu
 580 585 590

tac gcc acc ttc ttc ccc atg gcc cac aac acc gcc tcc acg ctt gag 1824
 Tyr Ala Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu
 595 600 605

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 Ala Met Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu
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 625 630 635 640

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gac cct tat tac acc tac tct ggc tct ata ccc tac cta gat gga acc 2064
 Asp Pro Tyr Tyr Thr Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr
 675 680 685

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 690 695 700

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 Asp Thr Lys Tyr Lys Asp Tyr Gln Gln Val Gly Ile Leu His Gln His
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Gln Ala Tyr Pro Ala Asn Phe Pro Tyr Pro Leu Ile Gly Lys Thr Ala			
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Val Asp Ser Ile Thr Gln Lys Lys Phe Leu Cys Asp Arg Thr Leu Trp			
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cgc atc cca ttc tcc agt aac ttt atg tcc atg ggc gca ctc aca gac			2592
Arg Ile Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp			
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Leu Gly Gln Asn Leu Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met			
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Thr Phe Glu Val Asp Pro Met Asp Glu Pro Thr Leu Leu Tyr Val Leu			
885	890	895	
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Phe Glu Val Phe Asp Val Val Arg Val His Gln Pro His Arg Gly Val			
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Thr			

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

cgc gcc acc gag acg tac ttc agc ctg aat aac aag ttt aga aac ccc 144
 Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
 35 40 45

acg gtg gcg cct acg cac gac gtg acc aca gac cgg tcc cag cgt ttg 192
 Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
 50 55 60

acg ctg cgg ttc atc cct gtg gac cgt gag gat act gcg tac tcg tac 240
 Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
 65 70 75 80

aag gcg cgg ttc acc cta gct gtg ggt gat aac cgt gtg ctg gac atg 288
 Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
 85 90 95

gct tcc acg tac ttt gac atc cgc ggc gtg ctg gac agg ggc cct act 336
 Ala Ser Thr Tyr Phe Asp Ile Arg Gly Val Leu Asp Arg Gly Pro Thr
 100 105 110

ttt aag ccc tac tct ggc act gcc tac aac gcc ctg gct ccc aag ggt 384
 Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
 115 120 125

gcc cca aat cct tgc gaa tgg gat gaa cag gga cca gga gca cca cag 432
 Ala Pro Asn Pro Cys Glu Trp Asp Glu Gln Gly Pro Gly Ala Pro Gln
 130 135 140

gga cca gga gca cca cag gga cca gga gca ccg caa ggt cct ggt gct 480
 Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala
 145 150 155 160

cct cag gga cca gga gca cca aaa act cac gta ttt ggg cag gcg cct 528
 Pro Gln Gly Pro Gly Ala Pro Lys Thr His Val Phe Gly Gln Ala Pro
 165 170 175

tat tct ggt ata aat att aca aag gag ggt att caa ata ggt gtc gaa 576
 Tyr Ser Gly Ile Asn Ile Thr Lys Glu Gly Ile Gln Ile Gly Val Glu
 180 185 190

ggt caa aca cct aaa tat gcc gat aaa aca ttt caa cct gaa cct caa 624
 Gly Gln Thr Pro Lys Tyr Ala Asp Lys Thr Phe Gln Pro Glu Pro Gln
 195 200 205

ata gga gaa tct cag tgg tac gaa aca gaa att aat cat gca gct ggg 672
 Ile Gly Glu Ser Gln Trp Tyr Glu Thr Glu Ile Asn His Ala Ala Gly
 210 215 220

aga gtc cta aaa aag act acc cca atg aaa cca tgt tac ggt tca tat 720
 Arg Val Leu Lys Lys Thr Thr Pro Met Lys Pro Cys Tyr Gly Ser Tyr
 225 230 235 240

gca aaa ccc aca aat gaa aat gga ggg caa ggc att ctt gta aag caa 768
 Ala Lys Pro Thr Asn Glu Asn Gly Gly Gln Gly Ile Leu Val Lys Gln
 245 250 255

caa aat gga aag cta gaa agt caa gtg gaa atg caa ttt ttc tca act 816
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 260 265 270

act gag gca gcc gca ggc aat ggt gat aac ttg act cct aaa gtg gta 864
 Thr Glu Ala Ala Ala Gly Asn Gly Asp Asn Leu Thr Pro Lys Val Val
 275 280 285

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 290 295 300

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 305 310 315 320

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 325 330 335

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 Thr Glu Leu Ser Tyr Gln Leu Leu Leu Asp Ser Ile Gly Asp Arg Thr
 370 375 380

agg tac ttt tct atg tgg aat cag ctt cca aat tac tgc ttt cca ctg 1200
 Arg Tyr Phe Ser Met Trp Asn Gln Leu Pro Asn Tyr Cys Phe Pro Leu
 385 390 395 400

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 405 410 415

ggt cag gaa aat gga tgg gaa aaa gat gct aca gaa ttt tca gat aaa 1296
 Gly Gln Glu Asn Gly Trp Glu Lys Asp Ala Thr Glu Phe Ser Asp Lys
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aat gaa ata aga gtt gga aat aat ttt gcc atg gaa atc aat cta aat 1344
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gcc aac ctg tgg aga aat ttc ctg tac tcc aac ata gcg ctg tat ttg 1392
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ccc gac aag cta aag tac agt cct tcc aac gta aaa att tct gat aac 1440
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 465 470 475 480

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 Val Asp Cys Tyr Ile Asn Leu Gly Ala Arg Trp Ser Leu Asp Tyr Met
 500 505 510

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 Arg Ser Met Leu Leu Gly Asn Gly Arg Tyr Val Pro Phe His Ile Gln
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 Val Pro Gln Lys Phe Phe Ala Ile Lys Asn Leu Leu Leu Leu Pro Gly
 545 550 555 560

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 Ser Tyr Thr Tyr Glu Trp Asn Phe Arg Lys Asp Val Asn Met Val Leu
 565 570 575

cag agc tcc cta gga aat gac cta agg gtt gac gga gcc agc att aag 1776
 Gln Ser Ser Leu Gly Asn Asp Leu Arg Val Asp Gly Ala Ser Ile Lys
 580 585 590

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 Phe Asp Ser Ile Cys Leu Tyr Ala Thr Phe Phe Pro Met Ala His Asn
 595 600 605

acc gcc tcc acg ctt gag gcc atg ctt aga aac gac acc aac gac cag 1872
 Thr Ala Ser Thr Leu Glu Ala Met Leu Arg Asn Asp Thr Asn Asp Gln

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Ser Phe Asn Asp Tyr Leu Ser Ala Ala Asn Met Leu Tyr Pro Ile Pro			
625	630	635	640
gcc aac gct acc aac gtg ccc ata tcc atc ccc tcc cgc aac tgg gcg	1968		
Ala Asn Ala Thr Asn Val Pro Ile Ser Ile Pro Ser Arg Asn Trp Ala			
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Ala Phe Arg Gly Trp Ala Phe Thr Arg Leu Lys Thr Lys Glu Thr Pro			
660	665	670	
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675	680	685	
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725	730	735	
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ccc acc atg cgc gaa gga cag gcc tac cct gct aac ttc ccc tat ccg	2496		

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 850 855 860

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 865 870 875 880

gcc cac gcg cta gac atg act ttt gag gtg gat ccc atg gac gag ccc 2688
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acc ctt ctt tat gtt ttg ttt gaa gtc ttt gac gtg gtc cgt gtg cac 2736
 Thr Leu Leu Tyr Val Leu Phe Glu Val Phe Asp Val Val Arg Val His
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cgc gcc acc gag acg tac ttc agc ctg aat aac aag ttt aga aac ccc 144
 Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
 35 40 45

acg gtg gcg cct acg cac gac gtg acc aca gac cgg tcc cag cgt ttg 192
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 50 55 60

acg ctg cgg ttc atc cct gtg gac cgt gag gat act gcg tac tcg tac 240
 Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
 65 70 75 80

aag gcg cgg ttc acc cta gct gtg ggt gat aac cgt gtg ctg gac atg 288
 Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
 85 90 95

gct tcc acg tac ttt gac atc cgc ggc gtg ctg gac agg ggc cct act 336
 Ala Ser Thr Tyr Phe Asp Ile Arg Gly Val Leu Asp Arg Gly Pro Thr
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 Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
 115 120 125

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 Ala Pro Asn Pro Cys Glu Trp Asp Glu Gln Gly Pro Gly Ala Pro Gln
 130 135 140

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 145 150 155 160

cct cag gga cca gga gca cca cag gga cca gga gca cca aaa act cac 528
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 165 170 175

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 180 185 190

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 195 200 205

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Pro Cys Tyr Gly Ser Tyr Ala Lys Pro Thr Asn Glu Asn Gly Gly Gln			
245	250	255	
ggc att ctt gta aag caa caa aat gga aag cta gaa agt caa gtg gaa			816
Gly Ile Leu Val Lys Gln Gln Asn Gly Lys Leu Glu Ser Gln Val Glu			
260	265	270	
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Met Gln Phe Phe Ser Thr Thr Glu Ala Ala Ala Gly Asn Gly Asp Asn			
275	280	285	
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Leu Thr Pro Lys Val Val Leu Tyr Ser Glu Asp Val Asp Ile Glu Thr			
290	295	300	
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Pro Asp Thr His Ile Ser Tyr Met Pro Thr Ile Lys Glu Gly Asn Ser			
305	310	315	320
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Arg Glu Leu Met Gly Gln Gln Ser Met Pro Asn Arg Pro Asn Tyr Ile			
325	330	335	
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Ala Phe Arg Asp Asn Phe Ile Gly Leu Met Tyr Tyr Asn Ser Thr Gly			
340	345	350	
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Asn Met Gly Val Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala Val Val			
355	360	365	
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Asp Leu Gln Asp Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu Leu Asp			
370	375	380	
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Ser Ile Gly Asp Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Leu Pro			
385	390	395	400
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Asn Tyr Cys Phe Pro Leu Gly Gly Val Ile Asn Thr Glu Thr Leu Thr			
405	410	415	
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Lys Val Lys Pro Lys Thr Gly Gln Glu Asn Gly Trp Glu Lys Asp Ala
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 Thr Glu Phe Ser Asp Lys Asn Glu Ile Arg Val Gly Asn Asn Phe Ala
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 Met Glu Ile Asn Leu Asn Ala Asn Leu Trp Arg Asn Phe Leu Tyr Ser
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 Asn Ile Ala Leu Tyr Leu Pro Asp Lys Leu Lys Tyr Ser Pro Ser Asn
 465 470 475 480
 gta aaa att tct gat aac cca aac acc tac gac tac atg aac aag cga 1488
 Val Lys Ile Ser Asp Asn Pro Asn Thr Tyr Asp Tyr Met Asn Lys Arg
 485 490 495
 gtg gtg gct ccc ggg cta gtg gac tgc tac att aac ctt gga gca cgc 1536
 Val Val Ala Pro Gly Leu Val Asp Cys Tyr Ile Asn Leu Gly Ala Arg
 500 505 510
 tgg tcc ctt gac tat atg gac aac gtc aac cca ttt aac cac cac cgc 1584
 Trp Ser Leu Asp Tyr Met Asp Asn Val Asn Pro Phe Asn His His Arg
 515 520 525
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 Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly Arg Tyr
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 Val Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe Ala Ile Lys Asn
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 Asp Val Asn Met Val Leu Gln Ser Ser Leu Gly Asn Asp Leu Arg Val
 580 585 590
 gac gga gcc agc att aag ttt gat agc att tgc ctt tac gcc acc ttc 1824
 Asp Gly Ala Ser Ile Lys Phe Asp Ser Ile Cys Leu Tyr Ala Thr Phe
 595 600 605
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 Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu Ala Met Leu Arg
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 Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala Ala Asn
 625 630 635 640

atg ctc tac cct ata ccc gcc aac gct acc aac gtg ccc ata tcc atc 1968
 Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val Pro Ile Ser Ile
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ccc tcc cgc aac tgg gcg gct ttc cgc ggc tgg gcc ttc acg cgc ctt 2016
 Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp Ala Phe Thr Arg Leu
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 Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly Tyr Asp Pro Tyr Tyr
 675 680 685

acc tac tct ggc tct ata ccc tac cta gat gga acc ttt tac ctc aac 2112
 Thr Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr Leu Asn
 690 695 700

cac acc ttt aag aag gtg gcc att acc ttt gac tct tct gtc agc tgg 2160
 His Thr Phe Lys Lys Val Ala Ile Thr Phe Asp Ser Ser Val Ser Trp
 705 710 715 720

cct ggc aat gac cgc ctg ctt acc ccc aac gag ttt gaa att aag cgc 2208
 Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile Lys Arg
 725 730 735

tca gtt gac ggg gag ggt tac aac gtt gcc cag tgt aac atg acc aaa 2256
 Ser Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys Asn Met Thr Lys
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 Asp Trp Phe Leu Val Gln Met Leu Ala Asn Tyr Asn Ile Gly Tyr Gln
 755 760 765

ggc ttc tat atc cca gag agc tac aag gac cgc atg tac tcc ttc ttt 2352
 Gly Phe Tyr Ile Pro Glu Ser Tyr Lys Asp Arg Met Tyr Ser Phe Phe
 770 775 780

aga aac ttc cag ccc atg agc cgt cag gtg gtg gat gat act aaa tac 2400
 Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp Asp Thr Lys Tyr
 785 790 795 800

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ttt gtt ggc tac ctt gcc ccc acc atg cgc gaa gga cag gcc tac cct 2496
 Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Glu Gly Gln Ala Tyr Pro
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gct aac ttc ccc tat ccg ctt ata ggc aag acc gca gtt gac agc att 2544
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 Thr Gln Lys Lys Phe Leu Cys Asp Arg Thr Leu Trp Arg Ile Pro Phe
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 Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp Leu Gly Gln Asn
 865 870 875 880

ctt ctc tac gcc aac tcc gcc cac gcg cta gac atg act ttt gag gtg 2688
 Leu Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met Thr Phe Glu Val
 885 890 895

gat ccc atg gac gag ccc acc ctt ctt tat gtt ttg ttt gaa gtc ttt 2736
 Asp Pro Met Asp Glu Pro Thr Leu Leu Tyr Val Leu Phe Glu Val Phe
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 915 920 925

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ggc cag gac gcc tcg gag tac ctg agc ccc ggg ctg gtg cag ttt gcc 96

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

cgc gcc acc gag acg tac ttc agc ctg aat aac aag ttt aga aac ccc 144
 Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
 35 40 45

acg gtg gcg cct acg cac gac gtg acc aca gac cgg tcc cag cgt ttg 192
 Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
 50 55 60

acg ctg cgg ttc atc cct gtg gac cgt gag gat act gcg tac tcg tac 240
 Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
 65 70 75 80

aag gcg cgg ttc acc cta gct gtg ggt gat aac cgt gtg ctg gac atg 288
 Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
 85 90 95

gct tcc acg tac ttt gac atc cgc ggc gtg ctg gac agg ggc cct act 336
 Ala Ser Thr Tyr Phe Asp Ile Arg Gly Val Leu Asp Arg Gly Pro Thr
 100 105 110

ttt aag ccc tac tct ggc act gcc tac aac gcc ctg gct ccc aag ggt 384
 Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
 115 120 125

gcc cca aat cct tgc gaa tgg gat gaa cag gga cca gga gca cca cag 432
 Ala Pro Asn Pro Cys Glu Trp Asp Glu Gln Gly Pro Gly Ala Pro Gln
 130 135 140

gga cca gga gca cca cag gga cca gga gca cca cag gga cca gga gca 480
 Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala
 145 150 155 160

cca cag gga cca gga gca cca cag gga cca gga gca ccg caa ggt cct 528
 Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro
 165 170 175

ggt gct cct aaa act cac gta ttt ggg cag gcg cct tat tct ggt ata 576
 Gly Ala Pro Lys Thr His Val Phe Gly Gln Ala Pro Tyr Ser Gly Ile
 180 185 190

aat att aca aag gag ggt att caa ata ggt gtc gaa ggt caa aca cct 624
 Asn Ile Thr Lys Glu Gly Ile Gln Ile Gly Val Glu Gly Gln Thr Pro
 195 200 205

aaa tat gcc gat aaa aca ttt caa cct gaa cct caa ata gga gaa tct 672
 Lys Tyr Ala Asp Lys Thr Phe Gln Pro Glu Pro Gln Ile Gly Glu Ser
 210 215 220

cag tgg tac gaa aca gaa att aat cat gca gct ggg aga gtc cta aaa 720
 Gln Trp Tyr Glu Thr Glu Ile Asn His Ala Ala Gly Arg Val Leu Lys
 225 230 235 240

aag act acc cca atg aaa cca tgt tac ggt tca tat gca aaa ccc aca 768
 Lys Thr Thr Pro Met Lys Pro Cys Tyr Gly Ser Tyr Ala Lys Pro Thr
 245 250 255

aat gaa aat gga ggg caa ggc att ctt gta aag caa caa aat gga aag 816
 Asn Glu Asn Gly Gly Gln Gly Ile Leu Val Lys Gln Gln Asn Gly Lys
 260 265 270

cta gaa agt caa gtg gaa atg caa ttt ttc tca act act gag gca gcc 864
 Leu Glu Ser Gln Val Glu Met Gln Phe Phe Ser Thr Thr Glu Ala Ala
 275 280 285

gca ggc aat ggt gat aac ttg act cct aaa gtg gta ttg tac agt gaa 912
 Ala Gly Asn Gly Asp Asn Leu Thr Pro Lys Val Val Leu Tyr Ser Glu
 290 295 300

gat gta gat ata gaa acc cca gac act cat att tct tac atg ccc act 960
 Asp Val Asp Ile Glu Thr Pro Asp Thr His Ile Ser Tyr Met Pro Thr
 305 310 315 320

att aag gaa ggt aac tca cga gaa cta atg ggc caa caa tct atg ccc 1008
 Ile Lys Glu Gly Asn Ser Arg Glu Leu Met Gly Gln Gln Ser Met Pro
 325 330 335

aac agg cct aat tac att gct ttt agg gac aat ttt att ggt cta atg 1056
 Asn Arg Pro Asn Tyr Ile Ala Phe Arg Asp Asn Phe Ile Gly Leu Met
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tat tac aac agc acg ggt aat atg ggt gtt ctg gcg ggc caa gca tcg 1104
 Tyr Tyr Asn Ser Thr Gly Asn Met Gly Val Leu Ala Gly Gln Ala Ser
 355 360 365

cag ttg aat gct gtt gta gat ttg caa gac aga aac aca gag ctt tca 1152
 Gln Leu Asn Ala Val Val Asp Leu Gln Asp Arg Asn Thr Glu Leu Ser
 370 375 380

tac cag ctt ttg ctt gat tcc att ggt gat aga acc agg tac ttt tct 1200
 Tyr Gln Leu Leu Leu Asp Ser Ile Gly Asp Arg Thr Arg Tyr Phe Ser
 385 390 395 400

atg tgg aat cag ctt cca aat tac tgc ttt cca ctg gga ggt gtg att 1248
 Met Trp Asn Gln Leu Pro Asn Tyr Cys Phe Pro Leu Gly Gly Val Ile
 405 410 415

aat aca gag act ctt acc aag gta aaa cct aaa aca ggt cag gaa aat 1296
 Asn Thr Glu Thr Leu Thr Lys Val Lys Pro Lys Thr Gly Gln Glu Asn
 420 425 430

gga tgg gaa aaa gat gct aca gaa ttt tca gat aaa aat gaa ata aga 1344
 Gly Trp Glu Lys Asp Ala Thr Glu Phe Ser Asp Lys Asn Glu Ile Arg
 435 440 445

gtt gga aat aat ttt gcc atg gaa atc aat cta aat gcc aac ctg tgg 1392
 Val Gly Asn Asn Phe Ala Met Glu Ile Asn Leu Asn Ala Asn Leu Trp
 450 455 460

aga aat ttc ctg tac tcc aac ata gcg ctg tat ttg ccc gac aag cta 1440
 Arg Asn Phe Leu Tyr Ser Asn Ile Ala Leu Tyr Leu Pro Asp Lys Leu
 465 470 475 480

aag tac agt cct tcc aac gta aaa att tct gat aac cca aac acc tac 1488
 Lys Tyr Ser Pro Ser Asn Val Lys Ile Ser Asp Asn Pro Asn Thr Tyr
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gac tac atg aac aag cga gtg gtg gct ccc ggg cta gtg gac tgc tac 1536
 Asp Tyr Met Asn Lys Arg Val Val Ala Pro Gly Leu Val Asp Cys Tyr
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att aac ctt gga gca cgc tgg tcc ctt gac tat atg gac aac gtc aac 1584
 Ile Asn Leu Gly Ala Arg Trp Ser Leu Asp Tyr Met Asp Asn Val Asn
 515 520 525

cca ttt aac cac cac cgc aat gct ggc ctg cgc tac cgc tca atg ttg 1632
 Pro Phe Asn His His Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu
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ctg ggc aat ggt cgc tat gtg ccc ttc cac atc cag gtg cct cag aag 1680
 Leu Gly Asn Gly Arg Tyr Val Pro Phe His Ile Gln Val Pro Gln Lys
 545 550 555 560

ttc ttt gcc att aaa aac ctc ctt ctc ctg ccg ggc tca tac acc tac 1728
 Phe Phe Ala Ile Lys Asn Leu Leu Leu Pro Gly Ser Tyr Thr Tyr
 565 570 575

gag tgg aac ttc agg aag gat gtt aac atg gtt ctg cag agc tcc cta 1776
 Glu Trp Asn Phe Arg Lys Asp Val Asn Met Val Leu Gln Ser Ser Leu
 580 585 590

gga aat gac cta agg gtt gac gga gcc agc att aag ttt gat agc att 1824
 Gly Asn Asp Leu Arg Val Asp Gly Ala Ser Ile Lys Phe Asp Ser Ile
 595 600 605

tgc ctt tac gcc acc ttc ttc ccc atg gcc cac aac acc gcc tcc acg 1872
 Cys Leu Tyr Ala Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr
 610 615 620

ctt gag gcc atg ctt aga aac gac acc aac gac cag tcc ttt aac gac 1920
 Leu Glu Ala Met Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp

625	630	635	640	
tat ctc tcc gcc gcc aac atg ctc tac cct ata ccc gcc aac gct acc				1968
Tyr Leu Ser Ala Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr				
645	650	655		
aac gtg ccc ata tcc atc ccc tcc cgc aac tgg gcg gct ttc cgc ggc				2016
Asn Val Pro Ile Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly				
660	665	670		
tgg gcc ttc acg cgc ctt aag act aag gaa acc cca tca ctg ggc tcg				2064
Trp Ala Phe Thr Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser				
675	680	685		
ggc tac gac cct tat tac acc tac tct ggc tct ata ccc tac cta gat				2112
Gly Tyr Asp Pro Tyr Tyr Thr Tyr Ser Gly Ser Ile Pro Tyr Leu Asp				
690	695	700		
gga acc ttt tac ctc aac cac acc ttt aag aag gtg gcc att acc ttt				2160
Gly Thr Phe Tyr Leu Asn His Thr Phe Lys Lys Val Ala Ile Thr Phe				
705	710	715	720	
gac tct tct gtc agc tgg cct ggc aat gac cgc ctg ctt acc ccc aac				2208
Asp Ser Ser Val Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn				
725	730	735		
gag ttt gaa att aag cgc tca gtt gac ggg gag ggt tac aac gtt gcc				2256
Glu Phe Glu Ile Lys Arg Ser Val Asp Gly Glu Gly Tyr Asn Val Ala				
740	745	750		
cag tgt aac atg acc aaa gac tgg ttc ctg gta caa atg cta gct aac				2304
Gln Cys Asn Met Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala Asn				
755	760	765		
tat aac att ggc tac cag ggc ttc tat atc cca gag agc tac aag gac				2352
Tyr Asn Ile Gly Tyr Gln Gly Phe Tyr Ile Pro Glu Ser Tyr Lys Asp				
770	775	780		
cgc atg tac tcc ttc ttt aga aac ttc cag ccc atg agc cgt cag gtg				2400
Arg Met Tyr Ser Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val				
785	790	795	800	
gtg gat gat act aaa tac aag gac tac caa cag gtg ggc atc cta cac				2448
Val Asp Asp Thr Lys Tyr Lys Asp Tyr Gln Gln Val Gly Ile Leu His				
805	810	815		
caa cac aac aac tct gga ttt gtt ggc tac ctt gcc ccc acc atg cgc				2496
Gln His Asn Asn Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg				
820	825	830		
gaa gga cag gcc tac cct gct aac ttc ccc tat ccg ctt ata ggc aag				2544

Glu Gly Gln Ala Tyr Pro Ala Asn Phe Pro Tyr Pro Leu Ile Gly Lys
 835 840 845
 acc gca gtt gac agc att acc cag aaa aag ttt ctt tgc gat cgc acc 2592
 Thr Ala Val Asp Ser Ile Thr Gln Lys Lys Phe Leu Cys Asp Arg Thr
 850 855 860
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 Leu Trp Arg Ile Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu
 865 870 875 880
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 Thr Asp Leu Gly Gln Asn Leu Leu Tyr Ala Asn Ser Ala His Ala Leu
 885 890 895
 gac atg act ttt gag gtg gat ccc atg gac gag ccc acc ctt ctt tat 2736
 Asp Met Thr Phe Glu Val Asp Pro Met Asp Glu Pro Thr Leu Leu Tyr
 900 905 910
 gtt ttg ttt gaa gtc ttt gac gtg gtc cgt gtg cac cag ccg cac cgc 2784
 Val Leu Phe Glu Val Phe Asp Val Val Arg Val His Gln Pro His Arg
 915 920 925
 ggc gtc atc gaa acc gtg tac ctg cgc acg ccc ttc tcg gcc ggc aac 2832
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 Ala Thr Thr
 945

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Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala				
20	25	30		
cgc gcc acc gag acg tac ttc agc ctg aat aac aag ttt aga aac ccc				144
Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro				
35	40	45		
acg gtg cgc cct acg cac gac gtg acc aca gac cgg tcc cag cgt ttg				192
Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu				
50	55	60		
acg ctg cgg ttc atc cct gtg gac cgt gag gat act gcg tac tcg tac				240
Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr				
65	70	75	80	
aag gcg cgg ttc acc cta gct gtg ggt gat aac cgt gtg ctg gac atg				288
Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met				
85	90	95		
gct tcc acg tac ttt gac atc cgc ggc gtg ctg gac agg ggc cct act				336
Ala Ser Thr Tyr Phe Asp Ile Arg Gly Val Leu Asp Arg Gly Pro Thr				
100	105	110		
ttt aag ccc tac tct ggc act gcc tac aac gcc ctg gct ccc aag ggt				384
Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly				
115	120	125		
gcc cca aat cct tgc gaa tgg gat gaa cag gga cca gga gca cca cag				432
Ala Pro Asn Pro Cys Glu Trp Asp Glu Gln Gly Pro Gly Ala Pro Gln				
130	135	140		
gga cca gga gca cca cag gga cca gga gca cca cag gga cca gga gca				480
Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala				
145	150	155	160	
cca cag gga cca gga gca cca cag gga cca gga gca ccg caa ggt cct				528
Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro				
165	170	175		
ggt gct cct cag gga cca gga gca cca aaa act cac gta ttt ggg cag				576
Gly Ala Pro Gln Gly Pro Gly Ala Pro Lys Thr His Val Phe Gly Gln				
180	185	190		
gcg cct tat tct ggt ata aat att aca aag gag ggt att caa ata ggt				624
Ala Pro Tyr Ser Gly Ile Asn Ile Thr Lys Glu Gly Ile Gln Ile Gly				
195	200	205		
gtc gaa ggt caa aca cct aaa tat gcc gat aaa aca ttt caa cct gaa				672

Val Glu Gly Gln Thr Pro Lys Tyr Ala Asp Lys Thr Phe Gln Pro Glu	
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cct caa ata gga gaa tct cag tgg tac gaa aca gaa att aat cat gca	720
Pro Gln Ile Gly Glu Ser Gln Trp Tyr Glu Thr Glu Ile Asn His Ala	
225 230 235 240	
gct ggg aga gtc cta aaa aag act acc cca atg aaa cca tgt tac ggt	768
Ala Gly Arg Val Leu Lys Lys Thr Thr Pro Met Lys Pro Cys Tyr Gly	
245 250 255	
tca tat gca aaa ccc aca aat gaa aat gga ggg caa ggc att ctt gta	816
Ser Tyr Ala Lys Pro Thr Asn Glu Asn Gly Gly Gln Gly Ile Leu Val	
260 265 270	
aag caa caa aat gga aag cta gaa agt caa gtg gaa atg caa ttt ttc	864
Lys Gln Gln Asn Gly Lys Leu Glu Ser Gln Val Glu Met Gln Phe Phe	
275 280 285	
tca act act gag gca gcc gca ggc aat ggt gat aac ttg act cct aaa	912
Ser Thr Thr Glu Ala Ala Ala Gly Asn Gly Asp Asn Leu Thr Pro Lys	
290 295 300	
gtg gta ttg tac agt gaa gat gta gat ata gaa acc cca gac act cat	960
Val Val Leu Tyr Ser Glu Asp Val Asp Ile Glu Thr Pro Asp Thr His	
305 310 315 320	
att tct tac atg ccc act att aag gaa ggt aac tca cga gaa cta atg	1008
Ile Ser Tyr Met Pro Thr Ile Lys Glu Gly Asn Ser Arg Glu Leu Met	
325 330 335	
ggc caa caa tct atg ccc aac agg cct aat tac att gct ttt agg gac	1056
Gly Gln Gln Ser Met Pro Asn Arg Pro Asn Tyr Ile Ala Phe Arg Asp	
340 345 350	
aat ttt att ggt cta atg tat tac aac agc acg ggt aat atg ggt gtt	1104
Asn Phe Ile Gly Leu Met Tyr Tyr Asn Ser Thr Gly Asn Met Gly Val	
355 360 365	
ctg gcg ggc caa gca tcg cag ttg aat gct gtt gta gat ttg caa gac	1152
Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala Val Val Asp Leu Gln Asp	
370 375 380	
aga aac aca gag ctt tca tac cag ctt ttg ctt gat tcc att ggt gat	1200
Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu Leu Asp Ser Ile Gly Asp	
385 390 395 400	
aga acc agg tac ttt tct atg tgg aat cag ctt cca aat tac tgc ttt	1248
Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Leu Pro Asn Tyr Cys Phe	
405 410 415	

cca ctg gga ggt gtg att aat aca gag act ctt acc aag gta aaa cct 1296
Pro Leu Gly Gly Val Ile Asn Thr Glu Thr Leu Thr Lys Val Lys Pro
420 425 430

aaa aca ggt cag gaa aat gga tgg gaa aaa gat gct aca gaa ttt tca 1344
Lys Thr Gly Gln Glu Asn Gly Trp Glu Lys Asp Ala Thr Glu Phe Ser
435 440 445

gat aaa aat gaa ata aga gtt gga aat aat ttt gcc atg gaa atc aat 1392
Asp Lys Asn Glu Ile Arg Val Gly Asn Asn Phe Ala Met Glu Ile Asn
450 455 460

cta aat gcc aac ctg tgg aga aat ttc ctg tac tcc aac ata gcg ctg 1440
Leu Asn Ala Asn Leu Trp Arg Asn Phe Leu Tyr Ser Asn Ile Ala Leu
465 470 475 480

tat ttg ccc gac aag cta aag tac agt cct tcc aac gta aaa att tct 1488
Tyr Leu Pro Asp Lys Leu Lys Tyr Ser Pro Ser Asn Val Lys Ile Ser
485 490 495

gat aac cca aac acc tac gac tac atg aac aag cga gtg gtg gct ccc 1536
Asp Asn Pro Asn Thr Tyr Asp Tyr Met Asn Lys Arg Val Val Ala Pro
500 505 510

ggg cta gtg gac tgc tac att aac ctt gga gca cgc tgg tcc ctt gac 1584
Gly Leu Val Asp Cys Tyr Ile Asn Leu Gly Ala Arg Trp Ser Leu Asp
515 520 525

tat atg gac aac gtc aac cca ttt aac cac cac cgc aat gct ggc ctg 1632
Tyr Met Asp Asn Val Asn Pro Phe Asn His His Arg Asn Ala Gly Leu
530 535 540

cgc tac cgc tca atg ttg ctg ggc aat ggt cgc tat gtg ccc ttc cac 1680
Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly Arg Tyr Val Pro Phe His
545 550 555 560

atc cag gtg cct cag aag ttc ttt gcc att aaa aac ctc ctt ctc ctg 1728
Ile Gln Val Pro Gln Lys Phe Phe Ala Ile Lys Asn Leu Leu Leu Leu
565 570 575

ccg ggc tca tac acc tac gag tgg aac ttc agg aag gat gtt aac atg 1776
Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe Arg Lys Asp Val Asn Met
580 585 590

gtt ctg cag agc tcc cta gga aat gac cta agg gtt gac gga gcc agc 1824
Val Leu Gln Ser Ser Leu Gly Asn Asp Leu Arg Val Asp Gly Ala Ser
595 600 605

att aag ttt gat agc att tgc ctt tac gcc acc ttc ttc ccc atg gcc 1872
Ile Lys Phe Asp Ser Ile Cys Leu Tyr Ala Thr Phe Phe Pro Met Ala
610 615 620

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 His Asn Thr Ala Ser Thr Leu Glu Ala Met Leu Arg Asn Asp Thr Asn
 625 630 635 640

gac cag tcc ttt aac gac tat ctc tcc gcc gcc aac atg ctc tac cct 1968
 Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala Ala Asn Met Leu Tyr Pro
 645 650 655

ata ccc gcc aac gct acc aac gtg ccc ata tcc atc ccc tcc cgc aac 2016
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 Trp Ala Ala Phe Arg Gly Trp Ala Phe Thr Arg Leu Lys Thr Lys Glu
 675 680 685

acc cca tca ctg ggc tcg ggc tac gac cct tat tac acc tac tct ggc 2112
 Thr Pro Ser Leu Gly Ser Gly Tyr Asp Pro Tyr Tyr Thr Tyr Ser Gly
 690 695 700

tct ata ccc tac cta gat gga acc ttt tac ctc aac cac acc ttt aag 2160
 Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr Leu Asn His Thr Phe Lys
 705 710 715 720

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 Lys Val Ala Ile Thr Phe Asp Ser Ser Val Ser Trp Pro Gly Asn Asp
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cgc ctg ctt acc ccc aac gag ttt gaa att aag cgc tca gtt gac ggg 2256
 Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile Lys Arg Ser Val Asp Gly
 740 745 750

gag ggt tac aac gtt gcc cag tgt aac atg acc aaa gac tgg ttc ctg 2304
 Glu Gly Tyr Asn Val Ala Gln Cys Asn Met Thr Lys Asp Trp Phe Leu
 755 760 765

gta caa atg cta gct aac tat aac att ggc tac cag ggc ttc tat atc 2352
 Val Gln Met Leu Ala Asn Tyr Asn Ile Gly Tyr Gln Gly Phe Tyr Ile
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ccc atg agc cgt cag gtg gtg gat gat act aaa tac aag gac tac caa 2448
 Pro Met Ser Arg Gln Val Val Asp Asp Thr Lys Tyr Lys Asp Tyr Gln
 805 810 815

cag gtg ggc atc cta cac caa cac aac aac tct gga ttt gtt ggc tac 2496
 Gln Val Gly Ile Leu His Gln His Asn Asn Ser Gly Phe Val Gly Tyr

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Leu Ala Pro Thr Met Arg Glu Gly Gln Ala Tyr Pro Ala Asn Phe Pro			
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tat ccg ctt ata ggc aag acc gca gtt gac agc att acc cag aaa aag			2592
Tyr Pro Leu Ile Gly Lys Thr Ala Val Asp Ser Ile Thr Gln Lys Lys			
850	855	860	
ttt ctt tgc gat cgc acc ctt tgg cgc atc cca ttc tcc agt aac ttt			2640
Phe Leu Cys Asp Arg Thr Leu Trp Arg Ile Pro Phe Ser Ser Asn Phe			
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atg tcc atg ggc gca ctc aca gac ctg ggc caa aac ctt ctc tac gcc			2688
Met Ser Met Gly Ala Leu Thr Asp Leu Gly Gln Asn Leu Leu Tyr Ala			
885	890	895	
aac tcc gcc cac gcg cta gac atg act ttt gag gtg gat ccc atg gac			2736
Asn Ser Ala His Ala Leu Asp Met Thr Phe Glu Val Asp Pro Met Asp			
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gag ccc acc ctt ctt tat gtt ttg ttt gaa gtc ttt gac gtg gtc cgt			2784
Glu Pro Thr Leu Leu Tyr Val Leu Phe Glu Val Phe Asp Val Val Arg			
915	920	925	
gtg cac cag ccg cac cgc ggc gtc atc gaa acc gtg tac ctg cgc acg			2832
Val His Gln Pro His Arg Gly Val Ile Glu Thr Val Tyr Leu Arg Thr			
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Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
20 25 30

cgc gcc acc gag acg tac ttc agc ctg aat aac aag ttt aga aac ccc 144
Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

acg gtg gcg cct acg cac gac gtg acc aca gac cgg tcc cag cgt ttg 192
Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
50 55 60

acg ctg cgg ttc atc cct gtg gac cgt gag gat act gcg tac tcg tac 240
Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

aag gcg cgg ttc acc cta gct gtg ggt gat aac cgt gtg ctg gac atg 288
Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

gct tcc acg tac ttt gac atc cgc ggc gtg ctg gac agg ggc cct act 336
Ala Ser Thr Tyr Phe Asp Ile Arg Gly Val Leu Asp Arg Gly Pro Thr
100 105 110

ttt aag ccc tac tct ggc act gcc tac aac gcc ctg gct ccc aag ggt 384
Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

gcc cca aat cct tgc gaa tgg gat gaa cag gga cca gga gca cca cag 432
Ala Pro Asn Pro Cys Glu Trp Asp Glu Gln Gly Pro Gly Ala Pro Gln
130 135 140

gga cca gga gca cca cag gga cca gga gca cca cag gga cca gga gca 480
Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala
145 150 155 160

cca cag gga cca gga gca cca cag gga cca gga gca ccg caa ggt cct 528
Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro
165 170 175

ggt gct cct cag gga cca gga gca cca cag gga cca gga gca cca aaa 576
Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Lys
180 185 190

act cac gta ttt ggg cag gcg cct tat tct ggt ata aat att aca aag 624
Thr His Val Phe Gly Gln Ala Pro Tyr Ser Gly Ile Asn Ile Thr Lys

195	200	205	
gag ggt att caa ata ggt gtc gaa ggt caa aca cct aaa tat gcc gat			672
Glu Gly Ile Gln Ile Gly Val Glu Gly Gln Thr Pro Lys Tyr Ala Asp			
210	215	220	
aaa aca ttt caa cct gaa cct caa ata gga gaa tct cag tgg tac gaa			720
Lys Thr Phe Gln Pro Glu Pro Gln Ile Gly Glu Ser Gln Trp Tyr Glu			
225	230	235	240
aca gaa att aat cat gca gct ggg aga gtc cta aaa aag act acc cca			768
Thr Glu Ile Asn His Ala Ala Gly Arg Val Leu Lys Lys Thr Thr Pro			
245	250	255	
atg aaa cca tgt tac ggt tca tat gca aaa ccc aca aat gaa aat gga			816
Met Lys Pro Cys Tyr Gly Ser Tyr Ala Lys Pro Thr Asn Glu Asn Gly			
260	265	270	
ggg caa ggc att ctt gta aag caa caa aat gga aag cta gaa agt caa			864
Gly Gln Gly Ile Leu Val Lys Gln Gln Asn Gly Lys Leu Glu Ser Gln			
275	280	285	
gtg gaa atg caa ttt ttc tca act act gag gca gcc gca ggc aat ggt			912
Val Glu Met Gln Phe Phe Ser Thr Thr Glu Ala Ala Ala Gly Asn Gly			
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Asp Asn Leu Thr Pro Lys Val Val Leu Tyr Ser Glu Asp Val Asp Ile			
305	310	315	320
gaa acc cca gac act cat att tct tac atg ccc act att aag gaa ggt			1008
Glu Thr Pro Asp Thr His Ile Ser Tyr Met Pro Thr Ile Lys Glu Gly			
325	330	335	
aac tca cga gaa cta atg ggc caa caa tct atg ccc aac agg cct aat			1056
Asn Ser Arg Glu Leu Met Gly Gln Gln Ser Met Pro Asn Arg Pro Asn			
340	345	350	
tac att gct ttt agg gac aat ttt att ggt cta atg tat tac aac agc			1104
Tyr Ile Ala Phe Arg Asp Asn Phe Ile Gly Leu Met Tyr Tyr Asn Ser			
355	360	365	
acg ggt aat atg ggt gtt ctg gcg ggc caa gca tcg cag ttg aat gct			1152
Thr Gly Asn Met Gly Val Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala			
370	375	380	
gtt gta gat ttg caa gac aga aac aca gag ctt tca tac cag ctt ttg			1200
Val Val Asp Leu Gln Asp Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu			
385	390	395	400
ctt gat tcc att ggt gat aga acc agg tac ttt tct atg tgg aat cag			1248

Leu Asp Ser Ile Gly Asp Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln
 405 410 415

 ctt cca aat tac tgc ttt cca ctg gga ggt gtg att aat aca gag act 1296
 Leu Pro Asn Tyr Cys Phe Pro Leu Gly Gly Val Ile Asn Thr Glu Thr
 420 425 430

 ctt acc aag gta aaa cct aaa aca ggt cag gaa aat gga tgg gaa aaa 1344
 Leu Thr Lys Val Lys Pro Lys Thr Gly Gln Glu Asn Gly Trp Glu Lys
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 gat gct aca gaa ttt tca gat aaa aat gaa ata aga gtt gga aat aat 1392
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 tac tcc aac ata gcg ctg tat ttg ccc gac aag cta aag tac agt cct 1488
 Tyr Ser Asn Ile Ala Leu Tyr Leu Pro Asp Lys Leu Lys Tyr Ser Pro
 485 490 495

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 Ser Asn Val Lys Ile Ser Asp Asn Pro Asn Thr Tyr Asp Tyr Met Asn
 500 505 510

 aag cga gtg gtg gct ccc ggg cta gtg gac tgc tac att aac ctt gga 1584
 Lys Arg Val Val Ala Pro Gly Leu Val Asp Cys Tyr Ile Asn Leu Gly
 515 520 525

 gca cgc tgg tcc ctt gac tat atg gac aac gtc aac cca ttt aac cac 1632
 Ala Arg Trp Ser Leu Asp Tyr Met Asp Asn Val Asn Pro Phe Asn His
 530 535 540

 cac cgc aat gct ggc ctg cgc tac cgc tca atg ttg ctg ggc aat ggt 1680
 His Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly
 545 550 555 560

 cgc tat gtg ccc ttc cac atc cag gtg cct cag aag ttc ttt gcc att 1728
 Arg Tyr Val Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe Ala Ile
 565 570 575

 aaa aac ctc ctt ctc ctg ccg ggc tca tac acc tac gag tgg aac ttc 1776
 Lys Asn Leu Leu Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe
 580 585 590

 agg aag gat gtt aac atg gtt ctg cag agc tcc cta gga aat gac cta 1824
 Arg Lys Asp Val Asn Met Val Leu Gln Ser Ser Leu Gly Asn Asp Leu
 595 600 605

agg gtt gac gga gcc agc att aag ttt gat agc att tgc ctt tac gcc 1872
 Arg Val Asp Gly Ala Ser Ile Lys Phe Asp Ser Ile Cys Leu Tyr Ala
 610 615 620

acc ttc ttc ccc atg gcc cac aac acc gcc tcc acg ctt gag gcc atg 1920
 Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu Ala Met
 625 630 635 640

ctt aga aac gac acc aac gac cag tcc ttt aac gac tat ctc tcc gcc 1968
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 645 650 655

gcc aac atg ctc tac cct ata ccc gcc aac gct acc aac gtg ccc ata 2016
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 Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp Ala Phe Thr
 675 680 685

cgc ctt aag act aag gaa acc cca tca ctg ggc tcg ggc tac gac cct 2112
 Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly Tyr Asp Pro
 690 695 700

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 705 710 715 720

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 725 730 735

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 755 760 765

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 770 775 780

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 820 825 830

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 835 840 845

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 Tyr Pro Ala Asn Phe Pro Tyr Pro Leu Ile Gly Lys Thr Ala Val Asp
 850 855 860

agc att acc cag aaa aag ttt ctt tgc gat cgc acc ctt tgg cgc atc 2640
 Ser Ile Thr Gln Lys Lys Phe Leu Cys Asp Arg Thr Leu Trp Arg Ile
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 Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp Leu Gly
 885 890 895

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 915 920 925

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 Val Phe Asp Val Val Arg Val His Gln Pro His Arg Gly Val Ile Glu
 930 935 940

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

cgc gcc acc gag acg tac ttc agc ctg aat aac aag ttt aga aac ccc 144
Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

acg gtg cgc cct acg cac gac gtg acc aca gac cgg tcc cag cgt ttg 192
Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
50 55 60

acg ctg cgg ttc atc cct gtg gac cgt gag gat act gcg tac tcg tac 240
Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

aag gcg cgg ttc acc cta gct gtg ggt gat aac cgt gtg ctg gac atg 288
Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

gct tcc acg tac ttt gac atc cgc ggc gtg ctg gac agg ggc cct act 336
Ala Ser Thr Tyr Phe Asp Ile Arg Gly Val Leu Asp Arg Gly Pro Thr
100 105 110

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Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

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130 135 140

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145 150 155 160

cca cag gga cca gga gca cca cag gga cca gga gca cca cag gga cca 528
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165 170 175

gga gca cca cag gga cca gga gca ccg caa ggt cct ggt gct cct cag 576
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180 185 190

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 Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Lys Thr His Val Phe
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 210 215 220

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 Ile Gly Val Glu Gly Gln Thr Pro Lys Tyr Ala Asp Lys Thr Phe Gln
 225 230 235 240

cct gaa cct caa ata gga gaa tct cag tgg tac gaa aca gaa att aat 768
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 245 250 255

cat gca gct ggg aga gtc cta aaa aag act acc cca atg aaa cca tgt 816
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 260 265 270

tac ggt tca tat gca aaa ccc aca aat gaa aat gga ggg caa ggc att 864
 Tyr Gly Ser Tyr Ala Lys Pro Thr Asn Glu Asn Gly Gly Gln Gly Ile
 275 280 285

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 Phe Phe Ser Thr Thr Glu Ala Ala Ala Gly Asn Gly Asp Asn Leu Thr
 305 310 315 320

cct aaa gtg gta ttg tac agt gaa gat gta gat ata gaa acc cca gac 1008
 Pro Lys Val Val Leu Tyr Ser Glu Asp Val Asp Ile Glu Thr Pro Asp
 325 330 335

act cat att tct tac atg ccc act att aag gaa ggt aac tca cga gaa 1056
 Thr His Ile Ser Tyr Met Pro Thr Ile Lys Glu Gly Asn Ser Arg Glu
 340 345 350

cta atg ggc caa caa tct atg ccc aac agg cct aat tac att gct ttt 1104
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 355 360 365

agg gac aat ttt att ggt cta atg tat tac aac agc acg ggt aat atg 1152
 Arg Asp Asn Phe Ile Gly Leu Met Tyr Tyr Asn Ser Thr Gly Asn Met
 370 375 380

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 Gly Val Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala Val Val Asp Leu
 385 390 395 400

caa gac aga aac aca gag ctt tca tac cag ctt ttg ctt gat tcc att 1248
 Gln Asp Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu Leu Asp Ser Ile
 405 410 415

ggt gat aga acc agg tac ttt tct atg tgg aat cag ctt cca aat tac 1296
 Gly Asp Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Leu Pro Asn Tyr
 420 425 430

tgc ttt cca ctg gga ggt gtg att aat aca gag act ctt acc aag gta 1344
 Cys Phe Pro Leu Gly Gly Val Ile Asn Thr Glu Thr Leu Thr Lys Val
 435 440 445

aaa cct aaa aca ggt cag gaa aat gga tgg gaa aaa gat gct aca gaa 1392
 Lys Pro Lys Thr Gly Gln Glu Asn Gly Trp Glu Lys Asp Ala Thr Glu
 450 455 460

ttt tca gat aaa aat gaa ata aga gtt gga aat aat ttt gcc atg gaa 1440
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 465 470 475 480

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 Ile Asn Leu Asn Ala Asn Leu Trp Arg Asn Phe Leu Tyr Ser Asn Ile
 485 490 495

gcg ctg tat ttg ccc gac aag cta aag tac agt cct tcc aac gta aaa 1536
 Ala Leu Tyr Leu Pro Asp Lys Leu Lys Tyr Ser Pro Ser Asn Val Lys
 500 505 510

att tct gat aac cca aac acc tac gac tac atg aac aag cga gtg gtg 1584
 Ile Ser Asp Asn Pro Asn Thr Tyr Asp Tyr Met Asn Lys Arg Val Val
 515 520 525

gct ccc ggg cta gtg gac tgc tac att aac ctt gga gca cgc tgg tcc 1632
 Ala Pro Gly Leu Val Asp Cys Tyr Ile Asn Leu Gly Ala Arg Trp Ser
 530 535 540

ctt gac tat atg gac aac gtc aac cca ttt aac cac cac cgc aat gct 1680
 Leu Asp Tyr Met Asp Asn Val Asn Pro Phe Asn His His Arg Asn Ala
 545 550 555 560

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 565 570 575

ttc cac atc cag gtg cct cag aag ttc ttt gcc att aaa aac ctc ctt 1776
 Phe His Ile Gln Val Pro Gln Lys Phe Phe Ala Ile Lys Asn Leu Leu
 580 585 590

ctc ctg ccg ggc tca tac acc tac gag tgg aac ttc agg aag gat gtt 1824
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595	600	605	
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Asn Met Val Leu Gln Ser Ser Leu Gly Asn Asp Leu Arg Val Asp Gly			
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Ala Ser Ile Lys Phe Asp Ser Ile Cys Leu Tyr Ala Thr Phe Phe Pro			
625	630	635	640
atg gcc cac aac acc gcc tcc acg ctt gag gcc atg ctt aga aac gac 1968			
Met Ala His Asn Thr Ala Ser Thr Leu Glu Ala Met Leu Arg Asn Asp			
645	650	655	
acc aac gac cag tcc ttt aac gac tat ctc tcc gcc gcc aac atg ctc 2016			
Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala Ala Asn Met Leu			
660	665	670	
tac cct ata ccc gcc aac gct acc aac gtg ccc ata tcc atc ccc tcc 2064			
Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val Pro Ile Ser Ile Pro Ser			
675	680	685	
cgc aac tgg gcg gct ttc cgc ggc tgg gcc ttc acg cgc ctt aag act 2112			
Arg Asn Trp Ala Ala Phe Arg Gly Trp Ala Phe Thr Arg Leu Lys Thr			
690	695	700	
aag gaa acc cca tca ctg ggc tcg ggc tac gac cct tat tac acc tac 2160			
Lys Glu Thr Pro Ser Leu Gly Ser Gly Tyr Asp Pro Tyr Tyr Thr Tyr			
705	710	715	720
tct ggc tct ata ccc tac cta gat gga acc ttt tac ctc aac cac acc 2208			
Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr Leu Asn His Thr			
725	730	735	
ttt aag aag gtg gcc att acc ttt gac tct tct gtc agc tgg cct ggc 2256			
Phe Lys Lys Val Ala Ile Thr Phe Asp Ser Ser Val Ser Trp Pro Gly			
740	745	750	
aat gac cgc ctg ctt acc ccc aac gag ttt gaa att aag cgc tca gtt 2304			
Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile Lys Arg Ser Val			
755	760	765	
gac ggg gag ggt tac aac gtt gcc cag tgt aac atg acc aaa gac tgg 2352			
Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys Asn Met Thr Lys Asp Trp			
770	775	780	
ttc ctg gta caa atg cta gct aac tat aac att ggc tac cag ggc ttc 2400			
Phe Leu Val Gln Met Leu Ala Asn Tyr Asn Ile Gly Tyr Gln Gly Phe			
785	790	795	800
tat atc cca gag agc tac aag gac cgc atg tac tcc ttc ttt aga aac 2448			

Tyr Ile Pro Glu Ser Tyr Lys Asp Arg Met Tyr Ser Phe Phe Arg Asn
 805 810 815
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 Phe Gln Pro Met Ser Arg Gln Val Val Asp Asp Thr Lys Tyr Lys Asp
 820 825 830
 tac caa cag gtg ggc atc cta cac caa cac aac aac tct gga ttt gtt 2544
 Tyr Gln Gln Val Gly Ile Leu His Gln His Asn Asn Ser Gly Phe Val
 835 840 845
 ggc tac ctt gcc ccc acc atg cgc gaa gga cag gcc tac cct gct aac 2592
 Gly Tyr Leu Ala Pro Thr Met Arg Glu Gly Gln Ala Tyr Pro Ala Asn
 850 855 860
 ttc ccc tat ccg ctt ata ggc aag acc gca gtt gac agc att acc cag 2640
 Phe Pro Tyr Pro Leu Ile Gly Lys Thr Ala Val Asp Ser Ile Thr Gln
 865 870 875 880
 aaa aag ttt ctt tgc gat cgc acc ctt tgg cgc atc cca ttc tcc agt 2688
 Lys Lys Phe Leu Cys Asp Arg Thr Leu Trp Arg Ile Pro Phe Ser Ser
 885 890 895
 aac ttt atg tcc atg ggc gca ctc aca gac ctg ggc caa aac ctt ctc 2736
 Asn Phe Met Ser Met Gly Ala Leu Thr Asp Leu Gly Gln Asn Leu Leu
 900 905 910
 tac gcc aac tcc gcc cac gcg cta gac atg act ttt gag gtg gat ccc 2784
 Tyr Ala Asn Ser Ala His Ala Leu Asp Met Thr Phe Glu Val Asp Pro
 915 920 925
 atg gac gag ccc acc ctt ctt tat gtt ttg ttt gaa gtc ttt gac gtg 2832
 Met Asp Glu Pro Thr Leu Leu Tyr Val Leu Phe Glu Val Phe Asp Val
 930 935 940
 gtc cgt gtg cac cag ccg cac cgc ggc gtc atc gaa acc gtg tac ctg 2880
 Val Arg Val His Gln Pro His Arg Gly Val Ile Glu Thr Val Tyr Leu
 945 950 955 960
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 965 970

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ggc cag gac gcc tcg gag tac ctg agc ccc ggg ctg gtg cag ttt gcc 96
Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
20 25 30

cgc gcc acc gag acg tac ttc agc ctg aat aac aag ttt aga aac ccc 144
Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

acg gtg gcg cct acg cac gac gtg acc aca gac cgg tcc cag cgt ttg 192
Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
50 55 60

acg ctg cgg ttc atc cct gtg gac cgt gag gat act gcg tac tcg tac 240
Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

aag gcg cgg ttc acc cta gct gtg ggt gat aac cgt gtg ctg gac atg 288
Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

gct tcc acg tac ttt gac atc cgc ggc gtg ctg gac agg ggc cct act 336
Ala Ser Thr Tyr Phe Asp Ile Arg Gly Val Leu Asp Arg Gly Pro Thr
100 105 110

ttt aag ccc tac tct ggc act gcc tac aac gcc ctg gct ccc aag ggt 384
Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

gcc cca aat cct tgc gaa tgg gat gaa cag gga cca gga gca cca cag 432
Ala Pro Asn Pro Cys Glu Trp Asp Glu Gln Gly Pro Gly Ala Pro Gln
130 135 140

gga cca gga gca cca cag gga cca gga gca cca cag gga cca gga gca 480
Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala
145 150 155 160

cca cag gga cca gga gca cca cag gga cca gga gca cca cag gga cca 528
Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro

165	170	175	
gga gca cca cag gga cca gga gca ccg caa ggt cct ggt gct cct cag			576
Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln			
180	185	190	
gga cca gga gca cca cag gga cca gga gca cca cag gga cca gga gca			624
Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala			
195	200	205	
cca aaa act cac gta ttt ggg cag gcg cct tat tct ggt ata aat att			672
Pro Lys Thr His Val Phe Gly Gln Ala Pro Tyr Ser Gly Ile Asn Ile			
210	215	220	
aca aag gag ggt att caa ata ggt gtc gaa ggt caa aca cct aaa tat			720
Thr Lys Glu Gly Ile Gln Ile Gly Val Glu Gly Gln Thr Pro Lys Tyr			
225	230	235	240
gcc gat aaa aca ttt caa cct gaa cct caa ata gga gaa tct cag tgg			768
Ala Asp Lys Thr Phe Gln Pro Glu Pro Gln Ile Gly Glu Ser Gln Trp			
245	250	255	
tac gaa aca gaa att aat cat gca gct ggg aga gtc cta aaa aag act			816
Tyr Glu Thr Glu Ile Asn His Ala Ala Gly Arg Val Leu Lys Lys Thr			
260	265	270	
acc cca atg aaa cca tgt tac ggt tca tat gca aaa ccc aca aat gaa			864
Thr Pro Met Lys Pro Cys Tyr Gly Ser Tyr Ala Lys Pro Thr Asn Glu			
275	280	285	
aat gga ggg caa ggc att ctt gta aag caa caa aat gga aag cta gaa			912
Asn Gly Gly Gln Gly Ile Leu Val Lys Gln Gln Asn Gly Lys Leu Glu			
290	295	300	
agt caa gtg gaa atg caa ttt ttc tca act act gag gca gcc gca ggc			960
Ser Gln Val Glu Met Gln Phe Phe Ser Thr Thr Glu Ala Ala Ala Gly			
305	310	315	320
aat ggt gat aac ttg act cct aaa gtg gta ttg tac agt gaa gat gta			1008
Asn Gly Asp Asn Leu Thr Pro Lys Val Val Leu Tyr Ser Glu Asp Val			
325	330	335	
gat ata gaa acc cca gac act cat att tct tac atg ccc act att aag			1056
Asp Ile Glu Thr Pro Asp Thr His Ile Ser Tyr Met Pro Thr Ile Lys			
340	345	350	
gaa ggt aac tca cga gaa cta atg ggc caa caa tct atg ccc aac agg			1104
Glu Gly Asn Ser Arg Glu Leu Met Gly Gln Gln Ser Met Pro Asn Arg			
355	360	365	
cct aat tac att gct ttt agg gac aat ttt att ggt cta atg tat tac			1152

Pro Asn Tyr Ile Ala Phe Arg Asp Asn Phe Ile Gly Leu Met Tyr Tyr
 370 375 380

aac agc acg ggt aat atg ggt gtt ctg gcg ggc caa gca tcg cag ttg 1200
 Asn Ser Thr Gly Asn Met Gly Val Leu Ala Gly Gln Ala Ser Gln Leu
 385 390 395 400

aat gct gtt gta gat ttg caa gac aga aac aca gag ctt tca tac cag 1248
 Asn Ala Val Val Asp Leu Gln Asp Arg Asn Thr Glu Leu Ser Tyr Gln
 405 410 415

ctt ttg ctt gat tcc att ggt gat aga acc agg tac ttt tct atg tgg 1296
 Leu Leu Leu Asp Ser Ile Gly Asp Arg Thr Arg Tyr Phe Ser Met Trp
 420 425 430

aat cag ctt cca aat tac tgc ttt cca ctg gga ggt gtg att aat aca 1344
 Asn Gln Leu Pro Asn Tyr Cys Phe Pro Leu Gly Gly Val Ile Asn Thr
 435 440 445

gag act ctt acc aag gta aaa cct aaa aca ggt cag gaa aat gga tgg 1392
 Glu Thr Leu Thr Lys Val Lys Pro Lys Thr Gly Gln Glu Asn Gly Trp
 450 455 460

gaa aaa gat gct aca gaa ttt tca gat aaa aat gaa ata aga gtt gga 1440
 Glu Lys Asp Ala Thr Glu Phe Ser Asp Lys Asn Glu Ile Arg Val Gly
 465 470 475 480

aat aat ttt gcc atg gaa atc aat cta aat gcc aac ctg tgg aga aat 1488
 Asn Asn Phe Ala Met Glu Ile Asn Leu Asn Ala Asn Leu Trp Arg Asn
 485 490 495

ttc ctg tac tcc aac ata gcg ctg tat ttg ccc gac aag cta aag tac 1536
 Phe Leu Tyr Ser Asn Ile Ala Leu Tyr Leu Pro Asp Lys Leu Lys Tyr
 500 505 510

agt cct tcc aac gta aaa att tct gat aac cca aac acc tac gac tac 1584
 Ser Pro Ser Asn Val Lys Ile Ser Asp Asn Pro Asn Thr Tyr Asp Tyr
 515 520 525

atg aac aag cga gtg gtg gct ccc ggg cta gtg gac tgc tac att aac 1632
 Met Asn Lys Arg Val Val Ala Pro Gly Leu Val Asp Cys Tyr Ile Asn
 530 535 540

ctt gga gca cgc tgg tcc ctt gac tat atg gac aac gtc aac cca ttt 1680
 Leu Gly Ala Arg Trp Ser Leu Asp Tyr Met Asp Asn Val Asn Pro Phe
 545 550 555 560

aac cac cac cgc aat gct ggc ctg cgc tac cgc tca atg ttg ctg ggc 1728
 Asn His His Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly
 565 570 575

aat ggt cgc tat gtg ccc ttc cac atc cag gtg cct cag aag ttc ttt 1776
Asn Gly Arg Tyr Val Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe
580 585 590

gcc att aaa aac ctc ctt ctc ctg ccg ggc tca tac acc tac gag tgg 1824
Ala Ile Lys Asn Leu Leu Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp
595 600 605

aac ttc agg aag gat gtt aac atg gtt ctg cag agc tcc cta gga aat 1872
Asn Phe Arg Lys Asp Val Asn Met Val Leu Gln Ser Ser Leu Gly Asn
610 615 620

gac cta agg gtt gac gga gcc agc att aag ttt gat agc att tgc ctt 1920
Asp Leu Arg Val Asp Gly Ala Ser Ile Lys Phe Asp Ser Ile Cys Leu
625 630 635 640

tac gcc acc ttc ttc ccc atg gcc cac aac acc gcc tcc acg ctt gag 1968
Tyr Ala Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu
645 650 655

gcc atg ctt aga aac gac acc aac gac cag tcc ttt aac gac tat ctc 2016
Ala Met Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu
660 665 670

tcc gcc gcc aac atg ctc tac cct ata ccc gcc aac gct acc aac gtg 2064
Ser Ala Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val
675 680 685

ccc ata tcc atc ccc tcc cgc aac tgg gcg gct ttc cgc ctg ctt acc 2112
Pro Ile Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Leu Leu Thr
690 695 700

ccc aac gag ttt gaa att aag cgc tca gtt gac ggg gag ggt tac aac 2160
Pro Asn Glu Phe Glu Ile Lys Arg Ser Val Asp Gly Glu Gly Tyr Asn
705 710 715 720

gac cct tat tac acc tac tct ggc tct ata ccc tac cta gat gga acc 2208
Asp Pro Tyr Tyr Thr Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr
725 730 735

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Phe Tyr Leu Asn His Thr Phe Lys Lys Val Ala Ile Thr Phe Asp Ser
740 745 750

tct gtc agc tgg cct ggc aat gac cgc ctg ctt acc ccc aac gag ttt 2304
Ser Val Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe
755 760 765

gaa att aag cgc tca gtt gac ggg gag ggt tac aac gtt gcc cag tgt 2352
Glu Ile Lys Arg Ser Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys
770 775 780

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 785 790 795 800

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 805 810 815

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 Tyr Ser Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp
 820 825 830

gat act aaa tac aag gac tac caa cag gtg ggc atc cta cac caa cac 2544
 Asp Thr Lys Tyr Lys Asp Tyr Gln Gln Val Gly Ile Leu His Gln His
 835 840 845

aac aac tct gga ttt gtt ggc tac ctt gcc ccc acc atg cgc gaa gga 2592
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 850 855 860

cag gcc tac cct gct aac ttc ccc tat ccg ctt ata ggc aag acc gca 2640
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 865 870 875 880

gtt gac agc att acc cag aaa aag ttt ctt tgc gat cgc acc ctt tgg 2688
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 885 890 895

cgc atc cca ttc tcc agt aac ttt atg tcc atg ggc gca ctc aca gac 2736
 Arg Ile Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp
 900 905 910

ctg ggc caa aac ctt ctc tac gcc aac tcc gcc cac gcg cta gac atg 2784
 Leu Gly Gln Asn Leu Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met
 915 920 925

act ttt gag gtg gat ccc atg gac gag ccc acc ctt ctt tat gtt ttg 2832
 Thr Phe Glu Val Asp Pro Met Asp Glu Pro Thr Leu Leu Tyr Val Leu
 930 935 940

ttt gaa gtc ttt gac gtg gtc cgt gtg cac cag ccg cac cgc ggc gtc 2880
 Phe Glu Val Phe Asp Val Val Arg Val His Gln Pro His Arg Gly Val
 945 950 955 960

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

cgc gcc acc gag acg tac ttc agc ctg aat aac aag ttt aga aac ccc 144
Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

acg gtg gcg cct acg cac gac gtg acc aca gac cgg tcc cag cgt ttg 192
Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
50 55 60

acg ctg cgg ttc atc cct gtg gac cgt gag gat act gcg tac tcg tac 240
Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

aag gcg cgg ttc acc cta gct gtg ggt gat aac cgt gtg ctg gac atg 288
Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

gct tcc acg tac ttt gac atc cgc ggc gtg ctg gac agg ggc cct act 336
Ala Ser Thr Tyr Phe Asp Ile Arg Gly Val Leu Asp Arg Gly Pro Thr
100 105 110

ttt aag ccc tac tct ggc act gcc tac aac gcc ctg gct ccc aag ggt 384
Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

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Ala Pro Asn Pro Cys Glu Trp Asp Glu Asn Ala Asn Pro Asn Ala Asn

130	135	140	
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145	150	155	160
gcg cct tat tct ggt ata aat att aca aag gag ggt att caa ata ggt			528
Ala Pro Tyr Ser Gly Ile Asn Ile Thr Lys Glu Gly Ile Gln Ile Gly			
165	170	175	
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Val Glu Gly Gln Thr Pro Lys Tyr Ala Asp Lys Thr Phe Gln Pro Glu			
180	185	190	
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Pro Gln Ile Gly Glu Ser Gln Trp Tyr Glu Thr Glu Ile Asn His Ala			
195	200	205	
gct ggg aga gtc cta aaa aag act acc cca atg aaa cca tgt tac ggt			672
Ala Gly Arg Val Leu Lys Lys Thr Thr Pro Met Lys Pro Cys Tyr Gly			
210	215	220	
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Ser Tyr Ala Lys Pro Thr Asn Glu Asn Gly Gly Gln Gly Ile Leu Val			
225	230	235	240
aag caa caa aat gga aag cta gaa agt caa gtg gaa atg caa ttt ttc			768
Lys Gln Gln Asn Gly Lys Leu Glu Ser Gln Val Glu Met Gln Phe Phe			
245	250	255	
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Ser Thr Thr Glu Ala Ala Ala Gly Asn Gly Asp Asn Leu Thr Pro Lys			
260	265	270	
gtg gta ttg tac agt gaa gat gta gat ata gaa acc cca gac act cat			864
Val Val Leu Tyr Ser Glu Asp Val Asp Ile Glu Thr Pro Asp Thr His			
275	280	285	
att tct tac atg ccc act att aag gaa ggt aac tca cga gaa cta atg			912
Ile Ser Tyr Met Pro Thr Ile Lys Glu Gly Asn Ser Arg Glu Leu Met			
290	295	300	
ggc caa caa tct atg ccc aac agg cct aat tac att gct ttt agg gac			960
Gly Gln Gln Ser Met Pro Asn Arg Pro Asn Tyr Ile Ala Phe Arg Asp			
305	310	315	320
aat ttt att ggt cta atg tat tac aac agc acg ggt aat atg ggt gtt			1008
Asn Phe Ile Gly Leu Met Tyr Tyr Asn Ser Thr Gly Asn Met Gly Val			
325	330	335	
ctg gcg ggc caa gca tcg cag ttg aat gct gtt gta gat ttg caa gac			1056

Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala Val Val Asp Leu Gln Asp
 340 345 350

aga aac aca gag ctt tca tac cag ctt ttg ctt gat tcc att ggt gat 1104
 Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu Leu Asp Ser Ile Gly Asp
 355 360 365

aga acc agg tac ttt tct atg tgg aat cag gct gtt gac agc tat gat 1152
 Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Ala Val Asp Ser Tyr Asp
 370 375 380

cca gat gtt aga att att gaa aat cat gga act gaa gat gaa ctt cca 1200
 Pro Asp Val Arg Ile Ile Glu Asn His Gly Thr Glu Asp Glu Leu Pro
 385 390 395 400

aat tac tgc ttt cca ctg gga ggt gtg att aat aca gag act ctt acc 1248
 Asn Tyr Cys Phe Pro Leu Gly Gly Val Ile Asn Thr Glu Thr Leu Thr
 405 410 415

aag gta aaa cct aaa aca ggt cag gaa aat gga tgg gaa aaa gat gct 1296
 Lys Val Lys Pro Lys Thr Gly Gln Glu Asn Gly Trp Glu Lys Asp Ala
 420 425 430

aca gaa ttt tca gat aaa aat gaa ata aga gtt gga aat aat ttt gcc 1344
 Thr Glu Phe Ser Asp Lys Asn Glu Ile Arg Val Gly Asn Asn Phe Ala
 435 440 445

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 Met Glu Ile Asn Leu Asn Ala Asn Leu Trp Arg Asn Phe Leu Tyr Ser
 450 455 460

aac ata gcg ctg tat ttg ccc gac aag cta aag tac agt cct tcc aac 1440
 Asn Ile Ala Leu Tyr Leu Pro Asp Lys Leu Lys Tyr Ser Pro Ser Asn
 465 470 475 480

gta aaa att tct gat aac cca aac acc tac gac tac atg aac aag cga 1488
 Val Lys Ile Ser Asp Asn Pro Asn Thr Tyr Asp Tyr Met Asn Lys Arg
 485 490 495

gtg gtg gct ccc ggg cta gtg gac tgc tac att aac ctt gga gca cgc 1536
 Val Val Ala Pro Gly Leu Val Asp Cys Tyr Ile Asn Leu Gly Ala Arg
 500 505 510

tgg tcc ctt gac tat atg gac aac gtc aac cca ttt aac cac cac cgc 1584
 Trp Ser Leu Asp Tyr Met Asp Asn Val Asn Pro Phe Asn His His Arg
 515 520 525

aat gct ggc ctg cgc tac cgc tca atg ttg ctg ggc aat ggt cgc tat 1632
 Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly Arg Tyr
 530 535 540

gtg ccc ttc cac atc cag gtg cct cag aag ttc ttt gcc att aaa aac 1680
 Val Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe Ala Ile Lys Asn
 545 550 555 560

ctc ctt ctc ctg ccg ggc tca tac acc tac gag tgg aac ttc agg aag 1728
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 565 570 575

gat gtt aac atg gtt ctg cag agc tcc cta gga aat gac cta agg gtt 1776
 Asp Val Asn Met Val Leu Gln Ser Ser Leu Gly Asn Asp Leu Arg Val
 580 585 590

gac gga gcc agc att aag ttt gat agc att tgc ctt tac gcc acc ttc 1824
 Asp Gly Ala Ser Ile Lys Phe Asp Ser Ile Cys Leu Tyr Ala Thr Phe
 595 600 605

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 Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu Ala Met Leu Arg
 610 615 620

aac gac acc aac gac cag tcc ttt aac gac tat ctc tcc gcc gcc aac 1920
 Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala Ala Asn
 625 630 635 640

atg ctc tac cct ata ccc gcc aac gct acc aac gtg ccc ata tcc atc 1968
 Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val Pro Ile Ser Ile
 645 650 655

ccc tcc cgc aac tgg gcg gct ttc cgc ggc tgg gcc ttc acg cgc ctt 2016
 Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp Ala Phe Thr Arg Leu
 660 665 670

aag act aag gaa acc cca tca ctg ggc tcg ggc tac gac cct tat tac 2064
 Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly Tyr Asp Pro Tyr Tyr
 675 680 685

acc tac tct ggc tct ata ccc tac cta gat gga acc ttt tac ctc aac 2112
 Thr Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr Leu Asn
 690 695 700

cac acc ttt aag aag gtg gcc att acc ttt gac tct tct gtc agc tgg 2160
 His Thr Phe Lys Lys Val Ala Ile Thr Phe Asp Ser Ser Val Ser Trp
 705 710 715 720

cct ggc aat gac cgc ctg ctt acc ccc aac gag ttt gaa att aag cgc 2208
 Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile Lys Arg
 725 730 735

tca gtt gac ggg gag ggt tac aac gtt gcc cag tgt aac atg acc aaa 2256
 Ser Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys Asn Met Thr Lys
 740 745 750

gac tgg ttc ctg gta caa atg cta gct aac tat aac att ggc tac cag 2304
 Asp Trp Phe Leu Val Gln Met Leu Ala Asn Tyr Asn Ile Gly Tyr Gln
 755 760 765

ggc ttc tat atc cca gag agc tac aag gac cgc atg tac tcc ttc ttt 2352
 Gly Phe Tyr Ile Pro Glu Ser Tyr Lys Asp Arg Met Tyr Ser Phe Phe
 770 775 780

aga aac ttc cag ccc atg agc cgt cag gtg gtg gat gat act aaa tac 2400
 Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp Asp Thr Lys Tyr
 785 790 795 800

aag gac tac caa cag gtg ggc atc cta cac caa cac aac aac tct gga 2448
 Lys Asp Tyr Gln Gln Val Gly Ile Leu His Gln His Asn Asn Ser Gly
 805 810 815

ttt gtt ggc tac ctt gcc ccc acc atg cgc gaa gga cag gcc tac cct 2496
 Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Glu Gly Gln Ala Tyr Pro
 820 825 830

gct aac ttc ccc tat ccg ctt ata ggc aag acc gca gtt gac agc att 2544
 Ala Asn Phe Pro Tyr Pro Leu Ile Gly Lys Thr Ala Val Asp Ser Ile
 835 840 845

acc cag aaa aag ttt ctt tgc gat cgc acc ctt tgg cgc atc cca ttc 2592
 Thr Gln Lys Lys Phe Leu Cys Asp Arg Thr Leu Trp Arg Ile Pro Phe
 850 855 860

tcc agt aac ttt atg tcc atg ggc gca ctc aca gac ctg ggc caa aac 2640
 Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp Leu Gly Gln Asn
 865 870 875 880

ctt ctc tac gcc aac tcc gcc cac gcg cta gac atg act ttt gag gtg 2688
 Leu Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met Thr Phe Glu Val
 885 890 895

gat ccc atg gac gag ccc acc ctt ctt tat gtt ttg ttt gaa gtc ttt 2736
 Asp Pro Met Asp Glu Pro Thr Leu Leu Tyr Val Leu Phe Glu Val Phe
 900 905 910

gac gtg gtc cgt gtg cac cag ccg cac cgc ggc gtc atc gaa acc gtg 2784
 Asp Val Val Arg Val His Gln Pro His Arg Gly Val Ile Glu Thr Val
 915 920 925

tac ctg cgc acg ccc ttc tcg gcc ggc aac gcc aca aca taa 2826
 Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala Thr Thr
 930 935 940

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 ggc cag gac gcc tcg gag tac ctg agc ccc ggg ctg gtg cag ttt gcc 96
 Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
 20 25 30

 cgc gcc acc gag acg tac ttc agc ctg aat aac aag ttt aga aac ccc 144
 Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
 35 40 45

 acg gtg gcg cct acg cac gac gtg acc aca gac cgg tcc cag cgt ttg 192
 Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
 50 55 60

 acg ctg cgg ttc atc cct gtg gac cgt gag gat act gcg tac tcg tac 240
 Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
 65 70 75 80

 aag gcg cgg ttc acc cta gct gtg ggt gat aac cgt gtg ctg gac atg 288
 Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
 85 90 95

 gct tcc acg tac ttt gac atc cgc ggc gtg ctg gac agg ggc cct act 336
 Ala Ser Thr Tyr Phe Asp Ile Arg Gly Val Leu Asp Arg Gly Pro Thr
 100 105 110

 ttt aag ccc tac tct ggc act gcc tac aac gcc ctg gct ccc aag ggt 384
 Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
 115 120 125

 gcc cca aat cct tgc gaa tgg gat gaa aat gca aat cca aat gca aat 432
 Ala Pro Asn Pro Cys Glu Trp Asp Glu Asn Ala Asn Pro Asn Ala Asn
 130 135 140

cca aat gca aat cca aat gca aat cca aac gcg aac ccg aat gct aat 480
 Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
 145 150 155 160

cct aaa act cac gta ttt ggg cag gcg cct tat tct ggt ata aat att 528
 Pro Lys Thr His Val Phe Gly Gln Ala Pro Tyr Ser Gly Ile Asn Ile
 165 170 175

aca aag gag ggt att caa ata ggt gtc gaa ggt caa aca cct aaa tat 576
 Thr Lys Glu Gly Ile Gln Ile Gly Val Glu Gly Gln Thr Pro Lys Tyr
 180 185 190

gcc gat aaa aca ttt caa cct gaa cct caa ata gga gaa tct cag tgg 624
 Ala Asp Lys Thr Phe Gln Pro Glu Pro Gln Ile Gly Glu Ser Gln Trp
 195 200 205

tac gaa aca gaa att aat cat gca gct ggg aga gtc cta aaa aag act 672
 Tyr Glu Thr Glu Ile Asn His Ala Ala Gly Arg Val Leu Lys Lys Thr
 210 215 220

acc cca atg aaa cca tgt tac ggt tca tat gca aaa ccc aca aat gaa 720
 Thr Pro Met Lys Pro Cys Tyr Gly Ser Tyr Ala Lys Pro Thr Asn Glu
 225 230 235 240

aat gga ggg caa ggc att ctt gta aag caa caa aat gga aag cta gaa 768
 Asn Gly Gly Gln Gly Ile Leu Val Lys Gln Gln Asn Gly Lys Leu Glu
 245 250 255

agt caa gtg gaa atg caa ttt ttc tca act act gag gca gcc gca ggc 816
 Ser Gln Val Glu Met Gln Phe Phe Ser Thr Thr Glu Ala Ala Ala Gly
 260 265 270

aat ggt gat aac ttg act cct aaa gtg gta ttg tac agt gaa gat gta 864
 Asn Gly Asp Asn Leu Thr Pro Lys Val Val Leu Tyr Ser Glu Asp Val
 275 280 285

gat ata gaa acc cca gac act cat att tct tac atg ccc act att aag 912
 Asp Ile Glu Thr Pro Asp Thr His Ile Ser Tyr Met Pro Thr Ile Lys
 290 295 300

gaa ggt aac tca cga gaa cta atg ggc caa caa tct atg ccc aac agg 960
 Glu Gly Asn Ser Arg Glu Leu Met Gly Gln Gln Ser Met Pro Asn Arg
 305 310 315 320

cct aat tac att gct ttt agg gac aat ttt att ggt cta atg tat tac 1008
 Pro Asn Tyr Ile Ala Phe Arg Asp Asn Phe Ile Gly Leu Met Tyr Tyr
 325 330 335

aac agc acg ggt aat atg ggt gtt ctg gcg ggc caa gca tcg cag ttg 1056
 Asn Ser Thr Gly Asn Met Gly Val Leu Ala Gly Gln Ala Ser Gln Leu
 340 345 350

aat gct gtt gta gat ttg caa gac aga aac aca gag ctt tca tac cag 1104
 Asn Ala Val Val Asp Leu Gln Asp Arg Asn Thr Glu Leu Ser Tyr Gln
 355 360 365

ctt ttg ctt gat tcc att ggt gat aga acc agg tac ttt tct atg tgg 1152
 Leu Leu Leu Asp Ser Ile Gly Asp Arg Thr Arg Tyr Phe Ser Met Trp
 370 375 380

aat cag ctt cca aat tac tgc ttt cca ctg gga ggt gtg att aat aca 1200
 Asn Gln Leu Pro Asn Tyr Cys Phe Pro Leu Gly Gly Val Ile Asn Thr
 385 390 395 400

gag act ctt acc aag gta aaa cct aaa aca ggt cag gaa aat gga tgg 1248
 Glu Thr Leu Thr Lys Val Lys Pro Lys Thr Gly Gln Glu Asn Gly Trp
 405 410 415

gaa aaa gat gct aca gaa ttt tca gat aaa aat gaa ata aga gtt gga 1296
 Glu Lys Asp Ala Thr Glu Phe Ser Asp Lys Asn Glu Ile Arg Val Gly
 420 425 430

aat aat ttt gcc atg gaa atc aat cta aat gcc aac ctg tgg aga aat 1344
 Asn Asn Phe Ala Met Glu Ile Asn Leu Asn Ala Asn Leu Trp Arg Asn
 435 440 445

ttc ctg tac tcc aac ata gcg ctg tat ttg ccc gac aag cta aag tac 1392
 Phe Leu Tyr Ser Asn Ile Ala Leu Tyr Leu Pro Asp Lys Leu Lys Tyr
 450 455 460

agt cct tcc aac gta aaa att tct gat aac cca aac acc tac gac tac 1440
 Ser Pro Ser Asn Val Lys Ile Ser Asp Asn Pro Asn Thr Tyr Asp Tyr
 465 470 475 480

atg aac aag cga gtg gtg gct ccc ggg cta gtg gac tgc tac att aac 1488
 Met Asn Lys Arg Val Val Ala Pro Gly Leu Val Asp Cys Tyr Ile Asn
 485 490 495

ctt gga gca cgc tgg tcc ctt gac tat atg gac aac gtc aac cca ttt 1536
 Leu Gly Ala Arg Trp Ser Leu Asp Tyr Met Asp Asn Val Asn Pro Phe
 500 505 510

aac cac cac cgc aat gct ggc ctg cgc tac cgc tca atg ttg ctg ggc 1584
 Asn His His Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly
 515 520 525

aat ggt cgc tat gtg ccc ttc cac atc cag gtg cct cag aag ttc ttt 1632
 Asn Gly Arg Tyr Val Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe
 530 535 540

gcc att aaa aac ctc ctt ctc ctg ccg ggc tca tac acc tac gag tgg 1680
 Ala Ile Lys Asn Leu Leu Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp

545	550	555	560	
aac ttc agg aag gat gtt aac atg gtt ctg cag agc tcc cta gga aat				1728
Asn Phe Arg Lys Asp Val Asn Met Val Leu Gln Ser Ser Leu Gly Asn				
	565	570	575	
gac cta agg gtt gac gga gcc agc att aag ttt gat agc att tgc ctt				1776
Asp Leu Arg Val Asp Gly Ala Ser Ile Lys Phe Asp Ser Ile Cys Leu				
	580	585	590	
tac gcc acc ttc ttc ccc atg gcc cac aac acc gcc tcc acg ctt gag				1824
Tyr Ala Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu				
	595	600	605	
gcc atg ctt aga aac gac acc aac gac cag tcc ttt aac gac tat ctc				1872
Ala Met Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu				
	610	615	620	
tcc gcc gcc aac atg ctc tac cct ata ccc gcc aac gct acc aac gtg				1920
Ser Ala Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val				
	625	630	635	640
ccc ata tcc atc ccc tcc cgc aac tgg gcg gct ttc cgc ggc tgg gcc				1968
Pro Ile Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp Ala				
	645	650	655	
ttc acg cgc ctt aag act aag gaa acc cca tca ctg ggc tcg ggc tac				2016
Phe Thr Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly Tyr				
	660	665	670	
gac cct tat tac acc tac tct ggc tct ata ccc tac cta gat gga acc				2064
Asp Pro Tyr Tyr Thr Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr				
	675	680	685	
ttt tac ctc aac cac acc ttt aag aag gtg gcc att acc ttt gac tct				2112
Phe Tyr Leu Asn His Thr Phe Lys Lys Val Ala Ile Thr Phe Asp Ser				
	690	695	700	
tct gtc agc tgg cct ggc aat gac cgc ctg ctt acc ccc aac gag ttt				2160
Ser Val Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe				
	705	710	715	720
gaa att aag cgc tca gtt gac ggg gag ggt tac aac gtt gcc cag tgt				2208
Glu Ile Lys Arg Ser Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys				
	725	730	735	
aac atg acc aaa gac tgg ttc ctg gta caa atg cta gct aac tat aac				2256
Asn Met Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala Asn Tyr Asn				
	740	745	750	
att ggc tac cag ggc ttc tat atc cca gag agc tac aag gac cgc atg				2304

Ile Gly Tyr Gln Gly Phe Tyr Ile Pro Glu Ser Tyr Lys Asp Arg Met
 755 760 765

 tac tcc ttc ttt aga aac ttc cag ccc atg agc cgt cag gtg gtg gat 2352
 Tyr Ser Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp
 770 775 780

 gat act aaa tac aag gac tac caa cag gtg ggc atc cta cac caa cac 2400
 Asp Thr Lys Tyr Lys Asp Tyr Gln Val Gly Ile Leu His Gln His
 785 790 795 800

 aac aac tct gga ttt gtt ggc tac ctt gcc ccc acc atg cgc gaa gga 2448
 Asn Asn Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Glu Gly
 805 810 815

 cag gcc tac cct gct aac ttc ccc tat ccg ctt ata ggc aag acc gca 2496
 Gln Ala Tyr Pro Ala Asn Phe Pro Tyr Pro Leu Ile Gly Lys Thr Ala
 820 825 830

 gtt gac agc att acc cag aaa aag ttt ctt tgc gat cgc acc ctt tgg 2544
 Val Asp Ser Ile Thr Gln Lys Lys Phe Leu Cys Asp Arg Thr Leu Trp
 835 840 845

 cgc atc cca ttc tcc agt aac ttt atg tcc atg ggc gca ctc aca gac 2592
 Arg Ile Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp
 850 855 860

 ctg ggc caa aac ctt ctc tac gcc aac tcc gcc cac gcg cta gac atg 2640
 Leu Gly Gln Asn Leu Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met
 865 870 875 880

 act ttt gag gtg gat ccc atg gac gag ccc acc ctt ctt tat gtt ttg 2688
 Thr Phe Glu Val Asp Pro Met Asp Glu Pro Thr Leu Leu Tyr Val Leu
 885 890 895

 ttt gaa gtc ttt gac gtg gtc cgt gtg cac cag ccg cac cgc ggc gtc 2736
 Phe Glu Val Phe Asp Val Val Arg Val His Gln Pro His Arg Gly Val
 900 905 910

 atc gaa acc gtg tac ctg cgc acg ccc ttc tcg gcc ggc aac gcc aca 2784
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 Thr

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ggc cag gac gcc tcg gag tac ctg agc ccc ggg ctg gtg cag ttt gcc 96
Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
20 25 30

cgc gcc acc gag acg tac ttc agc ctg aat aac aag ttt aga aac ccc 144
Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

acg gtg gcg cct acg cac gac gtg acc aca gac cgg tcc cag cgt ttg 192
Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
50 55 60

acg ctg cgg ttc atc cct gtg gac cgt gag gat act gcg tac tcg tac 240
Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

aag gcg cgg ttc acc cta gct gtg ggt gat aac cgt gtg ctg gac atg 288
Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

gct tcc acg tac ttt gac atc cgc ggc gtg ctg gac agg ggc cct act 336
Ala Ser Thr Tyr Phe Asp Ile Arg Gly Val Leu Asp Arg Gly Pro Thr
100 105 110

ttt aag ccc tac tct ggc act gcc tac aac gcc ctg gct ccc aag ggt 384
Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

gcc cca aat cct tgc gaa tgg gat gaa aat gca aat cca aat gca aat 432
Ala Pro Asn Pro Cys Glu Trp Asp Glu Asn Ala Asn Pro Asn Ala Asn
130 135 140

cca aat gca aat cca aat gca aat cca aac gcg aac ccg aat gct aat 480
Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
145 150 155 160

cct aat gca aat cca aat gca aat cca aaa act cac gta ttt ggg cag 528
Pro Asn Ala Asn Pro Asn Ala Asn Pro Lys Thr His Val Phe Gly Gln
165 170 175

gcg cct tat tct ggt ata aat att aca aag gag ggt att caa ata ggt 576
Ala Pro Tyr Ser Gly Ile Asn Ile Thr Lys Glu Gly Ile Gln Ile Gly
180 185 190

gtc gaa ggt caa aca cct aaa tat gcc gat aaa aca ttt caa cct gaa 624
Val Glu Gly Gln Thr Pro Lys Tyr Ala Asp Lys Thr Phe Gln Pro Glu
195 200 205

cct caa ata gga gaa tct cag tgg tac gaa aca gaa att aat cat gca 672
Pro Gln Ile Gly Glu Ser Gln Trp Tyr Glu Thr Glu Ile Asn His Ala
210 215 220

gct ggg aga gtc cta aaa aag act acc cca atg aaa cca tgt tac ggt 720
Ala Gly Arg Val Leu Lys Lys Thr Thr Pro Met Lys Pro Cys Tyr Gly
225 230 235 240

tca tat gca aaa ccc aca aat gaa aat gga ggg caa ggc att ctt gta 768
Ser Tyr Ala Lys Pro Thr Asn Glu Asn Gly Gly Gln Gly Ile Leu Val
245 250 255

aag caa caa aat gga aag cta gaa agt caa gtg gaa atg caa ttt ttc 816
Lys Gln Gln Asn Gly Lys Leu Glu Ser Gln Val Glu Met Gln Phe Phe
260 265 270

tca act act gag gca gcc gca ggc aat ggt gat aac ttg act cct aaa 864
Ser Thr Thr Glu Ala Ala Ala Gly Asn Gly Asp Asn Leu Thr Pro Lys
275 280 285

gtg gta ttg tac agt gaa gat gta gat ata gaa acc cca gac act cat 912
Val Val Leu Tyr Ser Glu Asp Val Asp Ile Glu Thr Pro Asp Thr His
290 295 300

att tct tac atg ccc act att aag gaa ggt aac tca cga gaa cta atg 960
Ile Ser Tyr Met Pro Thr Ile Lys Glu Gly Asn Ser Arg Glu Leu Met
305 310 315 320

ggc caa caa tct atg ccc aac agg cct aat tac att gct ttt agg gac 1008
Gly Gln Gln Ser Met Pro Asn Arg Pro Asn Tyr Ile Ala Phe Arg Asp
325 330 335

aat ttt att ggt cta atg tat tac aac agc acg ggt aat atg ggt gtt 1056
Asn Phe Ile Gly Leu Met Tyr Tyr Asn Ser Thr Gly Asn Met Gly Val
340 345 350

ctg gcg ggc caa gca tcg cag ttg aat gct gtt gta gat ttg caa gac 1104
Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala Val Val Asp Leu Gln Asp

355	360	365	
aga aac aca gag ctt tca tac cag ctt ttg ctt gat tcc att ggt gat 1152			
Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu Leu Asp Ser Ile Gly Asp			
370	375	380	
aga acc agg tac ttt tct atg tgg aat cag ctt cca aat tac tgc ttt 1200			
Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Leu Pro Asn Tyr Cys Phe			
385	390	395	400
cca ctg gga ggt gtg att aat aca gag act ctt acc aag gta aaa cct 1248			
Pro Leu Gly Gly Val Ile Asn Thr Glu Thr Leu Thr Lys Val Lys Pro			
405	410	415	
aaa aca ggt cag gaa aat gga tgg gaa aaa gat gct aca gaa ttt tca 1296			
Lys Thr Gly Gln Glu Asn Gly Trp Glu Lys Asp Ala Thr Glu Phe Ser			
420	425	430	
gat aaa aat gaa ata aga gtt gga aat aat ttt gcc atg gaa atc aat 1344			
Asp Lys Asn Glu Ile Arg Val Gly Asn Asn Phe Ala Met Glu Ile Asn			
435	440	445	
cta aat gcc aac ctg tgg aga aat ttc ctg tac tcc aac ata gcg ctg 1392			
Leu Asn Ala Asn Leu Trp Arg Asn Phe Leu Tyr Ser Asn Ile Ala Leu			
450	455	460	
tat ttg ccc gac aag cta aag tac agt cct tcc aac gta aaa att tct 1440			
Tyr Leu Pro Asp Lys Leu Lys Tyr Ser Pro Ser Asn Val Lys Ile Ser			
465	470	475	480
gat aac cca aac acc tac gac tac atg aac aag cga gtg gtg gct ccc 1488			
Asp Asn Pro Asn Thr Tyr Asp Tyr Met Asn Lys Arg Val Val Ala Pro			
485	490	495	
ggg cta gtg gac tgc tac att aac ctt gga gca cgc tgg tcc ctt gac 1536			
Gly Leu Val Asp Cys Tyr Ile Asn Leu Gly Ala Arg Trp Ser Leu Asp			
500	505	510	
tat atg gac aac gtc aac cca ttt aac cac cac cgc aat gct ggc ctg 1584			
Tyr Met Asp Asn Val Asn Pro Phe Asn His His Arg Asn Ala Gly Leu			
515	520	525	
cgc tac cgc tca atg ttg ctg ggc aat ggt cgc tat gtg ccc ttc cac 1632			
Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly Arg Tyr Val Pro Phe His			
530	535	540	
atc cag gtg cct cag aag ttc ttt gcc att aaa aac ctc ctt ctc ctg 1680			
Ile Gln Val Pro Gln Lys Phe Phe Ala Ile Lys Asn Leu Leu Leu Leu			
545	550	555	560
ccg ggc tca tac acc tac gag tgg aac ttc agg aag gat gtt aac atg 1728			

Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe Arg Lys Asp Val Asn Met
 565 570 575
 gtt ctg cag agc tcc cta gga aat gac cta agg gtt gac gga gcc agc 1776
 Val Leu Gln Ser Ser Leu Gly Asn Asp Leu Arg Val Asp Gly Ala Ser
 580 585 590
 att aag ttt gat agc att tgc ctt tac gcc acc ttc ttc ccc atg gcc 1824
 Ile Lys Phe Asp Ser Ile Cys Leu Tyr Ala Thr Phe Phe Pro Met Ala
 595 600 605
 cac aac acc gcc tcc acg ctt gag gcc atg ctt aga aac gac acc aac 1872
 His Asn Thr Ala Ser Thr Leu Glu Ala Met Leu Arg Asn Asp Thr Asn
 610 615 620
 gac cag tcc ttt aac gac tat ctc tcc gcc gcc aac atg ctc tac cct 1920
 Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala Ala Asn Met Leu Tyr Pro
 625 630 635 640
 ata ccc gcc aac gct acc aac gtg ccc ata tcc atc ccc tcc cgc aac 1968
 Ile Pro Ala Asn Ala Thr Asn Val Pro Ile Ser Ile Pro Ser Arg Asn
 645 650 655
 tgg gcg gct ttc cgc ggc tgg gcc ttc acg cgc ctt aag act aag gaa 2016
 Trp Ala Ala Phe Arg Gly Trp Ala Phe Thr Arg Leu Lys Thr Lys Glu
 660 665 670
 acc cca tca ctg ggc tgg ggc tac gac cct tat tac acc tac tct ggc 2064
 Thr Pro Ser Leu Gly Ser Gly Tyr Asp Pro Tyr Tyr Thr Tyr Ser Gly
 675 680 685
 tct ata ccc tac cta gat gga acc ttt tac ctc aac cac acc ttt aag 2112
 Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr Leu Asn His Thr Phe Lys
 690 695 700
 aag gtg gcc att acc ttt gac tct tct gtc agc tgg cct ggc aat gac 2160
 Lys Val Ala Ile Thr Phe Asp Ser Ser Val Ser Trp Pro Gly Asn Asp
 705 710 715 720
 cgc ctg ctt acc ccc aac gag ttt gaa att aag cgc tca gtt gac ggg 2208
 Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile Lys Arg Ser Val Asp Gly
 725 730 735
 gag ggt tac aac gtt gcc cag tgt aac atg acc aaa gac tgg ttc ctg 2256
 Glu Gly Tyr Asn Val Ala Gln Cys Asn Met Thr Lys Asp Trp Phe Leu
 740 745 750
 gta caa atg cta gct aac tat aac att ggc tac cag ggc ttc tat atc 2304
 Val Gln Met Leu Ala Asn Tyr Asn Ile Gly Tyr Gln Gly Phe Tyr Ile
 755 760 765

cca gag agc tac aag gac cgc atg tac tcc ttc ttt aga aac ttc cag 2352
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 770 775 780

ccc atg agc cgt cag gtg gtg gat gat act aaa tac aag gac tac caa 2400
 Pro Met Ser Arg Gln Val Val Asp Asp Thr Lys Tyr Lys Asp Tyr Gln
 785 790 795 800

cag gtg ggc atc cta cac caa cac aac aac tct gga ttt gtt ggc tac 2448
 Gln Val Gly Ile Leu His Gln His Asn Asn Ser Gly Phe Val Gly Tyr
 805 810 815

ctt gcc ccc acc atg cgc gaa gga cag gcc tac cct gct aac ttc ccc 2496
 Leu Ala Pro Thr Met Arg Glu Gly Gln Ala Tyr Pro Ala Asn Phe Pro
 820 825 830

tat ccg ctt ata ggc aag acc gca gtt gac agc att acc cag aaa aag 2544
 Tyr Pro Leu Ile Gly Lys Thr Ala Val Asp Ser Ile Thr Gln Lys Lys
 835 840 845

ttt ctt tgc gat cgc acc ctt tgg cgc atc cca ttc tcc agt aac ttt 2592
 Phe Leu Cys Asp Arg Thr Leu Trp Arg Ile Pro Phe Ser Ser Asn Phe
 850 855 860

atg tcc atg ggc gca ctc aca gac ctg ggc caa aac ctt ctc tac gcc 2640
 Met Ser Met Gly Ala Leu Thr Asp Leu Gly Gln Asn Leu Leu Tyr Ala
 865 870 875 880

aac tcc gcc cac gcg cta gac atg act ttt gag gtg gat ccc atg gac 2688
 Asn Ser Ala His Ala Leu Asp Met Thr Phe Glu Val Asp Pro Met Asp
 885 890 895

gag ccc acc ctt ctt tat gtt ttg ttt gaa gtc ttt gac gtg gtc cgt 2736
 Glu Pro Thr Leu Leu Tyr Val Leu Phe Glu Val Phe Asp Val Val Arg
 900 905 910

gtg cac cag ccg cac cgc ggc gtc atc gaa acc gtg tac ctg cgc acg 2784
 Val His Gln Pro His Arg Gly Val Ile Glu Thr Val Tyr Leu Arg Thr
 915 920 925

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 Pro Phe Ser Ala Gly Asn Ala Thr Thr
 930 935

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<211> 2838

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<213> Artificial Sequence

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<222> (1)..(2835)

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1 5 10 15

ggc cag gac gcc tcg gag tac ctg agc ccc ggg ctg gtg cag ttt gcc 96

Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala

20 25 30

cgc gcc acc gag acg tac ttc agc ctg aat aac aag ttt aga aac ccc 144

Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro

35 40 45

acg gtg gcg cct acg cac gac gtg acc aca gac cgg tcc cag cgt ttg 192

Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu

50 55 60

acg ctg cgg ttc atc cct gtg gac cgt gag gat act gcg tac tcg tac 240

Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr

65 70 75 80

aag gcg cgg ttc acc cta gct gtg ggt gat aac cgt gtg ctg gac atg 288

Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met

85 90 95

gct tcc acg tac ttt gac atc cgc ggc gtg ctg gac agg ggc cct act 336

Ala Ser Thr Tyr Phe Asp Ile Arg Gly Val Leu Asp Arg Gly Pro Thr

100 105 110

ttt aag ccc tac tct ggc act gcc tac aac gcc ctg gct ccc aag ggt 384

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly

115 120 125

gcc cca aat cct tgc gaa tgg gat gaa aat gca aat cca aat gca aat 432

Ala Pro Asn Pro Cys Glu Trp Asp Glu Asn Ala Asn Pro Asn Ala Asn

130 135 140

cca aat gca aat cca aat gca aat cca aac gcg aac ccg aat gct aat 480

Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn

145 150 155 160

cct aat gca aat cca aat gca aat cca aat gca aat cca aat gca aat 528

Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
 165 170 175

 cca aaa act cac gta ttt ggg cag gcg cct tat tct ggt ata aat att 576
 Pro Lys Thr His Val Phe Gly Gln Ala Pro Tyr Ser Gly Ile Asn Ile
 180 185 190

 aca aag gag ggt att caa ata ggt gtc gaa ggt caa aca cct aaa tat 624
 Thr Lys Glu Gly Ile Gln Ile Gly Val Glu Gly Gln Thr Pro Lys Tyr
 195 200 205

 gcc gat aaa aca ttt caa cct gaa cct caa ata gga gaa tct cag tgg 672
 Ala Asp Lys Thr Phe Gln Pro Glu Pro Gln Ile Gly Glu Ser Gln Trp
 210 215 220

 tac gaa aca gaa att aat cat gca gct ggg aga gtc cta aaa aag act 720
 Tyr Glu Thr Glu Ile Asn His Ala Ala Gly Arg Val Leu Lys Lys Thr
 225 230 235 240

 acc cca atg aaa cca tgt tac ggt tca tat gca aaa ccc aca aat gaa 768
 Thr Pro Met Lys Pro Cys Tyr Gly Ser Tyr Ala Lys Pro Thr Asn Glu
 245 250 255

 aat gga ggg caa ggc att ctt gta aag caa caa aat gga aag cta gaa 816
 Asn Gly Gly Gln Gly Ile Leu Val Lys Gln Gln Asn Gly Lys Leu Glu
 260 265 270

 agt caa gtg gaa atg caa ttt ttc tca act act gag gca gcc gca ggc 864
 Ser Gln Val Glu Met Gln Phe Phe Ser Thr Thr Glu Ala Ala Ala Gly
 275 280 285

 aat ggt gat aac ttg act cct aaa gtg gta ttg tac agt gaa gat gta 912
 Asn Gly Asp Asn Leu Thr Pro Lys Val Val Leu Tyr Ser Glu Asp Val
 290 295 300

 gat ata gaa acc cca gac act cat att tct tac atg ccc act att aag 960
 Asp Ile Glu Thr Pro Asp Thr His Ile Ser Tyr Met Pro Thr Ile Lys
 305 310 315 320

 gaa ggt aac tca cga gaa cta atg ggc caa caa tct atg ccc aac agg 1008
 Glu Gly Asn Ser Arg Glu Leu Met Gly Gln Gln Ser Met Pro Asn Arg
 325 330 335

 cct aat tac att gct ttt agg gac aat ttt att ggt cta atg tat tac 1056
 Pro Asn Tyr Ile Ala Phe Arg Asp Asn Phe Ile Gly Leu Met Tyr Tyr
 340 345 350

 aac agc acg ggt aat atg ggt gtt ctg gcg ggc caa gca tcg cag ttg 1104
 Asn Ser Thr Gly Asn Met Gly Val Leu Ala Gly Gln Ala Ser Gln Leu
 355 360 365

aat gct gtt gta gat ttg caa gac aga aac aca gag ctt tca tac cag 1152
Asn Ala Val Val Asp Leu Gln Asp Arg Asn Thr Glu Leu Ser Tyr Gln
370 375 380

ctt ttg ctt gat tcc att ggt gat aga acc agg tac ttt tct atg tgg 1200
Leu Leu Leu Asp Ser Ile Gly Asp Arg Thr Arg Tyr Phe Ser Met Trp
385 390 395 400

aat cag ctt cca aat tac tgc ttt cca ctg gga ggt gtg att aat aca 1248
Asn Gln Leu Pro Asn Tyr Cys Phe Pro Leu Gly Gly Val Ile Asn Thr
405 410 415

gag act ctt acc aag gta aaa cct aaa aca ggt cag gaa aat gga tgg 1296
Glu Thr Leu Thr Lys Val Lys Pro Lys Thr Gly Gln Glu Asn Gly Trp
420 425 430

gaa aaa gat gct aca gaa ttt tca gat aaa aat gaa ata aga gtt gga 1344
Glu Lys Asp Ala Thr Glu Phe Ser Asp Lys Asn Glu Ile Arg Val Gly
435 440 445

aat aat ttt gcc atg gaa atc aat cta aat gcc aac ctg tgg aga aat 1392
Asn Asn Phe Ala Met Glu Ile Asn Leu Asn Ala Asn Leu Trp Arg Asn
450 455 460

ttc ctg tac tcc aac ata gcg ctg tat ttg ccc gac aag cta aag tac 1440
Phe Leu Tyr Ser Asn Ile Ala Leu Tyr Leu Pro Asp Lys Leu Lys Tyr
465 470 475 480

agt cct tcc aac gta aaa att tct gat aac cca aac acc tac gac tac 1488
Ser Pro Ser Asn Val Lys Ile Ser Asp Asn Pro Asn Thr Tyr Asp Tyr
485 490 495

atg aac aag cga gtg gtg gct ccc ggg cta gtg gac tgc tac att aac 1536
Met Asn Lys Arg Val Val Ala Pro Gly Leu Val Asp Cys Tyr Ile Asn
500 505 510

ctt gga gca cgc tgg tcc ctt gac tat atg gac aac gtc aac cca ttt 1584
Leu Gly Ala Arg Trp Ser Leu Asp Tyr Met Asp Asn Val Asn Pro Phe
515 520 525

aac cac cac cgc aat gct ggc ctg cgc tac cgc tca atg ttg ctg ggc 1632
Asn His His Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly
530 535 540

aat ggt cgc tat gtg ccc ttc cac atc cag gtg cct cag aag ttc ttt 1680
Asn Gly Arg Tyr Val Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe
545 550 555 560

gcc att aaa aac ctc ctt ctc ctg ccg ggc tca tac acc tac gag tgg 1728
Ala Ile Lys Asn Leu Leu Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp
565 570 575

aac ttc agg aag gat gtt aac atg gtt ctg cag agc tcc cta gga aat 1776
 Asn Phe Arg Lys Asp Val Asn Met Val Leu Gln Ser Ser Leu Gly Asn
 580 585 590

gac cta agg gtt gac gga gcc agc att aag ttt gat agc att tgc ctt 1824
 Asp Leu Arg Val Asp Gly Ala Ser Ile Lys Phe Asp Ser Ile Cys Leu
 595 600 605

tac gcc acc ttc ttc ccc atg gcc cac aac acc gcc tcc acg ctt gag 1872
 Tyr Ala Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu
 610 615 620

gcc atg ctt aga aac gac acc aac gac cag tcc ttt aac gac tat ctc 1920
 Ala Met Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu
 625 630 635 640

tcc gcc gcc aac atg ctc tac cct ata ccc gcc aac gct acc aac gtg 1968
 Ser Ala Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val
 645 650 655

ccc ata tcc atc ccc tcc cgc aac tgg gcg gct ttc cgc ggc tgg gcc 2016
 Pro Ile Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp Ala
 660 665 670

ttc acg cgc ctt aag act aag gaa acc cca tca ctg ggc tcg ggc tac 2064
 Phe Thr Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly Tyr
 675 680 685

gac cct tat tac acc tac tct ggc tct ata ccc tac cta gat gga acc 2112
 Asp Pro Tyr Tyr Thr Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr
 690 695 700

ttt tac ctc aac cac acc ttt aag aag gtg gcc att acc ttt gac tct 2160
 Phe Tyr Leu Asn His Thr Phe Lys Lys Val Ala Ile Thr Phe Asp Ser
 705 710 715 720

tct gtc agc tgg cct ggc aat gac cgc ctg ctt acc ccc aac gag ttt 2208
 Ser Val Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe
 725 730 735

gaa att aag cgc tca gtt gac ggg gag ggt tac aac gtt gcc cag tgt 2256
 Glu Ile Lys Arg Ser Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys
 740 745 750

aac atg acc aaa gac tgg ttc ctg gta caa atg cta gct aac tat aac 2304
 Asn Met Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala Asn Tyr Asn
 755 760 765

att ggc tac cag ggc ttc tat atc cca gag agc tac aag gac cgc atg 2352
 Ile Gly Tyr Gln Gly Phe Tyr Ile Pro Glu Ser Tyr Lys Asp Arg Met

770	775	780	
tac tcc ttc ttt aga aac ttc cag ccc atg agc cgt cag gtg gat			2400
Tyr Ser Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp			
785	790	795	800
gat act aaa tac aag gac tac caa cag gtg ggc atc cta cac caa cac			2448
Asp Thr Lys Tyr Lys Asp Tyr Gln Gln Val Gly Ile Leu His Gln His			
805	810	815	
aac aac tct gga ttt gtt ggc tac ctt gcc ccc acc atg cgc gaa gga			2496
Asn Asn Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Glu Gly			
820	825	830	
cag gcc tac cct gct aac ttc ccc tat ccg ctt ata ggc aag acc gca			2544
Gln Ala Tyr Pro Ala Asn Phe Pro Tyr Pro Leu Ile Gly Lys Thr Ala			
835	840	845	
gtt gac agc att acc cag aaa aag ttt ctt tgc gat cgc acc ctt tgg			2592
Val Asp Ser Ile Thr Gln Lys Lys Phe Leu Cys Asp Arg Thr Leu Trp			
850	855	860	
cgc atc cca ttc tcc agt aac ttt atg tcc atg ggc gca ctc aca gac			2640
Arg Ile Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp			
865	870	875	880
ctg ggc caa aac ctt ctc tac gcc aac tcc gcc cac cgc cta gac atg			2688
Leu Gly Gln Asn Leu Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met			
885	890	895	
act ttt gag gtg gat ccc atg gac gag ccc acc ctt ctt tat gtt ttg			2736
Thr Phe Glu Val Asp Pro Met Asp Glu Pro Thr Leu Leu Tyr Val Leu			
900	905	910	
ttt gaa gtc ttt gac gtg gtc cgt gtg cac cag ccg cac cgc ggc gtc			2784
Phe Glu Val Phe Asp Val Val Arg Val His Gln Pro His Arg Gly Val			
915	920	925	
atc gaa acc gtg tac ctg cgc acg ccc ttc tcg gcc ggc aac gcc aca			2832
Ile Glu Thr Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala Thr			
930	935	940	
aca taa			2838
Thr			
945			

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<223> (NANP)12-HVR1 modified Hexon protein

<220>

<221> CDS

<222> (1)..(2859)

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ggc cag gac gcc tcg gag tac ctg agc ccc ggg ctg gtg cag ttt gcc 96
Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
20 25 30

cgc gcc acc gag acg tac ttc agc ctg aat aac aag ttt aga aac ccc 144
Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

acg gtg cgc cct acg cac gac gtg acc aca gac cgg tcc cag cgt ttg 192
Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
50 55 60

acg ctg cgg ttc atc cct gtg gac cgt gag gat act gcg tac tcg tac 240
Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

aag gcg cgg ttc acc cta gct gtg ggt gat aac cgt gtg ctg gac atg 288
Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

gct tcc acg tac ttt gac atc cgc ggc gtg ctg gac agg ggc cct act 336
Ala Ser Thr Tyr Phe Asp Ile Arg Gly Val Leu Asp Arg Gly Pro Thr
100 105 110

ttt aag ccc tac tct ggc act gcc tac aac gcc ctg gct ccc aag ggt 384
Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

gcc cca aat cct tgc gaa tgg gat gaa aat gca aat cca aat gca aat 432
Ala Pro Asn Pro Cys Glu Trp Asp Glu Asn Ala Asn Pro Asn Ala Asn
130 135 140

cca aat gca aat cca aat gca aat cca aat gca aat cca aat gca aat 480
Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
145 150 155 160

cca aat gca aat cca aat gca aat cca aac gcg aac ccg aat gct aat 528
Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
165 170 175

cct aat gca aat cca aat gca aat cca aaa act cac gta ttt ggg cag 576
Pro Asn Ala Asn Pro Asn Ala Asn Pro Lys Thr His Val Phe Gly Gln
180 185 190

gcg cct tat tct ggt ata aat att aca aag gag ggt att caa ata ggt 624
Ala Pro Tyr Ser Gly Ile Asn Ile Thr Lys Glu Gly Ile Gln Ile Gly
195 200 205

gtc gaa ggt caa aca cct aaa tat gcc gat aaa aca ttt caa cct gaa 672
Val Glu Gly Gln Thr Pro Lys Tyr Ala Asp Lys Thr Phe Gln Pro Glu
210 215 220

cct caa ata gga gaa tct cag tgg tac gaa aca gaa att aat cat gca 720
Pro Gln Ile Gly Glu Ser Gln Trp Tyr Glu Thr Glu Ile Asn His Ala
225 230 235 240

gct ggg aga gtc cta aaa aag act acc cca atg aaa cca tgt tac ggt 768
Ala Gly Arg Val Leu Lys Lys Thr Thr Pro Met Lys Pro Cys Tyr Gly
245 250 255

tca tat gca aaa ccc aca aat gaa aat gga ggg caa ggc att ctt gta 816
Ser Tyr Ala Lys Pro Thr Asn Glu Asn Gly Gly Gln Gly Ile Leu Val
260 265 270

aag caa caa aat gga aag cta gaa agt caa gtg gaa atg caa ttt ttc 864
Lys Gln Gln Asn Gly Lys Leu Glu Ser Gln Val Glu Met Gln Phe Phe
275 280 285

tca act act gag gca gcc gca ggc aat ggt gat aac ttg act cct aaa 912
Ser Thr Thr Glu Ala Ala Ala Gly Asn Gly Asp Asn Leu Thr Pro Lys
290 295 300

gtg gta ttg tac agt gaa gat gta gat ata gaa acc cca gac act cat 960
Val Val Leu Tyr Ser Glu Asp Val Asp Ile Glu Thr Pro Asp Thr His
305 310 315 320

att tct tac atg ccc act att aag gaa ggt aac tca cga gaa cta atg 1008
Ile Ser Tyr Met Pro Thr Ile Lys Glu Gly Asn Ser Arg Glu Leu Met
325 330 335

ggc caa caa tct atg ccc aac agg cct aat tac att gct ttt agg gac 1056
Gly Gln Gln Ser Met Pro Asn Arg Pro Asn Tyr Ile Ala Phe Arg Asp
340 345 350

aat ttt att ggt cta atg tat tac aac agc acg ggt aat atg ggt gtt 1104
Asn Phe Ile Gly Leu Met Tyr Tyr Asn Ser Thr Gly Asn Met Gly Val
355 360 365

ctg gcg ggc caa gca tcg cag ttg aat gct gtt gta gat ttg caa gac 1152
 Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala Val Val Asp Leu Gln Asp
 370 375 380

aga aac aca gag ctt tca tac cag ctt ttg ctt gat tcc att ggt gat 1200
 Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu Leu Asp Ser Ile Gly Asp
 385 390 395 400

aga acc agg tac ttt tct atg tgg aat cag ctt cca aat tac tgc ttt 1248
 Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Leu Pro Asn Tyr Cys Phe
 405 410 415

cca ctg gga ggt gtg att aat aca gag act ctt acc aag gta aaa cct 1296
 Pro Leu Gly Gly Val Ile Asn Thr Glu Thr Leu Thr Lys Val Lys Pro
 420 425 430

aaa aca ggt cag gaa aat gga tgg gaa aaa gat gct aca gaa ttt tca 1344
 Lys Thr Gly Gln Glu Asn Gly Trp Glu Lys Asp Ala Thr Glu Phe Ser
 435 440 445

gat aaa aat gaa ata aga gtt gga aat aat ttt gcc atg gaa atc aat 1392
 Asp Lys Asn Glu Ile Arg Val Gly Asn Asn Phe Ala Met Glu Ile Asn
 450 455 460

cta aat gcc aac ctg tgg aga aat ttc ctg tac tcc aac ata gcg ctg 1440
 Leu Asn Ala Asn Leu Trp Arg Asn Phe Leu Tyr Ser Asn Ile Ala Leu
 465 470 475 480

tat ttg ccc gac aag cta aag tac agt cct tcc aac gta aaa att tct 1488
 Tyr Leu Pro Asp Lys Leu Lys Tyr Ser Pro Ser Asn Val Lys Ile Ser
 485 490 495

gat aac cca aac acc tac gac tac atg aac aag cga gtg gtg gct ccc 1536
 Asp Asn Pro Asn Thr Tyr Asp Tyr Met Asn Lys Arg Val Val Ala Pro
 500 505 510

ggg cta gtg gac tgc tac att aac ctt gga gca cgc tgg tcc ctt gac 1584
 Gly Leu Val Asp Cys Tyr Ile Asn Leu Gly Ala Arg Trp Ser Leu Asp
 515 520 525

tat atg gac aac gtc aac cca ttt aac cac cac cgc aat gct ggc ctg 1632
 Tyr Met Asp Asn Val Asn Pro Phe Asn His His Arg Asn Ala Gly Leu
 530 535 540

cgc tac cgc tca atg ttg ctg ggc aat ggt cgc tat gtg ccc ttc cac 1680
 Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly Arg Tyr Val Pro Phe His
 545 550 555 560

atc cag gtg cct cag aag ttc ttt gcc att aaa aac ctc ctt ctc ctg 1728
 Ile Gln Val Pro Gln Lys Phe Phe Ala Ile Lys Asn Leu Leu Leu Leu

565	570	575	
ccg ggc tca tac acc tac gag tgg aac ttc agg aag gat gtt aac atg 1776			
Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe Arg Lys Asp Val Asn Met			
580	585	590	
ggt ctg cag agc tcc cta gga aat gac cta agg gtt gac gga gcc agc 1824			
Val Leu Gln Ser Ser Leu Gly Asn Asp Leu Arg Val Asp Gly Ala Ser			
595	600	605	
att aag ttt gat agc att tgc ctt tac gcc acc ttc ttc ccc atg gcc 1872			
Ile Lys Phe Asp Ser Ile Cys Leu Tyr Ala Thr Phe Phe Pro Met Ala			
610	615	620	
cac aac acc gcc tcc acg ctt gag gcc atg ctt aga aac gac acc aac 1920			
His Asn Thr Ala Ser Thr Leu Glu Ala Met Leu Arg Asn Asp Thr Asn			
625	630	635	640
gac cag tcc ttt aac gac tat ctc tcc gcc gcc aac atg ctc tac cct 1968			
Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala Ala Asn Met Leu Tyr Pro			
645	650	655	
ata ccc gcc aac gct acc aac gtg ccc ata tcc atc ccc tcc cgc aac 2016			
Ile Pro Ala Asn Ala Thr Asn Val Pro Ile Ser Ile Pro Ser Arg Asn			
660	665	670	
tgg gcg gct ttc cgc ggc tgg gcc ttc acg cgc ctt aag act aag gaa 2064			
Trp Ala Ala Phe Arg Gly Trp Ala Phe Thr Arg Leu Lys Thr Lys Glu			
675	680	685	
acc cca tca ctg ggc tcg ggc tac gac cct tat tac acc tac tct ggc 2112			
Thr Pro Ser Leu Gly Ser Gly Tyr Asp Pro Tyr Tyr Thr Tyr Ser Gly			
690	695	700	
tct ata ccc tac cta gat gga acc ttt tac ctc aac cac acc ttt aag 2160			
Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr Leu Asn His Thr Phe Lys			
705	710	715	720
aag gtg gcc att acc ttt gac tct tct gtc agc tgg cct ggc aat gac 2208			
Lys Val Ala Ile Thr Phe Asp Ser Ser Val Ser Trp Pro Gly Asn Asp			
725	730	735	
cgc ctg ctt acc ccc aac gag ttt gaa att aag cgc tca gtt gac ggg 2256			
Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile Lys Arg Ser Val Asp Gly			
740	745	750	
gag ggt tac aac gtt gcc cag tgt aac atg acc aaa gac tgg ttc ctg 2304			
Glu Gly Tyr Asn Val Ala Gln Cys Asn Met Thr Lys Asp Trp Phe Leu			
755	760	765	
gta caa atg cta gct aac tat aac att ggc tac cag ggc ttc tat atc 2352			

Val Gln Met Leu Ala Asn Tyr Asn Ile Gly Tyr Gln Gly Phe Tyr Ile
 770 775 780

cca gag agc tac aag gac cgc atg tac tcc ttc ttt aga aac ttc cag 2400
 Pro Glu Ser Tyr Lys Asp Arg Met Tyr Ser Phe Phe Arg Asn Phe Gln
 785 790 795 800

ccc atg agc cgt cag gtg gtg gat gat act aaa tac aag gac tac caa 2448
 Pro Met Ser Arg Gln Val Val Asp Thr Lys Tyr Lys Asp Tyr Gln
 805 810 815

cag gtg ggc atc cta cac caa cac aac aac tct gga ttt gtt ggc tac 2496
 Gln Val Gly Ile Leu His Gln His Asn Asn Ser Gly Phe Val Gly Tyr
 820 825 830

ctt gcc ccc acc atg cgc gaa gga cag gcc tac cct gct aac ttc ccc 2544
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 835 840 845

tat ccg ctt ata ggc aag acc gca gtt gac agc att acc cag aaa aag 2592
 Tyr Pro Leu Ile Gly Lys Thr Ala Val Asp Ser Ile Thr Gln Lys Lys
 850 855 860

ttt ctt tgc gat cgc acc ctt tgg cgc atc cca ttc tcc agt aac ttt 2640
 Phe Leu Cys Asp Arg Thr Leu Trp Arg Ile Pro Phe Ser Ser Asn Phe
 865 870 875 880

atg tcc atg ggc gca ctc aca gac ctg ggc caa aac ctt ctc tac gcc 2688
 Met Ser Met Gly Ala Leu Thr Asp Leu Gly Gln Asn Leu Leu Tyr Ala
 885 890 895

aac tcc gcc cac gcg cta gac atg act ttt gag gtg gat ccc atg gac 2736
 Asn Ser Ala His Ala Leu Asp Met Thr Phe Glu Val Asp Pro Met Asp
 900 905 910

gag ccc acc ctt ctt tat gtt ttg ttt gaa gtc ttt gac gtg gtc cgt 2784
 Glu Pro Thr Leu Leu Tyr Val Leu Phe Glu Val Phe Asp Val Val Arg
 915 920 925

gtg cac cag ccg cac cgc ggc gtc atc gaa acc gtg tac ctg cgc acg 2832
 Val His Gln Pro His Arg Gly Val Ile Glu Thr Val Tyr Leu Arg Thr
 930 935 940

ccc ttc tcg gcc ggc aac gcc aca aca taa 2862
 Pro Phe Ser Ala Gly Asn Ala Thr Thr
 945 950

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<212> DNA
<213> Artificial Sequence

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<223> (NANP)14-HVR1 modified Hexon protein

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ggc cag gac gcc tcg gag tac ctg agc ccc ggg ctg gtg cag ttt gcc 96
Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
20 25 30

cgc gcc acc gag acg tac ttc agc ctg aat aac aag ttt aga aac ccc 144
Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

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Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
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Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

aag gcg cgg ttc acc cta gct gtg ggt gat aac cgt gtg ctg gac atg 288
Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

gct tcc acg tac ttt gac atc cgc ggc gtg ctg gac agg ggc cct act 336
Ala Ser Thr Tyr Phe Asp Ile Arg Gly Val Leu Asp Arg Gly Pro Thr
100 105 110

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Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

gcc cca aat cct tgc gaa tgg gat gaa aat gca aat cca aat gca aat 432
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130 135 140

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Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn

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cca aat gca aat cca aat gca aat cca aac gcg aac ccg aat gct aat				528
Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn				
165	170	175		
cct aat gca aat cca aat gca aat cca aat gca aat cca aat gca aat				576
Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn				
180	185	190		
cca aaa act cac gta ttt ggg cag gcg cct tat tct ggt ata aat att				624
Pro Lys Thr His Val Phe Gly Gln Ala Pro Tyr Ser Gly Ile Asn Ile				
195	200	205		
aca aag gag ggt att caa ata ggt gtc gaa ggt caa aca cct aaa tat				672
Thr Lys Glu Gly Ile Gln Ile Gly Val Glu Gly Gln Thr Pro Lys Tyr				
210	215	220		
gcc gat aaa aca ttt caa cct gaa cct caa ata gga gaa tct cag tgg				720
Ala Asp Lys Thr Phe Gln Pro Glu Pro Gln Ile Gly Glu Ser Gln Trp				
225	230	235	240	
tac gaa aca gaa att aat cat gca gct ggg aga gtc cta aaa aag act				768
Tyr Glu Thr Glu Ile Asn His Ala Ala Gly Arg Val Leu Lys Lys Thr				
245	250	255		
acc cca atg aaa cca tgt tac ggt tca tat gca aaa ccc aca aat gaa				816
Thr Pro Met Lys Pro Cys Tyr Gly Ser Tyr Ala Lys Pro Thr Asn Glu				
260	265	270		
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Asn Gly Gly Gln Gly Ile Leu Val Lys Gln Gln Asn Gly Lys Leu Glu				
275	280	285		
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Ser Gln Val Glu Met Gln Phe Phe Ser Thr Thr Glu Ala Ala Ala Gly				
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Asp Ile Glu Thr Pro Asp Thr His Ile Ser Tyr Met Pro Thr Ile Lys				
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Glu Gly Asn Ser Arg Glu Leu Met Gly Gln Gln Ser Met Pro Asn Arg				
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370 375 380

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Asn Gln Leu Pro Asn Tyr Cys Phe Pro Leu Gly Gly Val Ile Asn Thr
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Phe Leu Tyr Ser Asn Ile Ala Leu Tyr Leu Pro Asp Lys Leu Lys Tyr
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Ser Pro Ser Asn Val Lys Ile Ser Asp Asn Pro Asn Thr Tyr Asp Tyr
500 505 510

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Met Asn Lys Arg Val Val Ala Pro Gly Leu Val Asp Cys Tyr Ile Asn
515 520 525

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Leu Gly Ala Arg Trp Ser Leu Asp Tyr Met Asp Asn Val Asn Pro Phe
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595 600 605

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Asp Leu Arg Val Asp Gly Ala Ser Ile Lys Phe Asp Ser Ile Cys Leu
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Tyr Ala Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu
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gcc atg ctt aga aac gac acc aac gac cag tcc ttt aac gac tat ctc 1968
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660 665 670

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690 695 700

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Asp Pro Tyr Tyr Thr Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr
705 710 715 720

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725 730 735

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

 cgc gcc acc gag acg tac ttc agc ctg aat aac aag ttt aga aac ccc 144
 Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
 35 40 45

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 Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
 50 55 60

 acg ctg cgg ttc atc cct gtg gac cgt gag gat act gcg tac tcg tac 240
 Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
 65 70 75 80

 aag gcg cgg ttc acc cta gct gtg ggt gat aac cgt gtg ctg gac atg 288
 Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
 85 90 95

 gct tcc acg tac ttt gac atc cgc ggc gtg ctg gac agg ggc cct act 336
 Ala Ser Thr Tyr Phe Asp Ile Arg Gly Val Leu Asp Arg Gly Pro Thr
 100 105 110

 ttt aag ccc tac tct ggc act gcc tac aac gcc ctg gct ccc aag ggt 384
 Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
 115 120 125

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 130 135 140

cca aat gca aat cca aat gca aat cca aat gca aat cca aat gca aat 480
Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
145 150 155 160

cca aat gca aat cca aat gca aat cca aac gcg aac ccg aat gct aat 528
Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
165 170 175

cct aat gca aat cca aat gca aat cca aat gca aat cca aat gca aat 576
Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
180 185 190

cca aat gca aat cca aat gca aat cca aaa act cac gta ttt ggg cag 624
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195 200 205

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Ala Pro Tyr Ser Gly Ile Asn Ile Thr Lys Glu Gly Ile Gln Ile Gly
210 215 220

gtc gaa ggt caa aca cct aaa tat gcc gat aaa aca ttt caa cct gaa 720
Val Glu Gly Gln Thr Pro Lys Tyr Ala Asp Lys Thr Phe Gln Pro Glu
225 230 235 240

cct caa ata gga gaa tct cag tgg tac gaa aca gaa att aat cat gca 768
Pro Gln Ile Gly Glu Ser Gln Trp Tyr Glu Thr Glu Ile Asn His Ala
245 250 255

gct ggg aga gtc cta aaa aag act acc cca atg aaa cca tgt tac ggt 816
Ala Gly Arg Val Leu Lys Lys Thr Thr Pro Met Lys Pro Cys Tyr Gly
260 265 270

tca tat gca aaa ccc aca aat gaa aat gga ggg caa ggc att ctt gta 864
Ser Tyr Ala Lys Pro Thr Asn Glu Asn Gly Gly Gln Gly Ile Leu Val
275 280 285

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Lys Gln Gln Asn Gly Lys Leu Glu Ser Gln Val Glu Met Gln Phe Phe
290 295 300

tca act act gag gca gcc gca ggc aat ggt gat aac ttg act cct aaa 960
Ser Thr Thr Glu Ala Ala Gly Asn Gly Asp Asn Leu Thr Pro Lys
305 310 315 320

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Val Val Leu Tyr Ser Glu Asp Val Asp Ile Glu Thr Pro Asp Thr His
325 330 335

att tct tac atg ccc act att aag gaa ggt aac tca cga gaa cta atg 1056
Ile Ser Tyr Met Pro Thr Ile Lys Glu Gly Asn Ser Arg Glu Leu Met

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420	425	430	
cca ctg gga ggt gtg att aat aca gag act ctt acc aag gta aaa cct 1344			
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435	440	445	
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Asp Lys Asn Glu Ile Arg Val Gly Asn Asn Phe Ala Met Glu Ile Asn			
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Tyr Leu Pro Asp Lys Leu Lys Tyr Ser Pro Ser Asn Val Lys Ile Ser			
500	505	510	
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Asp Asn Pro Asn Thr Tyr Asp Tyr Met Asn Lys Arg Val Val Ala Pro			
515	520	525	
ggg cta gtg gac tgc tac att aac ctt gga gca cgc tgg tcc ctt gac 1632			
Gly Leu Val Asp Cys Tyr Ile Asn Leu Gly Ala Arg Trp Ser Leu Asp			
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Tyr Met Asp Asn Val Asn Pro Phe Asn His His Arg Asn Ala Gly Leu
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 565 570 575

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 580 585 590

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 Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe Arg Lys Asp Val Asn Met
 595 600 605

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 610 615 620

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 625 630 635 640

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 Thr Pro Ser Leu Gly Ser Gly Tyr Asp Pro Tyr Tyr Thr Tyr Ser Gly
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755 760 765

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900 905 910

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915 920 925

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cgc gcc acc gag acg tac ttc agc ctg aat aac aag ttt aga aac ccc 144
 Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
 35 40 45

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

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Ala Pro Asn Pro Cys Glu Trp Asp Glu Asn Ala Asn Pro Asn Ala Asn			
130	135	140	
cca aat gca aat cca aat gca aat cca aat gca aat cca aat gca aat 480			
Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn			
145	150	155	160
cca aat gca aat cca aat gca aat cca aat gca aat cca aat gca aat 528			
Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn			
165	170	175	
cca aat gca aat cca aat gca aat cca aac gcg aac ccg aat gct aat 576			
Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn			
180	185	190	
cct aat gca aat cca aat gca aat cca aat gca aat cca aat gca aat 624			
Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn			
195	200	205	
cca aaa act cac gta ttt ggg cag gcg cct tat tct ggt ata aat att 672			
Pro Lys Thr His Val Phe Gly Gln Ala Pro Tyr Ser Gly Ile Asn Ile			
210	215	220	
aca aag gag ggt att caa ata ggt gtc gaa ggt caa aca cct aaa tat 720			
Thr Lys Glu Gly Ile Gln Ile Gly Val Glu Gly Gln Thr Pro Lys Tyr			
225	230	235	240
gcc gat aaa aca ttt caa cct gaa cct caa ata gga gaa tct cag tgg 768			
Ala Asp Lys Thr Phe Gln Pro Glu Pro Gln Ile Gly Glu Ser Gln Trp			
245	250	255	
tac gaa aca gaa att aat cat gca gct ggg aga gtc cta aaa aag act 816			
Tyr Glu Thr Glu Ile Asn His Ala Ala Gly Arg Val Leu Lys Lys Thr			
260	265	270	
acc cca atg aaa cca tgt tac ggt tca tat gca aaa ccc aca aat gaa 864			
Thr Pro Met Lys Pro Cys Tyr Gly Ser Tyr Ala Lys Pro Thr Asn Glu			
275	280	285	
aat gga ggg caa ggc att ctt gta aag caa caa aat gga aag cta gaa 912			
Asn Gly Gly Gln Gly Ile Leu Val Lys Gln Gln Asn Gly Lys Leu Glu			
290	295	300	
agt caa gtg gaa atg caa ttt ttc tca act act gag gca gcc gca ggc 960			
Ser Gln Val Glu Met Gln Phe Phe Ser Thr Thr Glu Ala Ala Ala Gly			
305	310	315	320
aat ggt gat aac ttg act cct aaa gtg gta ttg tac agt gaa gat gta 1008			

Asn Gly Asp Asn Leu Thr Pro Lys Val Val Leu Tyr Ser Glu Asp Val
 325 330 335

gat ata gaa acc cca gac act cat att tct tac atg ccc act att aag 1056
 Asp Ile Glu Thr Pro Asp Thr His Ile Ser Tyr Met Pro Thr Ile Lys
 340 345 350

gaa ggt aac tca cga gaa cta atg ggc caa caa tct atg ccc aac agg 1104
 Glu Gly Asn Ser Arg Glu Leu Met Gly Gln Gln Ser Met Pro Asn Arg
 355 360 365

cct aat tac att gct ttt agg gac aat ttt att ggt cta atg tat tac 1152
 Pro Asn Tyr Ile Ala Phe Arg Asp Asn Phe Ile Gly Leu Met Tyr Tyr
 370 375 380

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 Asn Ser Thr Gly Asn Met Gly Val Leu Ala Gly Gln Ala Ser Gln Leu
 385 390 395 400

aat gct gtt gta gat ttg caa gac aga aac aca gag ctt tca tac cag 1248
 Asn Ala Val Val Asp Leu Gln Asp Arg Asn Thr Glu Leu Ser Tyr Gln
 405 410 415

ctt ttg ctt gat tcc att ggt gat aga acc agg tac ttt tct atg tgg 1296
 Leu Leu Leu Asp Ser Ile Gly Asp Arg Thr Arg Tyr Phe Ser Met Trp
 420 425 430

aat cag ctt cca aat tac tgc ttt cca ctg gga ggt gtg att aat aca 1344
 Asn Gln Leu Pro Asn Tyr Cys Phe Pro Leu Gly Gly Val Ile Asn Thr
 435 440 445

gag act ctt acc aag gta aaa cct aaa aca ggt cag gaa aat gga tgg 1392
 Glu Thr Leu Thr Lys Val Lys Pro Lys Thr Gly Gln Glu Asn Gly Trp
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gaa aaa gat gct aca gaa ttt tca gat aaa aat gaa ata aga gtt gga 1440
 Glu Lys Asp Ala Thr Glu Phe Ser Asp Lys Asn Glu Ile Arg Val Gly
 465 470 475 480

aat aat ttt gcc atg gaa atc aat cta aat gcc aac ctg tgg aga aat 1488
 Asn Asn Phe Ala Met Glu Ile Asn Leu Asn Ala Asn Leu Trp Arg Asn
 485 490 495

ttc ctg tac tcc aac ata gcg ctg tat ttg ccc gac aag cta aag tac 1536
 Phe Leu Tyr Ser Asn Ile Ala Leu Tyr Leu Pro Asp Lys Leu Lys Tyr
 500 505 510

agt cct tcc aac gta aaa att tct gat aac cca aac acc tac gac tac 1584
 Ser Pro Ser Asn Val Lys Ile Ser Asp Asn Pro Asn Thr Tyr Asp Tyr
 515 520 525

atg aac aag cga gtg gtg gct ccc ggg cta gtg gac tgc tac att aac 1632
Met Asn Lys Arg Val Val Ala Pro Gly Leu Val Asp Cys Tyr Ile Asn
530 535 540

ctt gga gca cgc tgg tcc ctt gac tat atg gac aac gtc aac cca ttt 1680
Leu Gly Ala Arg Trp Ser Leu Asp Tyr Met Asp Asn Val Asn Pro Phe
545 550 555 560

aac cac cac cgc aat gct ggc ctg cgc tac cgc tca atg ttg ctg ggc 1728
Asn His His Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly
565 570 575

aat ggt cgc tat gtg ccc ttc cac atc cag gtg cct cag aag ttc ttt 1776
Asn Gly Arg Tyr Val Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe
580 585 590

gcc att aaa aac ctc ctt ctc ctg ccg ggc tca tac acc tac gag tgg 1824
Ala Ile Lys Asn Leu Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp
595 600 605

aac ttc agg aag gat gtt aac atg gtt ctg cag agc tcc cta gga aat 1872
Asn Phe Arg Lys Asp Val Asn Met Val Leu Gln Ser Ser Leu Gly Asn
610 615 620

gac cta agg gtt gac gga gcc agc att aag ttt gat agc att tgc ctt 1920
Asp Leu Arg Val Asp Gly Ala Ser Ile Lys Phe Asp Ser Ile Cys Leu
625 630 635 640

tac gcc acc ttc ttc ccc atg gcc cac aac acc gcc tcc acg ctt gag 1968
Tyr Ala Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu
645 650 655

gcc atg ctt aga aac gac acc aac gac cag tcc ttt aac gac tat ctc 2016
Ala Met Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu
660 665 670

tcc gcc gcc aac atg ctc tac cct ata ccc gcc aac gct acc aac gtg 2064
Ser Ala Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val
675 680 685

ccc ata tcc atc ccc tcc cgc aac tgg gcg gct ttc cgc ggc tgg gcc 2112
Pro Ile Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp Ala
690 695 700

ttc acg cgc ctt aag act aag gaa acc cca tca ctg ggc tcg ggc tac 2160
Phe Thr Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly Tyr
705 710 715 720

gac cct tat tac acc tac tct ggc tct ata ccc tac cta gat gga acc 2208
Asp Pro Tyr Tyr Thr Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr
725 730 735

ttt tac ctc aac cac acc ttt aag aag gtg gcc att acc ttt gac tct 2256
Phe Tyr Leu Asn His Thr Phe Lys Lys Val Ala Ile Thr Phe Asp Ser
740 745 750

tct gtc agc tgg cct ggc aat gac cgc ctg ctt acc ccc aac gag ttt 2304
Ser Val Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe
755 760 765

gaa att aag cgc tca gtt gac ggg gag ggt tac aac gtt gcc cag tgt 2352
Glu Ile Lys Arg Ser Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys
770 775 780

aac atg acc aaa gac tgg ttc ctg gta caa atg cta gct aac tat aac 2400
Asn Met Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala Asn Tyr Asn
785 790 795 800

att ggc tac cag ggc ttc tat atc cca gag agc tac aag gac cgc atg 2448
Ile Gly Tyr Gln Gly Phe Tyr Ile Pro Glu Ser Tyr Lys Asp Arg Met
805 810 815

tac tcc ttc ttt aga aac ttc cag ccc atg agc cgt cag gtg gtg gat 2496
Tyr Ser Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp
820 825 830

gat act aaa tac aag gac tac caa cag gtg ggc atc cta cac caa cac 2544
Asp Thr Lys Tyr Lys Asp Tyr Gln Gln Val Gly Ile Leu His Gln His
835 840 845

aac aac tct gga ttt gtt ggc tac ctt gcc ccc acc atg cgc gaa gga 2592
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850 855 860

cag gcc tac cct gct aac ttc ccc tat ccg ctt ata ggc aag acc gca 2640
Gln Ala Tyr Pro Ala Asn Phe Pro Tyr Pro Leu Ile Gly Lys Thr Ala
865 870 875 880

gtt gac agc att acc cag aaa aag ttt ctt tgc gat cgc acc ctt tgg 2688
Val Asp Ser Ile Thr Gln Lys Lys Phe Leu Cys Asp Arg Thr Leu Trp
885 890 895

cgc atc cca ttc tcc agt aac ttt atg tcc atg ggc gca ctc aca gac 2736
Arg Ile Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp
900 905 910

ctg ggc caa aac ctt ctc tac gcc aac tcc gcc cac gcg cta gac atg 2784
Leu Gly Gln Asn Leu Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met
915 920 925

act ttt gag gtg gat ccc atg gac gag ccc acc ctt ctt tat gtt ttg 2832
Thr Phe Glu Val Asp Pro Met Asp Glu Pro Thr Leu Leu Tyr Val Leu

85	90	95	
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Ala Ser Thr Tyr Phe Asp Ile Arg Gly Val Leu Asp Arg Gly Pro Thr			
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Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly			
115	120	125	
gcc cca aat cct tgc gaa tgg gat gaa aat gca aat cca aat gca aat			432
Ala Pro Asn Pro Cys Glu Trp Asp Glu Asn Ala Asn Pro Asn Ala Asn			
130	135	140	
cca aat gca aat cca aat gca aat cca aat gca aat cca aat gca aat			480
Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn			
145	150	155	160
cca aat gca aat cca aat gca aat cca aat gca aat cca aat gca aat			528
Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn			
165	170	175	
cca aat gca aat cca aat gca aat cca aac gcg aac ccg aat gct aat			576
Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn			
180	185	190	
cct aat gca aat cca aat gca aat cca aat gca aat cca aat gca aat			624
Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn			
195	200	205	
cca aat gca aat cca aat gca aat cca aaa act cac gta ttt ggg cag			672
Pro Asn Ala Asn Pro Asn Ala Asn Pro Lys Thr His Val Phe Gly Gln			
210	215	220	
gcg cct tat tct ggt ata aat att aca aag gag ggt att caa ata ggt			720
Ala Pro Tyr Ser Gly Ile Asn Ile Thr Lys Glu Gly Ile Gln Ile Gly			
225	230	235	240
gtc gaa ggt caa aca cct aaa tat gcc gat aaa aca ttt caa cct gaa			768
Val Glu Gly Gln Thr Pro Lys Tyr Ala Asp Lys Thr Phe Gln Pro Glu			
245	250	255	
cct caa ata gga gaa tct cag tgg tac gaa aca gaa att aat cat gca			816
Pro Gln Ile Gly Glu Ser Gln Trp Tyr Glu Thr Glu Ile Asn His Ala			
260	265	270	
gct ggg aga gtc cta aaa aag act acc cca atg aaa cca tgt tac ggt			864
Ala Gly Arg Val Leu Lys Lys Thr Thr Pro Met Lys Pro Cys Tyr Gly			
275	280	285	
tca tat gca aaa ccc aca aat gaa aat gga ggg caa ggc att ctt gta			912

Ser Tyr Ala Lys Pro Thr Asn Glu Asn Gly Gly Gln Gly Ile Leu Val
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 Lys Gln Gln Asn Gly Lys Leu Glu Ser Gln Val Glu Met Gln Phe Phe
 305 310 315 320

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

 gtg gta ttg tac agt gaa gat gta gat ata gaa acc cca gac act cat 1056
 Val Val Leu Tyr Ser Glu Asp Val Asp Ile Glu Thr Pro Asp Thr His
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 Ile Ser Tyr Met Pro Thr Ile Lys Glu Gly Asn Ser Arg Glu Leu Met
 355 360 365

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 Gly Gln Gln Ser Met Pro Asn Arg Pro Asn Tyr Ile Ala Phe Arg Asp
 370 375 380

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 385 390 395 400

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 Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Leu Pro Asn Tyr Cys Phe
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 cca ctg gga ggt gtg att aat aca gag act ctt acc aag gta aaa cct 1392
 Pro Leu Gly Gly Val Ile Asn Thr Glu Thr Leu Thr Lys Val Lys Pro
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 aaa aca ggt cag gaa aat gga tgg gaa aaa gat gct aca gaa ttt tca 1440
 Lys Thr Gly Gln Glu Asn Gly Trp Glu Lys Asp Ala Thr Glu Phe Ser
 465 470 475 480

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 Asp Lys Asn Glu Ile Arg Val Gly Asn Asn Phe Ala Met Glu Ile Asn
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tat ttg ccc gac aag cta aag tac agt cct tcc aac gta aaa att tct 1584
 Tyr Leu Pro Asp Lys Leu Lys Tyr Ser Pro Ser Asn Val Lys Ile Ser
 515 520 525

gat aac cca aac acc tac gac tac atg aac aag cga gtg gtg gct ccc 1632
 Asp Asn Pro Asn Thr Tyr Asp Tyr Met Asn Lys Arg Val Val Ala Pro
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ggg cta gtg gac tgc tac att aac ctt gga gca cgc tgg tcc ctt gac 1680
 Gly Leu Val Asp Cys Tyr Ile Asn Leu Gly Ala Arg Trp Ser Leu Asp
 545 550 555 560

tat atg gac aac gtc aac cca ttt aac cac cac cgc aat gct ggc ctg 1728
 Tyr Met Asp Asn Val Asn Pro Phe Asn His His Arg Asn Ala Gly Leu
 565 570 575

cgc tac cgc tca atg ttg ctg ggc aat ggt cgc tat gtg ccc ttc cac 1776
 Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly Arg Tyr Val Pro Phe His
 580 585 590

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 Ile Gln Val Pro Gln Lys Phe Phe Ala Ile Lys Asn Leu Leu Leu Leu
 595 600 605

ccg ggc tca tac acc tac gag tgg aac ttc agg aag gat gtt aac atg 1872
 Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe Arg Lys Asp Val Asn Met
 610 615 620

gtt ctg cag agc tcc cta gga aat gac cta agg gtt gac gga gcc agc 1920
 Val Leu Gln Ser Ser Leu Gly Asn Asp Leu Arg Val Asp Gly Ala Ser
 625 630 635 640

att aag ttt gat agc att tgc ctt tac gcc acc ttc ttc ccc atg gcc 1968
 Ile Lys Phe Asp Ser Ile Cys Leu Tyr Ala Thr Phe Phe Pro Met Ala
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cac aac acc gcc tcc acg ctt gag gcc atg ctt aga aac gac acc aac 2016
 His Asn Thr Ala Ser Thr Leu Glu Ala Met Leu Arg Asn Asp Thr Asn
 660 665 670

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 Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala Ala Asn Met Leu Tyr Pro
 675 680 685

ata ccc gcc aac gct acc aac gtg ccc ata tcc atc ccc tcc cgc aac 2112
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 690 695 700

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 Trp Ala Ala Phe Arg Gly Trp Ala Phe Thr Arg Leu Lys Thr Lys Glu
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 Thr Pro Ser Leu Gly Ser Gly Tyr Asp Pro Tyr Tyr Thr Tyr Ser Gly
 725 730 735

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 Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr Leu Asn His Thr Phe Lys
 740 745 750

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 755 760 765

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 770 775 780

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 785 790 795 800

gta caa atg cta gct aac tat aac att ggc tac cag ggc ttc tat atc 2448
 Val Gln Met Leu Ala Asn Tyr Asn Ile Gly Tyr Gln Gly Phe Tyr Ile
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 820 825 830

ccc atg agc cgt cag gtg gtg gat gat act aaa tac aag gac tac caa 2544
 Pro Met Ser Arg Gln Val Val Asp Thr Lys Tyr Lys Asp Tyr Gln
 835 840 845

cag gtg ggc atc cta cac caa cac aac aac tct gga ttt gtt ggc tac 2592
 Gln Val Gly Ile Leu His Gln His Asn Asn Ser Gly Phe Val Gly Tyr
 850 855 860

ctt gcc ccc acc atg cgc gaa gga cag gcc tac cct gct aac ttc ccc 2640
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 865 870 875 880

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 Tyr Pro Leu Ile Gly Lys Thr Ala Val Asp Ser Ile Thr Gln Lys Lys
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 915 920 925

 aac tcc gcc cac gcg cta gac atg act ttt gag gtg gat ccc atg gac 2832
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 930 935 940

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

 cgc gcc acc gag acg tac ttc agc ctg aat aac aag ttt aga aac ccc 144
 Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
 35 40 45

 acg gtg gcg cct acg cac gac gtg acc aca gac cgg tcc cag cgt ttg 192

Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
 50 55 60

 acg ctg cgg ttc atc cct gtg gac cgt gag gat act gcg tac tcg tac 240
 Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
 65 70 75 80

 aag gcg cgg ttc acc cta gct gtg ggt gat aac cgt gtg ctg gac atg 288
 Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
 85 90 95

 gct tcc acg tac ttt gac atc cgc ggc gtg ctg gac agg ggc cct act 336
 Ala Ser Thr Tyr Phe Asp Ile Arg Gly Val Leu Asp Arg Gly Pro Thr
 100 105 110

 ttt aag ccc tac tct ggc act gcc tac aac gcc ctg gct ccc aag ggt 384
 Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
 115 120 125

 gcc cca aat cct tgc gaa tgg gat gaa aat gca aat cca aat gca aat 432
 Ala Pro Asn Pro Cys Glu Trp Asp Glu Asn Ala Asn Pro Asn Ala Asn
 130 135 140

 cca aat gca aat cca aat gca aat cca aat gca aat cca aat gca aat 480
 Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
 145 150 155 160

 cca aat gca aat cca aat gca aat cca aat gca aat cca aat gca aat 528
 Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
 165 170 175

 cca aat gca aat cca aat gca aat cca aac gcg aac ccg aat gct aat 576
 Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
 180 185 190

 cct aat gca aat cca aat gca aat cca aat gca aat cca aat gca aat 624
 Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
 195 200 205

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 Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
 210 215 220

 cca aaa act cac gta ttt ggg cag gcg cct tat tct ggt ata aat att 720
 Pro Lys Thr His Val Phe Gly Gln Ala Pro Tyr Ser Gly Ile Asn Ile
 225 230 235 240

 aca aag gag ggt att caa ata ggt gtc gaa ggt caa aca cct aaa tat 768
 Thr Lys Glu Gly Ile Gln Ile Gly Val Glu Gly Gln Thr Pro Lys Tyr
 245 250 255

gcc gat aaa aca ttt caa cct gaa cct caa ata gga gaa tct cag tgg 816
 Ala Asp Lys Thr Phe Gln Pro Glu Pro Gln Ile Gly Glu Ser Gln Trp
 260 265 270

tac gaa aca gaa att aat cat gca gct ggg aga gtc cta aaa aag act 864
 Tyr Glu Thr Glu Ile Asn His Ala Ala Gly Arg Val Leu Lys Lys Thr
 275 280 285

acc cca atg aaa cca tgt tac ggt tca tat gca aaa ccc aca aat gaa 912
 Thr Pro Met Lys Pro Cys Tyr Gly Ser Tyr Ala Lys Pro Thr Asn Glu
 290 295 300

aat gga ggg caa ggc att ctt gta aag caa caa aat gga aag cta gaa 960
 Asn Gly Gly Gln Gly Ile Leu Val Lys Gln Gln Asn Gly Lys Leu Glu
 305 310 315 320

agt caa gtg gaa atg caa ttt ttc tca act act gag gca gcc gca ggc 1008
 Ser Gln Val Glu Met Gln Phe Phe Ser Thr Thr Glu Ala Ala Ala Gly
 325 330 335

aat ggt gat aac ttg act cct aaa gtg gta ttg tac agt gaa gat gta 1056
 Asn Gly Asp Asn Leu Thr Pro Lys Val Val Leu Tyr Ser Glu Asp Val
 340 345 350

gat ata gaa acc cca gac act cat att tct tac atg ccc act att aag 1104
 Asp Ile Glu Thr Pro Asp Thr His Ile Ser Tyr Met Pro Thr Ile Lys
 355 360 365

gaa ggt aac tca cga gaa cta atg ggc caa caa tct atg ccc aac agg 1152
 Glu Gly Asn Ser Arg Glu Leu Met Gly Gln Gln Ser Met Pro Asn Arg
 370 375 380

cct aat tac att gct ttt agg gac aat ttt att ggt cta atg tat tac 1200
 Pro Asn Tyr Ile Ala Phe Arg Asp Asn Phe Ile Gly Leu Met Tyr Tyr
 385 390 395 400

aac agc acg ggt aat atg ggt gtt ctg gcg ggc caa gca tcg cag ttg 1248
 Asn Ser Thr Gly Asn Met Gly Val Leu Ala Gly Gln Ala Ser Gln Leu
 405 410 415

aat gct gtt gta gat ttg caa gac aga aac aca gag ctt tca tac cag 1296
 Asn Ala Val Val Asp Leu Gln Asp Arg Asn Thr Glu Leu Ser Tyr Gln
 420 425 430

ctt ttg ctt gat tcc att ggt gat aga acc agg tac ttt tct atg tgg 1344
 Leu Leu Leu Asp Ser Ile Gly Asp Arg Thr Arg Tyr Phe Ser Met Trp
 435 440 445

aat cag ctt cca aat tac tgc ttt cca ctg gga ggt gtg att aat aca 1392
 Asn Gln Leu Pro Asn Tyr Cys Phe Pro Leu Gly Gly Val Ile Asn Thr
 450 455 460

gag act ctt acc aag gta aaa cct aaa aca ggt cag gaa aat gga tgg 1440
 Glu Thr Leu Thr Lys Val Lys Pro Lys Thr Gly Gln Glu Asn Gly Trp
 465 470 475 480

gaa aaa gat gct aca gaa ttt tca gat aaa aat gaa ata aga gtt gga 1488
 Glu Lys Asp Ala Thr Glu Phe Ser Asp Lys Asn Glu Ile Arg Val Gly
 485 490 495

aat aat ttt gcc atg gaa atc aat cta aat gcc aac ctg tgg aga aat 1536
 Asn Asn Phe Ala Met Glu Ile Asn Leu Asn Ala Asn Leu Trp Arg Asn
 500 505 510

ttc ctg tac tcc aac ata gcg ctg tat ttg ccc gac aag cta aag tac 1584
 Phe Leu Tyr Ser Asn Ile Ala Leu Tyr Leu Pro Asp Lys Leu Lys Tyr
 515 520 525

agt cct tcc aac gta aaa att tct gat aac cca aac acc tac gac tac 1632
 Ser Pro Ser Asn Val Lys Ile Ser Asp Asn Pro Asn Thr Tyr Asp Tyr
 530 535 540

atg aac aag cga gtg gtg gct ccc ggg cta gtg gac tgc tac att aac 1680
 Met Asn Lys Arg Val Val Ala Pro Gly Leu Val Asp Cys Tyr Ile Asn
 545 550 555 560

ctt gga gca cgc tgg tcc ctt gac tat atg gac aac gtc aac cca ttt 1728
 Leu Gly Ala Arg Trp Ser Leu Asp Tyr Met Asp Asn Val Asn Pro Phe
 565 570 575

aac cac cac cgc aat gct ggc ctg cgc tac cgc tca atg ttg ctg ggc 1776
 Asn His His Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly
 580 585 590

aat ggt cgc tat gtg ccc ttc cac atc cag gtg cct cag aag ttc ttt 1824
 Asn Gly Arg Tyr Val Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe
 595 600 605

gcc att aaa aac ctc ctt ctc ctg ccg ggc tca tac acc tac gag tgg 1872
 Ala Ile Lys Asn Leu Leu Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp
 610 615 620

aac ttc agg aag gat gtt aac atg gtt ctg cag agc tcc cta gga aat 1920
 Asn Phe Arg Lys Asp Val Asn Met Val Leu Gln Ser Ser Leu Gly Asn
 625 630 635 640

gac cta agg gtt gac gga gcc agc att aag ttt gat agc att tgc ctt 1968
 Asp Leu Arg Val Asp Gly Ala Ser Ile Lys Phe Asp Ser Ile Cys Leu
 645 650 655

tac gcc acc ttc ttc ccc atg gcc cac aac acc gcc tcc acg ctt gag 2016
 Tyr Ala Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu

660	665	670	
gcc atg ctt aga aac gac acc aac gac cag tcc ttt aac gac tat ctc			2064
Ala Met Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu			
675	680	685	
tcc gcc gcc aac atg ctc tac cct ata ccc gcc aac gct acc aac gtg			2112
Ser Ala Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val			
690	695	700	
ccc ata tcc atc ccc tcc cgc aac tgg gcg gct ttc cgc ggc tgg gcc			2160
Pro Ile Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp Ala			
705	710	715	720
ttc acg cgc ctt aag act aag gaa acc cca tca ctg ggc tcg ggc tac			2208
Phe Thr Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly Tyr			
725	730	735	
gac cct tat tac acc tac tct ggc tct ata ccc tac cta gat gga acc			2256
Asp Pro Tyr Tyr Thr Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr			
740	745	750	
ttt tac ctc aac cac acc ttt aag aag gtg gcc att acc ttt gac tct			2304
Phe Tyr Leu Asn His Thr Phe Lys Lys Val Ala Ile Thr Phe Asp Ser			
755	760	765	
tct gtc agc tgg cct ggc aat gac cgc ctg ctt acc ccc aac gag ttt			2352
Ser Val Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe			
770	775	780	
gaa att aag cgc tca gtt gac ggg gag ggt tac aac gtt gcc cag tgt			2400
Glu Ile Lys Arg Ser Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys			
785	790	795	800
aac atg acc aaa gac tgg ttc ctg gta caa atg cta gct aac tat aac			2448
Asn Met Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala Asn Tyr Asn			
805	810	815	
att ggc tac cag ggc ttc tat atc cca gag agc tac aag gac cgc atg			2496
Ile Gly Tyr Gln Gly Phe Tyr Ile Pro Glu Ser Tyr Lys Asp Arg Met			
820	825	830	
tac tcc ttc ttt aga aac ttc cag ccc atg agc cgt cag gtg gtg gat			2544
Tyr Ser Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp			
835	840	845	
gat act aaa tac aag gac tac caa cag gtg ggc atc cta cac caa cac			2592
Asp Thr Lys Tyr Lys Asp Tyr Gln Gln Val Gly Ile Leu His Gln His			
850	855	860	
aac aac tct gga ttt gtt ggc tac ctt gcc ccc acc atg cgc gaa gga			2640

1	5	10	15	
ggc cag gac gcc tcg gag tac ctg agc ccc ggg ctg gtg cag ttt gcc				96
Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala				
20	25	30		
cgc gcc acc gag acg tac ttc agc ctg aat aac aag ttt aga aac ccc				144
Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro				
35	40	45		
acg gtg gcg cct acg cac gac gtg acc aca gac cgg tcc cag cgt ttg				192
Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu				
50	55	60		
acg ctg cgg ttc atc cct gtg gac cgt gag gat act gcg tac tcg tac				240
Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr				
65	70	75	80	
aag gcg cgg ttc acc cta gct gtg ggt gat aac cgt gtg ctg gac atg				288
Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met				
85	90	95		
gct tcc acg tac ttt gac atc cgc ggc gtg ctg gac agg ggc cct act				336
Ala Ser Thr Tyr Phe Asp Ile Arg Gly Val Leu Asp Arg Gly Pro Thr				
100	105	110		
ttt aag ccc tac tct ggc act gcc tac aac gcc ctg gct ccc aag ggt				384
Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly				
115	120	125		
gcc cca aat cct tgc gaa tgg gat gaa aac gcc aat cca aat gcg aat				432
Ala Pro Asn Pro Cys Glu Trp Asp Glu Asn Ala Asn Pro Asn Ala Asn				
130	135	140		
ccc aac gct aat cct aac gca aac ccg aat gct aac cct aac gca aac				480
Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn				
145	150	155	160	
ccc aac gct aac ccc aac gcg aac ccc aat gcc aac ccc aac gcc aac				528
Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn				
165	170	175		
ccg aac gcc aat cca aac gct aac cct aat gcc aat cct aat gcc aat				576
Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn				
180	185	190		
ccg aac gcc aat cca aat gcc aat cca aat gct aat ccc aac aat gcc				624
Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn				
195	200	205		
ccc aac gcg aac cct aat gcc aac ccc aac gct aat cca aat gcg aac				672

Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
210 215 220

cct aac gcc aac ccg aat gct aat ccc aat gcc aac ccc aat gct aat 720
Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
225 230 235 240

ccc aat gcg aac cct aat gcc aat ccc aaa act cac gta ttt ggg cag 768
Pro Asn Ala Asn Pro Asn Ala Asn Pro Lys Thr His Val Phe Gly Gln
245 250 255

gcg cct tat tct ggt ata aat att aca aag gag ggt att caa ata ggt 816
Ala Pro Tyr Ser Gly Ile Asn Ile Thr Lys Glu Gly Ile Gln Ile Gly
260 265 270

gtc gaa ggt caa aca cct aaa tat gcc gat aaa aca ttt caa cct gaa 864
Val Glu Gly Gln Thr Pro Lys Tyr Ala Asp Lys Thr Phe Gln Pro Glu
275 280 285

cct caa ata gga gaa tct cag tgg tac gaa aca gaa att aat cat gca 912
Pro Gln Ile Gly Glu Ser Gln Trp Tyr Glu Thr Glu Ile Asn His Ala
290 295 300

gct ggg aga gtc cta aaa aag act acc cca atg aaa cca tgt tac ggt 960
Ala Gly Arg Val Leu Lys Lys Thr Thr Pro Met Lys Pro Cys Tyr Gly
305 310 315 320

tca tat gca aaa ccc aca aat gaa aat gga ggg caa ggc att ctt gta 1008
Ser Tyr Ala Lys Pro Thr Asn Glu Asn Gly Gly Gln Gly Ile Leu Val
325 330 335

aag caa caa aat gga aag cta gaa agt caa gtg gaa atg caa ttt ttc 1056
Lys Gln Gln Asn Gly Lys Leu Glu Ser Gln Val Glu Met Gln Phe Phe
340 345 350

tca act act gag gca gcc gca ggc aat ggt gat aac ttg act cct aaa 1104
Ser Thr Thr Glu Ala Ala Ala Gly Asn Gly Asp Asn Leu Thr Pro Lys
355 360 365

gtg gta ttg tac agt gaa gat gta gat ata gaa acc cca gac act cat 1152
Val Val Leu Tyr Ser Glu Asp Val Asp Ile Glu Thr Pro Asp Thr His
370 375 380

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Ile Ser Tyr Met Pro Thr Ile Lys Glu Gly Asn Ser Arg Glu Leu Met
385 390 395 400

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Gly Gln Gln Ser Met Pro Asn Arg Pro Asn Tyr Ile Ala Phe Arg Asp
405 410 415

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 Asn Phe Ile Gly Leu Met Tyr Tyr Asn Ser Thr Gly Asn Met Gly Val
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ctg gcg ggc caa gca tcg cag ttg aat gct gtt gta gat ttg caa gac 1344
 Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala Val Val Asp Leu Gln Asp
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aga aac aca gag ctt tca tac cag ctt ttg ctt gat tcc att ggt gat 1392
 Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu Leu Asp Ser Ile Gly Asp
 450 455 460

aga acc agg tac ttt tct atg tgg aat cag ctt cca aat tac tgc ttt 1440
 Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Leu Pro Asn Tyr Cys Phe
 465 470 475 480

cca ctg gga ggt gtg att aat aca gag act ctt acc aag gta aaa cct 1488
 Pro Leu Gly Gly Val Ile Asn Thr Glu Thr Leu Thr Lys Val Lys Pro
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aaa aca ggt cag gaa aat gga tgg gaa aaa gat gct aca gaa ttt tca 1536
 Lys Thr Gly Gln Glu Asn Gly Trp Glu Lys Asp Ala Thr Glu Phe Ser
 500 505 510

gat aaa aat gaa ata aga gtt gga aat aat ttt gcc atg gaa atc aat 1584
 Asp Lys Asn Glu Ile Arg Val Gly Asn Asn Phe Ala Met Glu Ile Asn
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 Leu Asn Ala Asn Leu Trp Arg Asn Phe Leu Tyr Ser Asn Ile Ala Leu
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tat ttg ccc gac aag cta aag tac agt cct tcc aac gta aaa att tct 1680
 Tyr Leu Pro Asp Lys Leu Lys Tyr Ser Pro Ser Asn Val Lys Ile Ser
 545 550 555 560

gat aac cca aac acc tac gac tac atg aac aag cga gtg gtg gct ccc 1728
 Asp Asn Pro Asn Thr Tyr Asp Tyr Met Asn Lys Arg Val Val Ala Pro
 565 570 575

ggg cta gtg gac tgc tac att aac ctt gga gca cgc tgg tcc ctt gac 1776
 Gly Leu Val Asp Cys Tyr Ile Asn Leu Gly Ala Arg Trp Ser Leu Asp
 580 585 590

tat atg gac aac gtc aac cca ttt aac cac cac cgc aat gct ggc ctg 1824
 Tyr Met Asp Asn Val Asn Pro Phe Asn His His Arg Asn Ala Gly Leu
 595 600 605

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 Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly Arg Tyr Val Pro Phe His
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 625 630 635 640

ccg ggc tca tac acc tac gag tgg aac ttc agg aag gat gtt aac atg 1968
 Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe Arg Lys Asp Val Asn Met
 645 650 655

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 660 665 670

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 675 680 685

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 His Asn Thr Ala Ser Thr Leu Glu Ala Met Leu Arg Asn Asp Thr Asn
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 Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala Ala Asn Met Leu Tyr Pro
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 Trp Ala Ala Phe Arg Gly Trp Ala Phe Thr Arg Leu Lys Thr Lys Glu
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acc cca tca ctg ggc tcg ggc tac gac cct tat tac acc tac tct ggc 2304
 Thr Pro Ser Leu Gly Ser Gly Tyr Asp Pro Tyr Tyr Thr Tyr Ser Gly
 755 760 765

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 Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr Leu Asn His Thr Phe Lys
 770 775 780

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 Lys Val Ala Ile Thr Phe Asp Ser Ser Val Ser Trp Pro Gly Asn Asp
 785 790 795 800

cgc ctg ctt acc ccc aac gag ttt gaa att aag cgc tca gtt gac ggg 2448
 Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile Lys Arg Ser Val Asp Gly
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835	840	845	
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Pro Glu Ser Tyr Lys Asp Arg Met Tyr Ser Phe Phe Arg Asn Phe Gln			
850	855	860	
ccc atg agc cgt cag gtg gtg gat gat act aaa tac aag gac tac caa			2640
Pro Met Ser Arg Gln Val Val Asp Asp Thr Lys Tyr Lys Asp Tyr Gln			
865	870	875	880
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Gln Val Gly Ile Leu His Gln His Asn Asn Ser Gly Phe Val Gly Tyr			
885	890	895	
ctt gcc ccc acc atg cgc gaa gga cag gcc tac cct gct aac ttc ccc			2736
Leu Ala Pro Thr Met Arg Glu Gly Gln Ala Tyr Pro Ala Asn Phe Pro			
900	905	910	
tat ccg ctt ata ggc aag acc gca gtt gac agc att acc cag aaa aag			2784
Tyr Pro Leu Ile Gly Lys Thr Ala Val Asp Ser Ile Thr Gln Lys Lys			
915	920	925	
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Phe Leu Cys Asp Arg Thr Leu Trp Arg Ile Pro Phe Ser Ser Asn Phe			
930	935	940	
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945	950	955	960
aac tcc gcc cac gcg cta gac atg act ttt gag gtg gat ccc atg gac			2928
Asn Ser Ala His Ala Leu Asp Met Thr Phe Glu Val Asp Pro Met Asp			
965	970	975	
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Glu Pro Thr Leu Leu Tyr Val Leu Phe Glu Val Phe Asp Val Val Arg			
980	985	990	
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Val His Gln Pro His Arg Gly Val Ile Glu Thr Val Tyr Leu Arg Thr			
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Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
20 25 30

cgc gcc acc gag acg tac ttc agc ctg aat aac aag ttt aga aac ccc 144
Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

acg gtg gcg cct acg cac gac gtg acc aca gac cgg tcc cag cgt ttg 192
Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
50 55 60

acg ctg cgg ttc atc cct gtg gac cgt gag gat act gcg tac tcg tac 240
Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

aag gcg cgg ttc acc cta gct gtg ggt gat aac cgt gtg ctg gac atg 288
Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

gct tcc acg tac ttt gac atc cgc ggc gtg ctg gac agg ggc cct act 336
Ala Ser Thr Tyr Phe Asp Ile Arg Gly Val Leu Asp Arg Gly Pro Thr
100 105 110

ttt aag ccc tac tct ggc act gcc tac aac gcc ctg gct ccc aag ggt 384
Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

gcc cca aat cct tgc gaa tgg gat gaa gct gct act gct ctt gaa ata 432
Ala Pro Asn Pro Cys Glu Trp Asp Glu Ala Ala Thr Ala Leu Glu Ile
130 135 140

aac cta gaa gaa gag gac gat gac aac gaa gac gaa gta gac gag caa 480
Asn Leu Glu Glu Glu Asp Asp Asp Asn Glu Asp Glu Val Asp Glu Gln

145	150	155	160	
gct gag cag caa aaa act cac gta ttt ggg cag gcg cct tat tct ggt				528
Ala Glu Gln Gln Lys Thr His Val Phe Gly Gln Ala Pro Tyr Ser Gly				
	165	170	175	
ata aat att aca aag gag ggt att caa ata ggt gtc gaa ggt caa aca				576
Ile Asn Ile Thr Lys Glu Gly Ile Gln Ile Gly Val Glu Gly Gln Thr				
	180	185	190	
cct aaa tat gcc gat aaa aca ttt caa cct gaa cct caa ata gga gaa				624
Pro Lys Tyr Ala Asp Lys Thr Phe Gln Pro Glu Pro Gln Ile Gly Glu				
	195	200	205	
tct cag tgg tac gaa aca gaa att aat cat gca gct ggg aga gtc cta				672
Ser Gln Trp Tyr Glu Thr Glu Ile Asn His Ala Ala Gly Arg Val Leu				
	210	215	220	
aaa aag act acc cca atg aaa cca tgt tac ggt tca tat gca aaa ccc				720
Lys Lys Thr Thr Pro Met Lys Pro Cys Tyr Gly Ser Tyr Ala Lys Pro				
	225	230	235	240
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Thr Asn Glu Asn Gly Gly Gln Gly Ile Leu Val Lys Gln Gln Asn Gly				
	245	250	255	
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Lys Leu Glu Ser Gln Val Glu Met Gln Phe Phe Ser Ala Ser Gln Gly				
	260	265	270	
cct gga gct cca cag gga cca ggt gca cct caa ggg cct gga gcc cct				864
Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro				
	275	280	285	
ggc act agc act act gag gca gcc gca ggc aat ggt gat aac ttg act				912
Gly Thr Ser Thr Thr Glu Ala Ala Ala Gly Asn Gly Asp Asn Leu Thr				
	290	295	300	
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Pro Lys Val Val Leu Tyr Ser Glu Asp Val Asp Ile Glu Thr Pro Asp				
	305	310	315	320
act cat att tct tac atg ccc act att aag gaa ggt aac tca cga gaa				1008
Thr His Ile Ser Tyr Met Pro Thr Ile Lys Glu Gly Asn Ser Arg Glu				
	325	330	335	
cta atg ggc caa caa tct atg ccc aac agg cct aat tac att gct ttt				1056
Leu Met Gly Gln Gln Ser Met Pro Asn Arg Pro Asn Tyr Ile Ala Phe				
	340	345	350	
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Arg Asp Asn Phe Ile Gly Leu Met Tyr Tyr Asn Ser Thr Gly Asn Met
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 370 375 380

caa gac aga aac aca gag ctt tca tac cag ctt ttg ctt gat tcc att 1200
 Gln Asp Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu Leu Asp Ser Ile
 385 390 395 400

ggt gat aga acc agg tac ttt tct atg tgg aat cag gct gtt gac agc 1248
 Gly Asp Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Ala Val Asp Ser
 405 410 415

tat gat cca gat gtt aga att att gaa aat cat gga act gaa gat gaa 1296
 Tyr Asp Pro Asp Val Arg Ile Glu Asn His Gly Thr Glu Asp Glu
 420 425 430

ctt cca aat tac tgc ttt cca ctg gga ggt gtg att aat aca gag act 1344
 Leu Pro Asn Tyr Cys Phe Pro Leu Gly Gly Val Ile Asn Thr Glu Thr
 435 440 445

ctt acc aag gta aaa cct aaa aca ggt cag gaa aat gga tgg gaa aaa 1392
 Leu Thr Lys Val Lys Pro Lys Thr Gly Gln Glu Asn Gly Trp Glu Lys
 450 455 460

gat gct aca gaa ttt tca gat aaa aat gaa ata aga gtt gga aat aat 1440
 Asp Ala Thr Glu Phe Ser Asp Lys Asn Glu Ile Arg Val Gly Asn Asn
 465 470 475 480

ttt gcc atg gaa atc aat cta aat gcc aac ctg tgg aga aat ttc ctg 1488
 Phe Ala Met Glu Ile Asn Leu Asn Ala Asn Leu Trp Arg Asn Phe Leu
 485 490 495

tac tcc aac ata gcg ctg tat ttg ccc gac aag cta aag tac agt cct 1536
 Tyr Ser Asn Ile Ala Leu Tyr Leu Pro Asp Lys Leu Lys Tyr Ser Pro
 500 505 510

tcc aac gta aaa att tct gat aac cca aac acc tac gac tac atg aac 1584
 Ser Asn Val Lys Ile Ser Asp Asn Pro Asn Thr Tyr Asp Tyr Met Asn
 515 520 525

aag cga gtg gtg gct ccc ggg cta gtg gac tgc tac att aac ctt gga 1632
 Lys Arg Val Val Ala Pro Gly Leu Val Asp Cys Tyr Ile Asn Leu Gly
 530 535 540

gca cgc tgg tcc ctt gac tat atg gac aac gtc aac cca ttt aac cac 1680
 Ala Arg Trp Ser Leu Asp Tyr Met Asp Asn Val Asn Pro Phe Asn His
 545 550 555 560

cac cgc aat gct ggc ctg cgc tac cgc tca atg ttg ctg ggc aat ggt 1728
His Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly
565 570 575

cgc tat gtg ccc ttc cac atc cag gtg cct cag aag ttc ttt gcc att 1776
Arg Tyr Val Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe Ala Ile
580 585 590

aaa aac ctc ctt ctc ctg ccg ggc tca tac acc tac gag tgg aac ttc 1824
Lys Asn Leu Leu Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe
595 600 605

agg aag gat gtt aac atg gtt ctg cag agc tcc cta gga aat gac cta 1872
Arg Lys Asp Val Asn Met Val Leu Gln Ser Ser Leu Gly Asn Asp Leu
610 615 620

agg gtt gac gga gcc agc att aag ttt gat agc att tgc ctt tac gcc 1920
Arg Val Asp Gly Ala Ser Ile Lys Phe Asp Ser Ile Cys Leu Tyr Ala
625 630 635 640

acc ttc ttc ccc atg gcc cac aac acc gcc tcc acg ctt gag gcc atg 1968
Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu Ala Met
645 650 655

ctt aga aac gac acc aac gac cag tcc ttt aac gac tat ctc tcc gcc 2016
Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala
660 665 670

gcc aac atg ctc tac cct ata ccc gcc aac gct acc aac gtg ccc ata 2064
Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val Pro Ile
675 680 685

tcc atc ccc tcc cgc aac tgg gcg gct ttc cgc ggc tgg gcc ttc acg 2112
Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp Ala Phe Thr
690 695 700

cgc ctt aag act aag gaa acc cca tca ctg ggc tcg ggc tac gac cct 2160
Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly Tyr Asp Pro
705 710 715 720

tat tac acc tac tct ggc tct ata ccc tac cta gat gga acc ttt tac 2208
Tyr Tyr Thr Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr
725 730 735

ctc aac cac acc ttt aag aag gtg gcc att acc ttt gac tct tct gtc 2256
Leu Asn His Thr Phe Lys Lys Val Ala Ile Thr Phe Asp Ser Ser Val
740 745 750

agc tgg cct ggc aat gac cgc ctg ctt acc ccc aac gag ttt gaa att 2304
Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile
755 760 765

aag cgc tca gtt gac ggg gag ggt tac aac gtt gcc cag tgt aac atg 2352
 Lys Arg Ser Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys Asn Met
 770 775 780

acc aaa gac tgg ttc ctg gta caa atg cta gct aac tat aac att ggc 2400
 Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala Asn Tyr Asn Ile Gly
 785 790 795 800

tac cag ggc ttc tat atc cca gag agc tac aag gac cgc atg tac tcc 2448
 Tyr Gln Gly Phe Tyr Ile Pro Glu Ser Tyr Lys Asp Arg Met Tyr Ser
 805 810 815

ttc ttt aga aac ttc cag ccc atg agc cgt cag gtg gtg gat gat act 2496
 Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp Asp Thr
 820 825 830

aaa tac aag gac tac caa cag gtg ggc atc cta cac caa cac aac aac 2544
 Lys Tyr Lys Asp Tyr Gln Gln Val Gly Ile Leu His Gln His Asn Asn
 835 840 845

tct gga ttt gtt ggc tac ctt gcc ccc acc atg cgc gaa gga cag gcc 2592
 Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Glu Gly Gln Ala
 850 855 860

tac cct gct aac ttc ccc tat ccg ctt ata ggc aag acc gca gtt gac 2640
 Tyr Pro Ala Asn Phe Pro Tyr Pro Leu Ile Gly Lys Thr Ala Val Asp
 865 870 875 880

agc att acc cag aaa aag ttt ctt tgc gat cgc acc ctt tgg cgc atc 2688
 Ser Ile Thr Gln Lys Lys Phe Leu Cys Asp Arg Thr Leu Trp Arg Ile
 885 890 895

cca ttc tcc agt aac ttt atg tcc atg ggc gca ctc aca gac ctg ggc 2736
 Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp Leu Gly
 900 905 910

caa aac ctt ctc tac gcc aac tcc gcc cac gcg cta gac atg act ttt 2784
 Gln Asn Leu Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met Thr Phe
 915 920 925

gag gtg gat ccc atg gac gag ccc acc ctt ctt tat gtt ttg ttt gaa 2832
 Glu Val Asp Pro Met Asp Glu Pro Thr Leu Leu Tyr Val Leu Phe Glu
 930 935 940

gtc ttt gac gtg gtc cgt gtg cac cag ccg cac cgc ggc gtc atc gaa 2880
 Val Phe Asp Val Val Arg Val His Gln Pro His Arg Gly Val Ile Glu
 945 950 955 960

acc gtg tac ctg cgc acg ccc ttc tcg gcc ggc aac gcc aca aca taa 2928
 Thr Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala Thr Thr

965 970 975

<210> 24

<211> 1800

<212> DNA

<213> Artificial Sequence

<220>

<223> (QGPGAP)3 modified fiber protein

<220>

<221> CDS

<222> (1)..(1797)

<400> 24

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Met Lys Arg Ala Arg Pro Ser Glu Asp Thr Phe Asn Pro Val Tyr Pro
1 5 10 15

tat gac acg gaa acc ggt cct cca act gtg cct ttt ctt act cct ccc 96
Tyr Asp Thr Glu Thr Gly Pro Pro Thr Val Pro Phe Leu Thr Pro Pro
20 25 30

ttt gta tcc ccc aat ggg ttt caa gag agt ccc cct ggg gta ctc tct 144
Phe Val Ser Pro Asn Gly Phe Gln Glu Ser Pro Pro Gly Val Leu Ser
35 40 45

ttg cgc cta tcc gaa cct cta gtt acc tcc aat ggc atg ctt gcg ctc 192
Leu Arg Leu Ser Glu Pro Leu Val Thr Ser Asn Gly Met Leu Ala Leu
50 55 60

aaa atg ggc aac ggc ctc tct ctg gac gag gcc ggc aac ctt acc tcc 240
Lys Met Gly Asn Gly Leu Ser Leu Asp Glu Ala Gly Asn Leu Thr Ser
65 70 75 80

caa aat gta acc act gtg agc cca cct ctc aaa aaa acc aag tca aac 288
Gln Asn Val Thr Thr Val Ser Pro Pro Leu Lys Lys Thr Lys Ser Asn
85 90 95

ata aac ctg gaa ata tct gca ccc ctc aca gtt acc tca gaa gcc cta 336
Ile Asn Leu Glu Ile Ser Ala Pro Leu Thr Val Thr Ser Glu Ala Leu
100 105 110

act gtg gct gcc gcc gca cct cta atg gtc gcg ggc aac aca ctc acc 384
Thr Val Ala Ala Ala Ala Pro Leu Met Val Ala Gly Asn Thr Leu Thr
115 120 125

atg caa tca cag gcc ccg cta acc gtg cac gac tcc aaa ctt agc att 432

Met Gln Ser Gln Ala Pro Leu Thr Val His Asp Ser Lys Leu Ser Ile
 130 135 140

gcc acc caa gga ccc ctc aca gtg tca gaa gga aag cta gcc ctg caa 480
 Ala Thr Gln Gly Pro Leu Thr Val Ser Glu Gly Lys Leu Ala Leu Gln
 145 150 155 160

aca tca ggc ccc ctc acc acc acc gat agc agt acc ctt act atc act 528
 Thr Ser Gly Pro Leu Thr Thr Thr Asp Ser Ser Thr Leu Thr Ile Thr
 165 170 175

gcc tca ccc cct cta act act gcc act ggt agc ttg ggc att gac ttg 576
 Ala Ser Pro Pro Leu Thr Thr Ala Thr Gly Ser Leu Gly Ile Asp Leu
 180 185 190

aaa gag ccc att tat aca caa aat gga aaa cta gga cta aag tac ggg 624
 Lys Glu Pro Ile Tyr Thr Gln Asn Gly Lys Leu Gly Leu Lys Tyr Gly
 195 200 205

gct cct ttg cat gta aca gac gac cta aac act ttg acc gta gca act 672
 Ala Pro Leu His Val Thr Asp Asp Leu Asn Thr Leu Thr Val Ala Thr
 210 215 220

ggt cca ggt gtg act att aat aat act tcc ttg caa act aaa gtt act 720
 Gly Pro Gly Val Thr Ile Asn Asn Thr Ser Leu Gln Thr Lys Val Thr
 225 230 235 240

gga gcc ttg ggt ttt gat tca caa ggc aat atg caa ctt aat gta gca 768
 Gly Ala Leu Gly Phe Asp Ser Gln Gly Asn Met Gln Leu Asn Val Ala
 245 250 255

gga gga cta agg att gat tct caa aac aga cgc ctt ata ctt gat gtt 816
 Gly Gly Leu Arg Ile Asp Ser Gln Asn Arg Arg Leu Ile Leu Asp Val
 260 265 270

agt tat ccg ttt gat gct caa aac caa cta aat cta aga cta gga cag 864
 Ser Tyr Pro Phe Asp Ala Gln Asn Gln Leu Asn Leu Arg Leu Gly Gln
 275 280 285

ggc cct ctt ttt ata aac tca gcc cac aac ttg gat att aac tac aac 912
 Gly Pro Leu Phe Ile Asn Ser Ala His Asn Leu Asp Ile Asn Tyr Asn
 290 295 300

aaa ggc ctt tac ttg ttt aca gct tca aac aat tcc aaa aag ctt gag 960
 Lys Gly Leu Tyr Leu Phe Thr Ala Ser Asn Asn Ser Lys Lys Leu Glu
 305 310 315 320

gtt aac cta agc act gcc aag ggg ttg atg ttt gac gct aca gcc ata 1008
 Val Asn Leu Ser Thr Ala Lys Gly Leu Met Phe Asp Ala Thr Ala Ile
 325 330 335

gcc att aat gca gga gat ggg ctt gaa ttt ggt tca cct aat gca cca 1056
Ala Ile Asn Ala Gly Asp Gly Leu Glu Phe Gly Ser Pro Asn Ala Pro
340 345 350

aac aca aat ccc ctc aaa aca aaa att ggc cat ggc cta gaa ttt gat 1104
Asn Thr Asn Pro Leu Lys Thr Lys Ile Gly His Gly Leu Glu Phe Asp
355 360 365

tca aac aag gct atg gtt cct aaa cta gga act ggc ctt agt ttt gac 1152
Ser Asn Lys Ala Met Val Pro Lys Leu Gly Thr Gly Leu Ser Phe Asp
370 375 380

agc aca ggt gcc att aca gta gga aac aaa aat aat gat aag cta act 1200
Ser Thr Gly Ala Ile Thr Val Gly Asn Lys Asn Asn Asp Lys Leu Thr
385 390 395 400

ttg tgg acc aca cca gct cca tct cct aac tgt aga cta aat gca gag 1248
Leu Trp Thr Thr Pro Ala Pro Ser Pro Asn Cys Arg Leu Asn Ala Glu
405 410 415

aaa gat gct aaa ctc act ttg gtc tta aca aaa tgt ggc agt caa ata 1296
Lys Asp Ala Lys Leu Thr Leu Val Leu Thr Lys Cys Gly Ser Gln Ile
420 425 430

ctt gct aca gtt tca gtt ttg gct gtt aaa ggc agt ttg gct cca ata 1344
Leu Ala Thr Val Ser Val Leu Ala Val Lys Gly Ser Leu Ala Pro Ile
435 440 445

tct gga aca gtt caa agt gct cat ctt att ata aga ttt gac gaa aat 1392
Ser Gly Thr Val Gln Ser Ala His Leu Ile Ile Arg Phe Asp Glu Asn
450 455 460

gga gtg cta cta aac aat tcc ttc ctg gac cca gaa tat tgg aac ttt 1440
Gly Val Leu Leu Asn Asn Ser Phe Leu Asp Pro Glu Tyr Trp Asn Phe
465 470 475 480

aga aat gga gat ctt act gaa ggc aca gcc tat aca aac gct gtt gga 1488
Arg Asn Gly Asp Leu Thr Glu Gly Thr Ala Tyr Thr Asn Ala Val Gly
485 490 495

ttt atg cct aac cta tca gct tat cca aaa tct cac ggt aaa act gcc 1536
Phe Met Pro Asn Leu Ser Ala Tyr Pro Lys Ser His Gly Lys Thr Ala
500 505 510

aaa agt aac att gtc agt caa gtt tac tta aac gga gac aaa act aaa 1584
Lys Ser Asn Ile Val Ser Gln Val Tyr Leu Asn Gly Asp Lys Thr Lys
515 520 525

cct gta aca cta acc att aca cta aac ggt aca cag gaa aca gga cag 1632
Pro Val Thr Leu Thr Ile Thr Leu Asn Gly Thr Gln Glu Thr Gly Gln
530 535 540

ggc cct gga gct cca cag gga cca ggt gca cct caa ggg cct gga gcc 1680
 Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala
 545 550 555 560

cct gac aca act cca agt gca tac tct atg tca ttt tca tgg gac tgg 1728
 Pro Asp Thr Thr Pro Ser Ala Tyr Ser Met Ser Phe Ser Trp Asp Trp
 565 570 575

tct ggc cac aac tac att aat gaa ata ttt gcc aca tcc tct tac act 1776
 Ser Gly His Asn Tyr Ile Asn Glu Ile Phe Ala Thr Ser Ser Tyr Thr
 580 585 590

ttt tca tac att gcc caa gaa taa 1800
 Phe Ser Tyr Ile Ala Gln Glu
 595

<210> 25
 <211> 1794
 <212> DNA
 <213> Artificial Sequence

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 <223> (NANP)₄ modified fiber protein

<220>
 <221> CDS
 <222> (1)..(1791)

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 Met Lys Arg Ala Arg Pro Ser Glu Asp Thr Phe Asn Pro Val Tyr Pro
 1 5 10 15

tat gac acg gaa acc ggt cct cca act gtg cct ttt ctt act cct ccc 96
 Tyr Asp Thr Glu Thr Gly Pro Pro Thr Val Pro Phe Leu Thr Pro Pro
 20 25 30

ttt gta tcc ccc aat ggg ttt caa gag agt ccc cct ggg gta ctc tct 144
 Phe Val Ser Pro Asn Gly Phe Gln Glu Ser Pro Pro Gly Val Leu Ser
 35 40 45

ttg cgc cta tcc gaa cct cta gtt acc tcc aat ggc atg ctt gcg ctc 192
 Leu Arg Leu Ser Glu Pro Leu Val Thr Ser Asn Gly Met Leu Ala Leu
 50 55 60

aaa atg ggc aac ggc ctc tct ctg gac gag gcc ggc aac ctt acc tcc 240
 Lys Met Gly Asn Gly Leu Ser Leu Asp Glu Ala Gly Asn Leu Thr Ser

65	70	75	80	
caa aat gta acc act gtg agc cca cct ctc aaa aaa acc aag tca aac				288
Gln Asn Val Thr Thr Val Ser Pro Pro Leu Lys Lys Thr Lys Ser Asn				
	85	90	95	
ata aac ctg gaa ata tct gca ccc ctc aca gtt acc tca gaa gcc cta				336
Ile Asn Leu Glu Ile Ser Ala Pro Leu Thr Val Thr Ser Glu Ala Leu				
	100	105	110	
act gtg gct gcc gcc gca cct cta atg gtc gcg ggc aac aca ctc acc				384
Thr Val Ala Ala Ala Ala Pro Leu Met Val Ala Gly Asn Thr Leu Thr				
	115	120	125	
atg caa tca cag gcc ccg cta acc gtg cac gac tcc aaa ctt agc att				432
Met Gln Ser Gln Ala Pro Leu Thr Val His Asp Ser Lys Leu Ser Ile				
	130	135	140	
gcc acc caa gga ccc ctc aca gtg tca gaa gga aag cta gcc ctg caa				480
Ala Thr Gln Gly Pro Leu Thr Val Ser Glu Gly Lys Leu Ala Leu Gln				
	145	150	155	160
aca tca ggc ccc ctc acc acc acc gat agc agt acc ctt act atc act				528
Thr Ser Gly Pro Leu Thr Thr Thr Asp Ser Ser Thr Leu Thr Ile Thr				
	165	170	175	
gcc tca ccc cct cta act act gcc act ggt agc ttg ggc att gac ttg				576
Ala Ser Pro Pro Leu Thr Thr Ala Thr Gly Ser Leu Gly Ile Asp Leu				
	180	185	190	
aaa gag ccc att tat aca caa aat gga aaa cta gga cta aag tac ggg				624
Lys Glu Pro Ile Tyr Thr Gln Asn Gly Lys Leu Gly Leu Lys Tyr Gly				
	195	200	205	
gct cct ttg cat gta aca gac gac cta aac act ttg acc gta gca act				672
Ala Pro Leu His Val Thr Asp Asp Leu Asn Thr Leu Thr Val Ala Thr				
	210	215	220	
ggt cca ggt gtg act att aat aat act tcc ttg caa act aaa gtt act				720
Gly Pro Gly Val Thr Ile Asn Asn Thr Ser Leu Gln Thr Lys Val Thr				
	225	230	235	240
gga gcc ttg ggt ttt gat tca caa ggc aat atg caa ctt aat gta gca				768
Gly Ala Leu Gly Phe Asp Ser Gln Gly Asn Met Gln Leu Asn Val Ala				
	245	250	255	
gga gga cta agg att gat tct caa aac aga cgc ctt ata ctt gat gtt				816
Gly Gly Leu Arg Ile Asp Ser Gln Asn Arg Arg Leu Ile Leu Asp Val				
	260	265	270	
agt tat ccg ttt gat gct caa aac caa cta aat cta aga cta gga cag				864

Ser Tyr Pro Phe Asp Ala Gln Asn Gln Leu Asn Leu Arg Leu Gly Gln
 275 280 285

ggc cct ctt ttt ata aac tca gcc cac aac ttg gat att aac tac aac 912
 Gly Pro Leu Phe Ile Asn Ser Ala His Asn Leu Asp Ile Asn Tyr Asn
 290 295 300

aaa ggc ctt tac ttg ttt aca gct tca aac aat tcc aaa aag ctt gag 960
 Lys Gly Leu Tyr Leu Phe Thr Ala Ser Asn Asn Ser Lys Lys Leu Glu
 305 310 315 320

gtt aac cta agc act gcc aag ggg ttg atg ttt gac gct aca gcc ata 1008
 Val Asn Leu Ser Thr Ala Lys Gly Leu Met Phe Asp Ala Thr Ala Ile
 325 330 335

gcc att aat gca gga gat ggg ctt gaa ttt ggt tca cct aat gca cca 1056
 Ala Ile Asn Ala Gly Asp Gly Leu Glu Phe Gly Ser Pro Asn Ala Pro
 340 345 350

aac aca aat ccc ctc aaa aca aaa att ggc cat ggc cta gaa ttt gat 1104
 Asn Thr Asn Pro Leu Lys Thr Lys Ile Gly His Gly Leu Glu Phe Asp
 355 360 365

tca aac aag gct atg gtt cct aaa cta gga act ggc ctt agt ttt gac 1152
 Ser Asn Lys Ala Met Val Pro Lys Leu Gly Thr Gly Leu Ser Phe Asp
 370 375 380

agc aca ggt gcc att aca gta gga aac aaa aat aat gat aag cta act 1200
 Ser Thr Gly Ala Ile Thr Val Gly Asn Lys Asn Asn Asp Lys Leu Thr
 385 390 395 400

ttg tgg acc aca cca gct cca tct cct aac tgt aga cta aat gca gag 1248
 Leu Trp Thr Thr Pro Ala Pro Ser Pro Asn Cys Arg Leu Asn Ala Glu
 405 410 415

aaa gat gct aaa ctc act ttg gtc tta aca aaa tgt ggc agt caa ata 1296
 Lys Asp Ala Lys Leu Thr Leu Val Leu Thr Lys Cys Gly Ser Gln Ile
 420 425 430

ctt gct aca gtt tca gtt ttg gct gtt aaa ggc agt ttg gct cca ata 1344
 Leu Ala Thr Val Ser Val Leu Ala Val Lys Gly Ser Leu Ala Pro Ile
 435 440 445

tct gga aca gtt caa agt gct cat ctt att ata aga ttt gac gaa aat 1392
 Ser Gly Thr Val Gln Ser Ala His Leu Ile Ile Arg Phe Asp Glu Asn
 450 455 460

gga gtg cta cta aac aat tcc ttc ctg gac cca gaa tat tgg aac ttt 1440
 Gly Val Leu Leu Asn Asn Ser Phe Leu Asp Pro Glu Tyr Trp Asn Phe
 465 470 475 480

aga aat gga gat ctt act gaa ggc aca gcc tat aca aac gct gtt gga 1488
 Arg Asn Gly Asp Leu Thr Glu Gly Thr Ala Tyr Thr Asn Ala Val Gly
 485 490 495

ttt atg cct aac cta tca gct tat cca aaa tct cac ggt aaa act gcc 1536
 Phe Met Pro Asn Leu Ser Ala Tyr Pro Lys Ser His Gly Lys Thr Ala
 500 505 510

aaa agt aac att gtc agt caa gtt tac tta aac gga gac aaa act aaa 1584
 Lys Ser Asn Ile Val Ser Gln Val Tyr Leu Asn Gly Asp Lys Thr Lys
 515 520 525

cct gta aca cta acc att aca cta aac ggt aca cag gaa aca gga aac 1632
 Pro Val Thr Leu Thr Ile Thr Leu Asn Gly Thr Gln Glu Thr Gly Asn
 530 535 540

gct aat ccc aac gct aac cca aat gca aat cct aat gcc aac ccc gac 1680
 Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asp
 545 550 555 560

aca act cca agt gca tac tct atg tca ttt tca tgg gac tgg tct ggc 1728
 Thr Thr Pro Ser Ala Tyr Ser Met Ser Phe Ser Trp Asp Trp Ser Gly
 565 570 575

cac aac tac att aat gaa ata ttt gcc aca tcc tct tac act ttt tca 1776
 His Asn Tyr Ile Asn Glu Ile Phe Ala Thr Ser Ser Tyr Thr Phe Ser
 580 585 590

tac att gcc caa gaa taa 1794
 Tyr Ile Ala Gln Glu
 595

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 <211> 684
 <212> DNA
 <213> Artificial Sequence

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 <223> P. yoelii CD4+ epitope modified pVII sequence

<220>
 <221> CDS
 <222> (1)..(681)

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 1 5 10 15

ttc cca agc aag atg ttt ggc ggg gcc aag aag cgc tcc gac caa cac	96
Phe Pro Ser Lys Met Phe Gly Gly Ala Lys Lys Arg Ser Asp Gln His	
20 25 30	
cca gtg cgc gtg cgc ggg cac tac cgc gcg ccc tgg ggc gcg cac aaa	144
Pro Val Arg Val Arg Gly His Tyr Arg Ala Pro Trp Gly Ala His Lys	
35 40 45	
cgc ggc cgc act ggg cgc acc acc gtc gat gac gcc atc gac gcg gtg	192
Arg Gly Arg Thr Gly Arg Thr Thr Val Asp Asp Ala Ile Asp Ala Val	
50 55 60	
gtg gag gag gcg cgc aac tac acg ccc acg ccg cca cca gtg tcc aca	240
Val Glu Glu Ala Arg Asn Tyr Thr Pro Thr Pro Pro Pro Val Ser Thr	
65 70 75 80	
gtg gac gcg gcc att cag acc gtg gtg cgc gga gcc cgg cgc tat gct	288
Val Asp Ala Ala Ile Gln Thr Val Val Arg Gly Ala Arg Arg Tyr Ala	
85 90 95	
aaa atg aag aga cgg cgg agg cgc gta gca cgt cgc cac cgc cgc cga	336
Lys Met Lys Arg Arg Arg Arg Arg Val Ala Arg Arg His Arg Arg Arg	
100 105 110	
ccc ggc act gcc gcc caa cgc gcg gcg gcc ctg ctt aac cgc gca	384
Pro Gly Thr Ala Ala Gln Arg Ala Ala Ala Leu Leu Asn Arg Ala	
115 120 125	
cgt cgc acc ggc cga cgg gcg gcc atg cgg gcc gct cga agg ctg gcc	432
Arg Arg Thr Gly Arg Arg Ala Ala Met Arg Ala Ala Arg Arg Leu Ala	
130 135 140	
gcg ggt att gtc act gtg ccc ccc agg tcc agg cga cga gcg gcc gcc	480
Ala Gly Ile Val Thr Val Pro Pro Arg Ser Arg Arg Arg Ala Ala Ala	
145 150 155 160	
gca gca gcc gcg gcc att agt gct atg act cag ggt cgc agg ggc aac	528
Ala Ala Ala Ala Ala Ile Ser Ala Met Thr Gln Gly Arg Arg Gly Asn	
165 170 175	
gtg tat tgg gtg cgc gac tcg gtt agc ggc ctg cgc gtg ccc gtg cgc	576
Val Tyr Trp Val Arg Asp Ser Val Ser Gly Leu Arg Val Pro Val Arg	
180 185 190	
acc cgc ccc ccg cgc aac gtg cgc acc cgc ccc ccg cgc aac tac aac	624
Thr Arg Pro Pro Arg Asn Val Arg Thr Arg Pro Pro Arg Asn Tyr Asn	
195 200 205	
agg aac atc gtg aac agg ctg ctg ggc gac gcc ctg aac ggc aag ccc	672
Arg Asn Ile Val Asn Arg Leu Leu Gly Asp Ala Leu Asn Gly Lys Pro	

210	215	220	
gag gag aag tag			684
Glu Glu Lys			
225			
<210> 27			
<211> 657			
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<223> P. falciparum CD4+ epitope modified pVII-1 sequence			
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<221> CDS			
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<400> 27			
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Met Ser Ile Leu Ile Ser Pro Ser Asn Asn Thr Gly Trp Gly Leu Arg			
1	5	10	15
ttc cca agc aag atg ttt ggc ggg gcc aag aag cgc tcc gac caa cac			96
Phe Pro Ser Lys Met Phe Gly Gly Ala Lys Lys Arg Ser Asp Gln His			
20	25	30	
cca gtg cgc gtg cgc ggg cac tac cgc gcg ccc tgg ggc gcg cac aaa			144
Pro Val Arg Val Arg Gly His Tyr Arg Ala Pro Trp Gly Ala His Lys			
35	40	45	
cgc ggc cgc act ggg cgc acc acc gtc gat gac gcc atc gac gcg gtg			192
Arg Gly Arg Thr Gly Arg Thr Val Val Asp Asp Ala Ile Asp Ala Val			
50	55	60	
gtg gag gag gcg cgc aac tac acg ccc acg ccg cca cca gtg tcc aca			240
Val Glu Glu Ala Arg Asn Tyr Thr Pro Thr Pro Pro Pro Val Ser Thr			
65	70	75	80
gtg gac gcg gcc att cag acc gtg gtg cgc gga gcc cgg cgc tat gct			288
Val Asp Ala Ala Ile Gln Thr Val Val Arg Gly Ala Arg Arg Tyr Ala			
85	90	95	
aaa atg aag aga cgg cgg agg cgc gta gca cgt cgc cac cgc cgc cga			336
Lys Met Lys Arg Arg Arg Arg Arg Val Ala Arg Arg His Arg Arg Arg			
100	105	110	
ccc ggc act gcc gcc caa cgc gcg gcg gcc ctg ctt aac cgc gca			384

Pro Gly Thr Ala Ala Gln Arg Ala Ala Ala Leu Leu Asn Arg Ala
115 120 125

cgt cgc acc ggc cga cgg gcg gcc atg cgg gcc gct cga agg ctg gcc 432
Arg Arg Thr Gly Arg Arg Ala Ala Met Arg Ala Ala Arg Arg Leu Ala
130 135 140

gcg ggt att gtc act gtg ccc ccc agg tcc agg cga cga gcg gcc gcc 480
Ala Gly Ile Val Thr Val Pro Pro Arg Ser Arg Arg Arg Ala Ala Ala
145 150 155 160

gca gca gcc gcg gcc att agt gct atg act cag ggt cgc agg ggc aac 528
Ala Ala Ala Ala Ala Ile Ser Ala Met Thr Gln Gly Arg Arg Gly Asn
165 170 175

gtg tat tgg gtg cgc gac tcg gtt agc ggc ctg cgc gtg ccc gtg cgc 576
Val Tyr Trp Val Arg Asp Ser Val Ser Gly Leu Arg Val Pro Val Arg
180 185 190

acc cgc ccc ccg cgc aac gaa tat ttg aac aag att caa aac tcc ctc 624
Thr Arg Pro Pro Arg Asn Glu Tyr Leu Asn Lys Ile Gln Asn Ser Leu
195 200 205

tca aca gaa tgg tct cct tgc agc gtg act tag 657
Ser Thr Glu Trp Ser Pro Cys Ser Val Thr
210 215

<210> 28
<211> 741
<212> DNA
<213> Artificial Sequence

<220>
<223> P. falciparum CD4+ epitope modified pVII-2 sequence

<220>
<221> CDS
<222> (1)..(738)

<400> 28
atg tcc atc ctt ata tcg ccc agc aat aac aca ggc tgg ggc ctg cgc 48
Met Ser Ile Leu Ile Ser Pro Ser Asn Asn Thr Gly Trp Gly Leu Arg
1 5 10 15

ttc cca agc aag atg ttt ggc ggg gcc aag aag cgc tcc gac caa cac 96
Phe Pro Ser Lys Met Phe Gly Gly Ala Lys Lys Arg Ser Asp Gln His
20 25 30

cca gtg cgc gtg cgc ggg cac tac cgc gcg ccc tgg ggc gcg cac aaa 144
Pro Val Arg Val Arg Gly His Tyr Arg Ala Pro Trp Gly Ala His Lys
35 40 45

cgc ggc cgc act ggg cgc acc acc gtc gat gac gcc atc gac gcg gtg 192
Arg Gly Arg Thr Gly Arg Thr Thr Val Asp Asp Ala Ile Asp Ala Val
50 55 60

gtg gag gag gcg cgc aac tac acg ccc acg ccg cca cca gtg tcc aca 240
Val Glu Glu Ala Arg Asn Tyr Thr Pro Thr Pro Pro Val Ser Thr
65 70 75 80

gtg gac gcg gcc att cag acc gtg gtg cgc gga gcc gaa tat ttg aac 288
Val Asp Ala Ala Ile Gln Thr Val Val Arg Gly Ala Glu Tyr Leu Asn
85 90 95

aag att caa aac tcc ctc tca aca gaa tgg tct cct tgc agc gtg act 336
Lys Ile Gln Asn Ser Leu Ser Thr Glu Trp Ser Pro Cys Ser Val Thr
100 105 110

cgg cgc tat gct aaa atg aag aga cgg cgg agg cgc gta gca cgt cgc 384
Arg Arg Tyr Ala Lys Met Lys Arg Arg Arg Arg Arg Val Ala Arg Arg
115 120 125

cac cgc cgc cga ccc ggc act gcc gcc caa cgc gcg gcg gcc ctg 432
His Arg Arg Arg Pro Gly Thr Ala Ala Gln Arg Ala Ala Ala Leu
130 135 140

ctt aac cgc gca cgt cgc acc ggc cga cgg gcg gcc atg cgg gcc gct 480
Leu Asn Arg Ala Arg Arg Thr Gly Arg Arg Ala Ala Met Arg Ala Ala
145 150 155 160

cga agg ctg gcc gcg ggt att gtc act gtg ccc ccc agg tcc agg cga 528
Arg Arg Leu Ala Ala Gly Ile Val Thr Val Pro Pro Arg Ser Arg Arg
165 170 175

cga gcg gcc gcc gca gca gcc gcg gcc att agt gct atg act cag ggt 576
Arg Ala Ala Ala Ala Ala Ala Ala Ile Ser Ala Met Thr Gln Gly
180 185 190

cgc agg ggc aac gtg tat tgg gtg cgc gac tcg gtt agc ggc ctg cgc 624
Arg Arg Gly Asn Val Tyr Trp Val Arg Asp Ser Val Ser Gly Leu Arg
195 200 205

gtg ccc gtg cgc acc cgc ccc ccg cgc aac gtg cgc acc cgc ccc ccg 672
Val Pro Val Arg Thr Arg Pro Pro Arg Asn Val Arg Thr Arg Pro Pro
210 215 220

cgc aac tac aac agg aac atc gtg aac agg ctg ctg ggc gac gcc ctg 720
Arg Asn Tyr Asn Arg Asn Ile Val Asn Arg Leu Leu Gly Asp Ala Leu
225 230 235 240

acc cgc ccc ccg cgc aac tag 741
 Thr Arg Pro Pro Arg Asn
 245

<210> 29
 <211> 681
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> P. falciparum CD4+ epitope modified PVII-3 sequence

<220>
 <221> CDS
 <222> (1)..(678)

<400> 29
 atg tcc atc ctt ata tcg ccc agc aat aac aca ggc tgg ggc ctg cgc 48
 Met Ser Ile Leu Ile Ser Pro Ser Asn Asn Thr Gly Trp Gly Leu Arg
 1 5 10 15
 ttc cca agc aag atg ttt ggc ggg gcc aag aag cgc tcc gac caa cac 96
 Phe Pro Ser Lys Met Phe Gly Gly Ala Lys Lys Arg Ser Asp Gln His
 20 25 30
 cca gtg cgc gtg cgc ggg cac tac cgc gcg ccc tgg ggc gcg cac aaa 144
 Pro Val Arg Val Arg Gly His Tyr Arg Ala Pro Trp Gly Ala His Lys
 35 40 45
 cgc ggc cgc act ggg cgc acc acc gtc gat gac gcc atc gac gcg gtg 192
 Arg Gly Arg Thr Gly Arg Thr Thr Val Asp Asp Ala Ile Asp Ala Val
 50 55 60
 gtg gag gag gcg cgc aac tac acg ccc acg ccg cca cca gtg tcc aca 240
 Val Glu Glu Ala Arg Asn Tyr Thr Pro Thr Pro Pro Pro Val Ser Thr
 65 70 75 80
 gtg gac gcg gcc att cag acc gtg gtg cgc gga gcc cgg cgc tat gct 288
 Val Asp Ala Ala Ile Gln Thr Val Val Arg Gly Ala Arg Arg Tyr Ala
 85 90 95
 aaa atg aag aga cgg cgg agg cgc gta gca cgt cgc cac cgc cgc cga 336
 Lys Met Lys Arg Arg Arg Arg Arg Val Ala Arg Arg His Arg Arg Arg
 100 105 110
 ccc ggc act gcc gcc caa cgc gcg gcg gcc ctg ctt aac cgc gca 384
 Pro Gly Thr Ala Ala Gln Arg Ala Ala Ala Ala Leu Leu Asn Arg Ala
 115 120 125

cg t cgc acc ggc cga cgg gcg gcc atg cgg gcc gct gaa tat ttg aac 432
 Arg Arg Thr Gly Arg Arg Ala Ala Met Arg Ala Ala Glu Tyr Leu Asn
 130 135 140

aag att caa aac tcc ctc tca aca gaa tgg tct cct tgc agc gtg act 480
 Lys Ile Gln Asn Ser Leu Ser Thr Glu Trp Ser Pro Cys Ser Val Thr
 145 150 155 160

cga agg ctg gcc gcg ggt att gtc act gtg ccc ccc agg tcc agg cga 528
 Arg Arg Leu Ala Ala Gly Ile Val Thr Val Pro Pro Arg Ser Arg Arg
 165 170 175

cga gcg gcc gcc gca gca gcc gcg gcc att agt gct atg act cag ggt 576
 Arg Ala Ala Ala Ala Ala Ala Ala Ala Ile Ser Ala Met Thr Gln Gly
 180 185 190

cgc agg ggc aac gtg tat tgg gtg cgc gac tcg gtt agc ggc ctg cgc 624
 Arg Arg Gly Asn Val Tyr Trp Val Arg Asp Ser Val Ser Gly Leu Arg
 195 200 205

gtg ccc gtg cgc acc cgc ccc ccg cgc aac gtg cgc acc cgc ccc ccg 672
 Val Pro Val Arg Thr Arg Pro Pro Arg Asn Val Arg Thr Arg Pro Pro
 210 215 220

cgc aac tag 681
 Arg Asn
 225

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

<220>
 <223> Synthetic Construct

<400> 30

Met Lys Lys Cys Thr Ile Leu Val Val Ala Ser Leu Leu Leu Val Asp
 1 5 10 15

Ser Leu Leu Pro Gly Tyr Gly Gln Asn Lys Ser Val Gln Ala Gln Arg
 20 25 30

Asn Leu Asn Glu Leu Cys Tyr Asn Glu Glu Asn Asp Asn Lys Leu Tyr
 35 40 45

His Val Leu Asn Ser Lys Asn Gly Lys Ile Tyr Asn Arg Asn Ile Val
50 55 60

Asn Arg Leu Leu Gly Asp Ala Leu Asn Gly Lys Pro Glu Glu Lys Lys
65 70 75 80

Asp Asp Pro Pro Lys Asp Asp Asn Lys Asp Asp Leu Pro Lys Glu Glu
85 90 95

Lys Lys Asp Asp Leu Pro Lys Glu Glu Lys Lys Asp Asp Pro Pro Lys
100 105 110

Asp Pro Lys Lys Asp Asp Pro Pro Lys Glu Ala Gln Asn Lys Leu Asn
115 120 125

Gln Pro Val Val Ala Asp Glu Asn Val Asp Gln Gly Pro Gly Ala Pro
130 135 140

Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly
145 150 155 160

Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly
165 170 175

Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro
180 185 190

Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly
195 200 205

Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly
210 215 220

Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro
225 230 235 240

Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Glu Pro Pro

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

Gly

<210> 31
<211> 943
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 31

Met Ala Thr Pro Ser Met Met Pro Gln Trp Ser Tyr Met His Ile Ser
1 5 10 15

Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala

20 25 30

Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
50 55 60

Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

Ala Pro Asn Pro Cys Glu Trp Asp Glu Gln Gly Pro Gly Ala Pro Gln
130 135 140

Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Lys Thr His Val Phe
145 150 155 160

Gly Gln Ala Pro Tyr Ser Gly Ile Asn Ile Thr Lys Glu Gly Ile Gln
165 170 175

Ile Gly Val Glu Gly Gln Thr Pro Lys Tyr Ala Asp Lys Thr Phe Gln
180 185 190

Pro Glu Pro Gln Ile Gly Glu Ser Gln Trp Tyr Glu Thr Glu Ile Asn
195 200 205

His Ala Ala Gly Arg Val Leu Lys Lys Thr Thr Pro Met Lys Pro Cys
210 215 220

Tyr Gly Ser Tyr Ala Lys Pro Thr Asn Glu Asn Gly Gly Gln Gly Ile
225 230 235 240

Leu Val Lys Gln Gln Asn Gly Lys Leu Glu Ser Gln Val Glu Met Gln
 245 250 255

Phe Phe Ser Thr Thr Glu Ala Ala Ala Gly Asn Gly Asp Asn Leu Thr
 260 265 270

Pro Lys Val Val Leu Tyr Ser Glu Asp Val Asp Ile Glu Thr Pro Asp
 275 280 285

Thr His Ile Ser Tyr Met Pro Thr Ile Lys Glu Gly Asn Ser Arg Glu
 290 295 300

Leu Met Gly Gln Gln Ser Met Pro Asn Arg Pro Asn Tyr Ile Ala Phe
305 310 315 320

Arg Asp Asn Phe Ile Gly Leu Met Tyr Tyr Asn Ser Thr Gly Asn Met
 325 330 335

Gly Val Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala Val Val Asp Leu
 340 345 350

Gln Asp Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu Leu Asp Ser Ile
 355 360 365

Gly Asp Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Ala Val Asp Ser
 370 375 380

Tyr Asp Pro Asp Val Arg Ile Ile Glu Asn His Gly Thr Glu Asp Glu
385 390 395 400

Leu Pro Asn Tyr Cys Phe Pro Leu Gly Gly Val Ile Asn Thr Glu Thr
 405 410 415

Leu Thr Lys Val Lys Pro Lys Thr Gly Gln Glu Asn Gly Trp Glu Lys
 420 425 430

Asp Ala Thr Glu Phe Ser Asp Lys Asn Glu Ile Arg Val Gly Asn Asn
435 440 445

Phe Ala Met Glu Ile Asn Leu Asn Ala Asn Leu Trp Arg Asn Phe Leu
450 455 460

Tyr Ser Asn Ile Ala Leu Tyr Leu Pro Asp Lys Leu Lys Tyr Ser Pro
465 470 475 480

Ser Asn Val Lys Ile Ser Asp Asn Pro Asn Thr Tyr Asp Tyr Met Asn
485 490 495

Lys Arg Val Val Ala Pro Gly Leu Val Asp Cys Tyr Ile Asn Leu Gly
500 505 510

Ala Arg Trp Ser Leu Asp Tyr Met Asp Asn Val Asn Pro Phe Asn His
515 520 525

His Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly
530 535 540

Arg Tyr Val Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe Ala Ile
545 550 555 560

Lys Asn Leu Leu Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe
565 570 575

Arg Lys Asp Val Asn Met Val Leu Gln Ser Ser Leu Gly Asn Asp Leu
580 585 590

Arg Val Asp Gly Ala Ser Ile Lys Phe Asp Ser Ile Cys Leu Tyr Ala
595 600 605

Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu Ala Met
610 615 620

Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala
625 630 635 640

Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val Pro Ile
645 650 655

Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp Ala Phe Thr
660 665 670

Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly Tyr Asp Pro
675 680 685

Tyr Tyr Thr Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr
690 695 700

Leu Asn His Thr Phe Lys Lys Val Ala Ile Thr Phe Asp Ser Ser Val
705 710 715 720

Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile
725 730 735

Lys Arg Ser Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys Asn Met
740 745 750

Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala Asn Tyr Asn Ile Gly
755 760 765

Tyr Gln Gly Phe Tyr Ile Pro Glu Ser Tyr Lys Asp Arg Met Tyr Ser
770 775 780

Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp Asp Thr
785 790 795 800

Lys Tyr Lys Asp Tyr Gln Gln Val Gly Ile Leu His Gln His Asn Asn
805 810 815

Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Glu Gly Gln Ala
820 825 830

Tyr Pro Ala Asn Phe Pro Tyr Pro Leu Ile Gly Lys Thr Ala Val Asp

835	840	845
Ser Ile Thr Gln Lys Lys Phe Leu Cys Asp Arg Thr Leu Trp Arg Ile		
850	855	860
Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp Leu Gly		
865	870	875
		880
Gln Asn Leu Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met Thr Phe		
885	890	895
Glu Val Asp Pro Met Asp Glu Pro Thr Leu Leu Tyr Val Leu Phe Glu		
900	905	910
Val Phe Asp Val Val Arg Val His Gln Pro His Arg Gly Val Ile Glu		
915	920	925
Thr Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala Thr Thr		
930	935	940

<210> 32
 <211> 929
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Synthetic Construct

<400> 32

Met Ala Thr Pro Ser Met Met Pro Gln Trp Ser Tyr Met His Ile Ser
1 5 10 15

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

Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
50 55 60

Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

Ala Pro Asn Pro Cys Glu Trp Asp Glu Gln Gly Pro Gly Ala Pro Gln
130 135 140

Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala
145 150 155 160

Pro Lys Thr His Val Phe Gly Gln Ala Pro Tyr Ser Gly Ile Asn Ile
165 170 175

Thr Lys Glu Gly Ile Gln Ile Gly Val Glu Gly Gln Thr Pro Lys Tyr
180 185 190

Ala Asp Lys Thr Phe Gln Pro Glu Pro Gln Ile Gly Glu Ser Gln Trp
195 200 205

Tyr Glu Thr Glu Ile Asn His Ala Ala Gly Arg Val Leu Lys Lys Thr
210 215 220

Thr Pro Met Lys Pro Cys Tyr Gly Ser Tyr Ala Lys Pro Thr Asn Glu
225 230 235 240

Asn Gly Gly Gln Gly Ile Leu Val Lys Gln Gln Asn Gly Lys Leu Glu
245 250 255

Ser Gln Val Glu Met Gln Phe Phe Ser Thr Thr Glu Ala Ala Ala Gly
260 265 270

Asn Gly Asp Asn Leu Thr Pro Lys Val Val Leu Tyr Ser Glu Asp Val
275 280 285

Asp Ile Glu Thr Pro Asp Thr His Ile Ser Tyr Met Pro Thr Ile Lys
290 295 300

Glu Gly Asn Ser Arg Glu Leu Met Gly Gln Gln Ser Met Pro Asn Arg
305 310 315 320

Pro Asn Tyr Ile Ala Phe Arg Asp Asn Phe Ile Gly Leu Met Tyr Tyr
325 330 335

Asn Ser Thr Gly Asn Met Gly Val Leu Ala Gly Gln Ala Ser Gln Leu
340 345 350

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

Leu Leu Leu Asp Ser Ile Gly Asp Arg Thr Arg Tyr Phe Ser Met Trp
370 375 380

Asn Gln Leu Pro Asn Tyr Cys Phe Pro Leu Gly Gly Val Ile Asn Thr
385 390 395 400

Glu Thr Leu Thr Lys Val Lys Pro Lys Thr Gly Gln Glu Asn Gly Trp
405 410 415

Glu Lys Asp Ala Thr Glu Phe Ser Asp Lys Asn Glu Ile Arg Val Gly
420 425 430

Asn Asn Phe Ala Met Glu Ile Asn Leu Asn Ala Asn Leu Trp Arg Asn
435 440 445

Phe Leu Tyr Ser Asn Ile Ala Leu Tyr Leu Pro Asp Lys Leu Lys Tyr
450 455 460

Ser Pro Ser Asn Val Lys Ile Ser Asp Asn Pro Asn Thr Tyr Asp Tyr
465 470 475 480

Met Asn Lys Arg Val Val Ala Pro Gly Leu Val Asp Cys Tyr Ile Asn
 485 490 495

Leu Gly Ala Arg Trp Ser Leu Asp Tyr Met Asp Asn Val Asn Pro Phe
 500 505 510

Asn His His Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly
 515 520 525

Asn Gly Arg Tyr Val Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe
 530 535 540

Ala Ile Lys Asn Leu Leu Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp
545 550 555 560

Asn Phe Arg Lys Asp Val Asn Met Val Leu Gln Ser Ser Leu Gly Asn
 565 570 575

Asp Leu Arg Val Asp Gly Ala Ser Ile Lys Phe Asp Ser Ile Cys Leu
 580 585 590

Tyr Ala Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu
 595 600 605

Ala Met Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu
 610 615 620

Ser Ala Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val
625 630 635 640

Pro Ile Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp Ala
 645 650 655

Phe Thr Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly Tyr

660 665 670

Asp Pro Tyr Tyr Thr Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr
675 680 685

Phe Tyr Leu Asn His Thr Phe Lys Lys Val Ala Ile Thr Phe Asp Ser
690 695 700

Ser Val Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe
705 710 715 720

Glu Ile Lys Arg Ser Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys
725 730 735

Asn Met Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala Asn Tyr Asn
740 745 750

Ile Gly Tyr Gln Gly Phe Tyr Ile Pro Glu Ser Tyr Lys Asp Arg Met
755 760 765

Tyr Ser Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp
770 775 780

Asp Thr Lys Tyr Lys Asp Tyr Gln Gln Val Gly Ile Leu His Gln His
785 790 795 800

Asn Asn Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Glu Gly
805 810 815

Gln Ala Tyr Pro Ala Asn Phe Pro Tyr Pro Leu Ile Gly Lys Thr Ala
820 825 830

Val Asp Ser Ile Thr Gln Lys Lys Phe Leu Cys Asp Arg Thr Leu Trp
835 840 845

Arg Ile Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp
850 855 860

Leu Gly Gln Asn Leu Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met
865 870 875 880

Thr Phe Glu Val Asp Pro Met Asp Glu Pro Thr Leu Leu Tyr Val Leu
 885 890 895

Phe Glu Val Phe Asp Val Val Arg Val His Gln Pro His Arg Gly Val
 900 905 910

Ile Glu Thr Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala Thr
 915 920 925

Thr

<210> 33

<211> 935

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Construct

<400> 33

Met Ala Thr Pro Ser Met Met Pro Gln Trp Ser Tyr Met His Ile Ser
1 5 10 15

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

Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
 35 40 45

Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
 50 55 60

Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

Ala Pro Asn Pro Cys Glu Trp Asp Glu Gln Gly Pro Gly Ala Pro Gln
130 135 140

Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala
145 150 155 160

Pro Gln Gly Pro Gly Ala Pro Lys Thr His Val Phe Gly Gln Ala Pro
165 170 175

Tyr Ser Gly Ile Asn Ile Thr Lys Glu Gly Ile Gln Ile Gly Val Glu
180 185 190

Gly Gln Thr Pro Lys Tyr Ala Asp Lys Thr Phe Gln Pro Glu Pro Gln
195 200 205

Ile Gly Glu Ser Gln Trp Tyr Glu Thr Glu Ile Asn His Ala Ala Gly
210 215 220

Arg Val Leu Lys Lys Thr Thr Pro Met Lys Pro Cys Tyr Gly Ser Tyr
225 230 235 240

Ala Lys Pro Thr Asn Glu Asn Gly Gly Gln Gly Ile Leu Val Lys Gln
245 250 255

Gln Asn Gly Lys Leu Glu Ser Gln Val Glu Met Gln Phe Phe Ser Thr
260 265 270

Thr Glu Ala Ala Ala Gly Asn Gly Asp Asn Leu Thr Pro Lys Val Val
275 280 285

Leu Tyr Ser Glu Asp Val Asp Ile Glu Thr Pro Asp Thr His Ile Ser
290 295 300

Tyr Met Pro Thr Ile Lys Glu Gly Asn Ser Arg Glu Leu Met Gly Gln
305 310 315 320

Gln Ser Met Pro Asn Arg Pro Asn Tyr Ile Ala Phe Arg Asp Asn Phe
325 330 335

Ile Gly Leu Met Tyr Tyr Asn Ser Thr Gly Asn Met Gly Val Leu Ala
340 345 350

Gly Gln Ala Ser Gln Leu Asn Ala Val Val Asp Leu Gln Asp Arg Asn
355 360 365

Thr Glu Leu Ser Tyr Gln Leu Leu Leu Asp Ser Ile Gly Asp Arg Thr
370 375 380

Arg Tyr Phe Ser Met Trp Asn Gln Leu Pro Asn Tyr Cys Phe Pro Leu
385 390 395 400

Gly Gly Val Ile Asn Thr Glu Thr Leu Thr Lys Val Lys Pro Lys Thr
405 410 415

Gly Gln Glu Asn Gly Trp Glu Lys Asp Ala Thr Glu Phe Ser Asp Lys
420 425 430

Asn Glu Ile Arg Val Gly Asn Asn Phe Ala Met Glu Ile Asn Leu Asn
435 440 445

Ala Asn Leu Trp Arg Asn Phe Leu Tyr Ser Asn Ile Ala Leu Tyr Leu
450 455 460

Pro Asp Lys Leu Lys Tyr Ser Pro Ser Asn Val Lys Ile Ser Asp Asn
465 470 475 480

Pro Asn Thr Tyr Asp Tyr Met Asn Lys Arg Val Val Ala Pro Gly Leu

485	490	495
Val Asp Cys Tyr Ile Asn Leu Gly Ala Arg Trp Ser Leu Asp Tyr Met		
500	505	510
Asp Asn Val Asn Pro Phe Asn His His Arg Asn Ala Gly Leu Arg Tyr		
515	520	525
Arg Ser Met Leu Leu Gly Asn Gly Arg Tyr Val Pro Phe His Ile Gln		
530	535	540
Val Pro Gln Lys Phe Phe Ala Ile Lys Asn Leu Leu Leu Leu Pro Gly		
545	550	560
Ser Tyr Thr Tyr Glu Trp Asn Phe Arg Lys Asp Val Asn Met Val Leu		
565	570	575
Gln Ser Ser Leu Gly Asn Asp Leu Arg Val Asp Gly Ala Ser Ile Lys		
580	585	590
Phe Asp Ser Ile Cys Leu Tyr Ala Thr Phe Phe Pro Met Ala His Asn		
595	600	605
Thr Ala Ser Thr Leu Glu Ala Met Leu Arg Asn Asp Thr Asn Asp Gln		
610	615	620
Ser Phe Asn Asp Tyr Leu Ser Ala Ala Asn Met Leu Tyr Pro Ile Pro		
625	630	640
Ala Asn Ala Thr Asn Val Pro Ile Ser Ile Pro Ser Arg Asn Trp Ala		
645	650	655
Ala Phe Arg Gly Trp Ala Phe Thr Arg Leu Lys Thr Lys Glu Thr Pro		
660	665	670
Ser Leu Gly Ser Gly Tyr Asp Pro Tyr Tyr Thr Tyr Ser Gly Ser Ile		
675	680	685

Pro Tyr Leu Asp Gly Thr Phe Tyr Leu Asn His Thr Phe Lys Lys Val
690 695 700

Ala Ile Thr Phe Asp Ser Ser Val Ser Trp Pro Gly Asn Asp Arg Leu
705 710 715 720

Leu Thr Pro Asn Glu Phe Glu Ile Lys Arg Ser Val Asp Gly Glu Gly
725 730 735

Tyr Asn Val Ala Gln Cys Asn Met Thr Lys Asp Trp Phe Leu Val Gln
740 745 750

Met Leu Ala Asn Tyr Asn Ile Gly Tyr Gln Gly Phe Tyr Ile Pro Glu
755 760 765

Ser Tyr Lys Asp Arg Met Tyr Ser Phe Phe Arg Asn Phe Gln Pro Met
770 775 780

Ser Arg Gln Val Val Asp Asp Thr Lys Tyr Lys Asp Tyr Gln Gln Val
785 790 795 800

Gly Ile Leu His Gln His Asn Asn Ser Gly Phe Val Gly Tyr Leu Ala
805 810 815

Pro Thr Met Arg Glu Gly Gln Ala Tyr Pro Ala Asn Phe Pro Tyr Pro
820 825 830

Leu Ile Gly Lys Thr Ala Val Asp Ser Ile Thr Gln Lys Lys Phe Leu
835 840 845

Cys Asp Arg Thr Leu Trp Arg Ile Pro Phe Ser Ser Asn Phe Met Ser
850 855 860

Met Gly Ala Leu Thr Asp Leu Gly Gln Asn Leu Leu Tyr Ala Asn Ser
865 870 875 880

Ala His Ala Leu Asp Met Thr Phe Glu Val Asp Pro Met Asp Glu Pro
885 890 895

Thr Leu Leu Tyr Val Leu Phe Glu Val Phe Asp Val Val Arg Val His
900 905 910

Gln Pro His Arg Gly Val Ile Glu Thr Val Tyr Leu Arg Thr Pro Phe
915 920 925

Ser Ala Gly Asn Ala Thr Thr
930 935

<210> 34

<211> 941

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Construct

<400> 34

Met Ala Thr Pro Ser Met Met Pro Gln Trp Ser Tyr Met His Ile Ser
1 5 10 15

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

Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
50 55 60

Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

Ala Pro Asn Pro Cys Glu Trp Asp Glu Gln Gly Pro Gly Ala Pro Gln
130 135 140

Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala
145 150 155 160

Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Lys Thr His
165 170 175

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

Ile Gln Ile Gly Val Glu Gly Gln Thr Pro Lys Tyr Ala Asp Lys Thr
195 200 205

Phe Gln Pro Glu Pro Gln Ile Gly Glu Ser Gln Trp Tyr Glu Thr Glu
210 215 220

Ile Asn His Ala Ala Gly Arg Val Leu Lys Lys Thr Thr Pro Met Lys
225 230 235 240

Pro Cys Tyr Gly Ser Tyr Ala Lys Pro Thr Asn Glu Asn Gly Gly Gln
245 250 255

Gly Ile Leu Val Lys Gln Gln Asn Gly Lys Leu Glu Ser Gln Val Glu
260 265 270

Met Gln Phe Phe Ser Thr Thr Glu Ala Ala Ala Gly Asn Gly Asp Asn
275 280 285

Leu Thr Pro Lys Val Val Leu Tyr Ser Glu Asp Val Asp Ile Glu Thr
290 295 300

Pro Asp Thr His Ile Ser Tyr Met Pro Thr Ile Lys Glu Gly Asn Ser

305	310	315	320
Arg Glu Leu Met Gly Gln Gln Ser Met Pro Asn Arg Pro Asn Tyr Ile			
	325	330	335
Ala Phe Arg Asp Asn Phe Ile Gly Leu Met Tyr Tyr Asn Ser Thr Gly			
	340	345	350
Asn Met Gly Val Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala Val Val			
	355	360	365
Asp Leu Gln Asp Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu Leu Asp			
	370	375	380
Ser Ile Gly Asp Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Leu Pro			
	385	390	395
			400
Asn Tyr Cys Phe Pro Leu Gly Gly Val Ile Asn Thr Glu Thr Leu Thr			
	405	410	415
Lys Val Lys Pro Lys Thr Gly Gln Glu Asn Gly Trp Glu Lys Asp Ala			
	420	425	430
Thr Glu Phe Ser Asp Lys Asn Glu Ile Arg Val Gly Asn Asn Phe Ala			
	435	440	445
Met Glu Ile Asn Leu Asn Ala Asn Leu Trp Arg Asn Phe Leu Tyr Ser			
	450	455	460
Asn Ile Ala Leu Tyr Leu Pro Asp Lys Leu Lys Tyr Ser Pro Ser Asn			
	465	470	475
			480
Val Lys Ile Ser Asp Asn Pro Asn Thr Tyr Asp Tyr Met Asn Lys Arg			
	485	490	495
Val Val Ala Pro Gly Leu Val Asp Cys Tyr Ile Asn Leu Gly Ala Arg			
	500	505	510

Trp Ser Leu Asp Tyr Met Asp Asn Val Asn Pro Phe Asn His His Arg
515 520 525

Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly Arg Tyr
530 535 540

Val Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe Ala Ile Lys Asn
545 550 555 560

Leu Leu Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe Arg Lys
565 570 575

Asp Val Asn Met Val Leu Gln Ser Ser Leu Gly Asn Asp Leu Arg Val
580 585 590

Asp Gly Ala Ser Ile Lys Phe Asp Ser Ile Cys Leu Tyr Ala Thr Phe
595 600 605

Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu Ala Met Leu Arg
610 615 620

Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala Ala Asn
625 630 635 640

Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val Pro Ile Ser Ile
645 650 655

Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp Ala Phe Thr Arg Leu
660 665 670

Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly Tyr Asp Pro Tyr Tyr
675 680 685

Thr Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr Leu Asn
690 695 700

His Thr Phe Lys Lys Val Ala Ile Thr Phe Asp Ser Ser Val Ser Trp
705 710 715 720

Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile Lys Arg
725 730 735

Ser Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys Asn Met Thr Lys
740 745 750

Asp Trp Phe Leu Val Gln Met Leu Ala Asn Tyr Asn Ile Gly Tyr Gln
755 760 765

Gly Phe Tyr Ile Pro Glu Ser Tyr Lys Asp Arg Met Tyr Ser Phe Phe
770 775 780

Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp Asp Thr Lys Tyr
785 790 795 800

Lys Asp Tyr Gln Gln Val Gly Ile Leu His Gln His Asn Asn Ser Gly
805 810 815

Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Glu Gly Gln Ala Tyr Pro
820 825 830

Ala Asn Phe Pro Tyr Pro Leu Ile Gly Lys Thr Ala Val Asp Ser Ile
835 840 845

Thr Gln Lys Lys Phe Leu Cys Asp Arg Thr Leu Trp Arg Ile Pro Phe
850 855 860

Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp Leu Gly Gln Asn
865 870 875 880

Leu Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met Thr Phe Glu Val
885 890 895

Asp Pro Met Asp Glu Pro Thr Leu Leu Tyr Val Leu Phe Glu Val Phe
900 905 910

Asp Val Val Arg Val His Gln Pro His Arg Gly Val Ile Glu Thr Val
915 920 925

Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala Thr Thr
930 935 940

<210> 35
<211> 947
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 35

Met Ala Thr Pro Ser Met Met Pro Gln Trp Ser Tyr Met His Ile Ser
1 5 10 15

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

Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
50 55 60

Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

Ala Pro Asn Pro Cys Glu Trp Asp Glu Gln Gly Pro Gly Ala Pro Gln
130 135 140

Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala
145 150 155 160

Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro
165 170 175

Gly Ala Pro Lys Thr His Val Phe Gly Gln Ala Pro Tyr Ser Gly Ile
180 185 190

Asn Ile Thr Lys Glu Gly Ile Gln Ile Gly Val Glu Gly Gln Thr Pro
195 200 205

Lys Tyr Ala Asp Lys Thr Phe Gln Pro Glu Pro Gln Ile Gly Glu Ser
210 215 220

Gln Trp Tyr Glu Thr Glu Ile Asn His Ala Ala Gly Arg Val Leu Lys
225 230 235 240

Lys Thr Thr Pro Met Lys Pro Cys Tyr Gly Ser Tyr Ala Lys Pro Thr
245 250 255

Asn Glu Asn Gly Gly Gln Gly Ile Leu Val Lys Gln Gln Asn Gly Lys
260 265 270

Leu Glu Ser Gln Val Glu Met Gln Phe Phe Ser Thr Thr Glu Ala Ala
275 280 285

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

Asp Val Asp Ile Glu Thr Pro Asp Thr His Ile Ser Tyr Met Pro Thr
305 310 315 320

Ile Lys Glu Gly Asn Ser Arg Glu Leu Met Gly Gln Gln Ser Met Pro
325 330 335

Asn Arg Pro Asn Tyr Ile Ala Phe Arg Asp Asn Phe Ile Gly Leu Met
340 345 350

Tyr Tyr Asn Ser Thr Gly Asn Met Gly Val Leu Ala Gly Gln Ala Ser
355 360 365

Gln Leu Asn Ala Val Val Asp Leu Gln Asp Arg Asn Thr Glu Leu Ser
370 375 380

Tyr Gln Leu Leu Leu Asp Ser Ile Gly Asp Arg Thr Arg Tyr Phe Ser
385 390 395 400

Met Trp Asn Gln Leu Pro Asn Tyr Cys Phe Pro Leu Gly Gly Val Ile
405 410 415

Asn Thr Glu Thr Leu Thr Lys Val Lys Pro Lys Thr Gly Gln Glu Asn
420 425 430

Gly Trp Glu Lys Asp Ala Thr Glu Phe Ser Asp Lys Asn Glu Ile Arg
435 440 445

Val Gly Asn Asn Phe Ala Met Glu Ile Asn Leu Asn Ala Asn Leu Trp
450 455 460

Arg Asn Phe Leu Tyr Ser Asn Ile Ala Leu Tyr Leu Pro Asp Lys Leu
465 470 475 480

Lys Tyr Ser Pro Ser Asn Val Lys Ile Ser Asp Asn Pro Asn Thr Tyr
485 490 495

Asp Tyr Met Asn Lys Arg Val Val Ala Pro Gly Leu Val Asp Cys Tyr
500 505 510

Ile Asn Leu Gly Ala Arg Trp Ser Leu Asp Tyr Met Asp Asn Val Asn
515 520 525

Pro Phe Asn His His Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu
530 535 540

Leu Gly Asn Gly Arg Tyr Val Pro Phe His Ile Gln Val Pro Gln Lys
545 550 555 560

Phe Phe Ala Ile Lys Asn Leu Leu Leu Leu Pro Gly Ser Tyr Thr Tyr
 565 570 575

Glu Trp Asn Phe Arg Lys Asp Val Asn Met Val Leu Gln Ser Ser Leu
 580 585 590

Gly Asn Asp Leu Arg Val Asp Gly Ala Ser Ile Lys Phe Asp Ser Ile
 595 600 605

Cys Leu Tyr Ala Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr
 610 615 620

Leu Glu Ala Met Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp
625 630 635 640

Tyr Leu Ser Ala Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr
 645 650 655

Asn Val Pro Ile Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly
 660 665 670

Trp Ala Phe Thr Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser
 675 680 685

Gly Tyr Asp Pro Tyr Tyr Thr Tyr Ser Gly Ser Ile Pro Tyr Leu Asp
 690 695 700

Gly Thr Phe Tyr Leu Asn His Thr Phe Lys Lys Val Ala Ile Thr Phe
705 710 715 720

Asp Ser Ser Val Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn
 725 730 735

Glu Phe Glu Ile Lys Arg Ser Val Asp Gly Glu Gly Tyr Asn Val Ala

740 745 750

Gln Cys Asn Met Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala Asn
755 760 765

Tyr Asn Ile Gly Tyr Gln Gly Phe Tyr Ile Pro Glu Ser Tyr Lys Asp
770 775 780

Arg Met Tyr Ser Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val
785 790 795 800

Val Asp Asp Thr Lys Tyr Lys Asp Tyr Gln Gln Val Gly Ile Leu His
805 810 815

Gln His Asn Asn Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg
820 825 830

Glu Gly Gln Ala Tyr Pro Ala Asn Phe Pro Tyr Pro Leu Ile Gly Lys
835 840 845

Thr Ala Val Asp Ser Ile Thr Gln Lys Lys Phe Leu Cys Asp Arg Thr
850 855 860

Leu Trp Arg Ile Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu
865 870 875 880

Thr Asp Leu Gly Gln Asn Leu Leu Tyr Ala Asn Ser Ala His Ala Leu
885 890 895

Asp Met Thr Phe Glu Val Asp Pro Met Asp Glu Pro Thr Leu Leu Tyr
900 905 910

Val Leu Phe Glu Val Phe Asp Val Val Arg Val His Gln Pro His Arg
915 920 925

Gly Val Ile Glu Thr Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn
930 935 940

Ala Thr Thr
945

<210> 36
<211> 953
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 36

Met Ala Thr Pro Ser Met Met Pro Gln Trp Ser Tyr Met His Ile Ser
1 5 10 15

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

Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
50 55 60

Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

Ala Pro Asn Pro Cys Glu Trp Asp Glu Gln Gly Pro Gly Ala Pro Gln
130 135 140

Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala
145 150 155 160

Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro
 165 170 175

Gly Ala Pro Gln Gly Pro Gly Ala Pro Lys Thr His Val Phe Gly Gln
 180 185 190

Ala Pro Tyr Ser Gly Ile Asn Ile Thr Lys Glu Gly Ile Gln Ile Gly
 195 200 205

Val Glu Gly Gln Thr Pro Lys Tyr Ala Asp Lys Thr Phe Gln Pro Glu
 210 215 220

Pro Gln Ile Gly Glu Ser Gln Trp Tyr Glu Thr Glu Ile Asn His Ala
225 230 235 240

Ala Gly Arg Val Leu Lys Lys Thr Thr Pro Met Lys Pro Cys Tyr Gly
 245 250 255

Ser Tyr Ala Lys Pro Thr Asn Glu Asn Gly Gly Gln Gly Ile Leu Val
 260 265 270

Lys Gln Gln Asn Gly Lys Leu Glu Ser Gln Val Glu Met Gln Phe Phe
 275 280 285

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

Val Val Leu Tyr Ser Glu Asp Val Asp Ile Glu Thr Pro Asp Thr His
305 310 315 320

Ile Ser Tyr Met Pro Thr Ile Lys Glu Gly Asn Ser Arg Glu Leu Met
 325 330 335

Gly Gln Gln Ser Met Pro Asn Arg Pro Asn Tyr Ile Ala Phe Arg Asp
 340 345 350

Asn Phe Ile Gly Leu Met Tyr Tyr Asn Ser Thr Gly Asn Met Gly Val
355 360 365

Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala Val Val Asp Leu Gln Asp
370 375 380

Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu Leu Asp Ser Ile Gly Asp
385 390 395 400

Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Leu Pro Asn Tyr Cys Phe
405 410 415

Pro Leu Gly Gly Val Ile Asn Thr Glu Thr Leu Thr Lys Val Lys Pro
420 425 430

Lys Thr Gly Gln Glu Asn Gly Trp Glu Lys Asp Ala Thr Glu Phe Ser
435 440 445

Asp Lys Asn Glu Ile Arg Val Gly Asn Asn Phe Ala Met Glu Ile Asn
450 455 460

Leu Asn Ala Asn Leu Trp Arg Asn Phe Leu Tyr Ser Asn Ile Ala Leu
465 470 475 480

Tyr Leu Pro Asp Lys Leu Lys Tyr Ser Pro Ser Asn Val Lys Ile Ser
485 490 495

Asp Asn Pro Asn Thr Tyr Asp Tyr Met Asn Lys Arg Val Val Ala Pro
500 505 510

Gly Leu Val Asp Cys Tyr Ile Asn Leu Gly Ala Arg Trp Ser Leu Asp
515 520 525

Tyr Met Asp Asn Val Asn Pro Phe Asn His His Arg Asn Ala Gly Leu
530 535 540

Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly Arg Tyr Val Pro Phe His
545 550 555 560

Ile Gln Val Pro Gln Lys Phe Phe Ala Ile Lys Asn Leu Leu Leu Leu
565 570 575

Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe Arg Lys Asp Val Asn Met
580 585 590

Val Leu Gln Ser Ser Leu Gly Asn Asp Leu Arg Val Asp Gly Ala Ser
595 600 605

Ile Lys Phe Asp Ser Ile Cys Leu Tyr Ala Thr Phe Phe Pro Met Ala
610 615 620

His Asn Thr Ala Ser Thr Leu Glu Ala Met Leu Arg Asn Asp Thr Asn
625 630 635 640

Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala Ala Asn Met Leu Tyr Pro
645 650 655

Ile Pro Ala Asn Ala Thr Asn Val Pro Ile Ser Ile Pro Ser Arg Asn
660 665 670

Trp Ala Ala Phe Arg Gly Trp Ala Phe Thr Arg Leu Lys Thr Lys Glu
675 680 685

Thr Pro Ser Leu Gly Ser Gly Tyr Asp Pro Tyr Tyr Thr Tyr Ser Gly
690 695 700

Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr Leu Asn His Thr Phe Lys
705 710 715 720

Lys Val Ala Ile Thr Phe Asp Ser Ser Val Ser Trp Pro Gly Asn Asp
725 730 735

Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile Lys Arg Ser Val Asp Gly
740 745 750

Glu Gly Tyr Asn Val Ala Gln Cys Asn Met Thr Lys Asp Trp Phe Leu

755	760	765	
Val Gln Met Leu Ala Asn Tyr Asn Ile Gly Tyr Gln Gly Phe Tyr Ile			
770	775	780	
Pro Glu Ser Tyr Lys Asp Arg Met Tyr Ser Phe Phe Arg Asn Phe Gln			
785	790	795	800
Pro Met Ser Arg Gln Val Val Asp Asp Thr Lys Tyr Lys Asp Tyr Gln			
805	810	815	
Gln Val Gly Ile Leu His Gln His Asn Asn Ser Gly Phe Val Gly Tyr			
820	825	830	
Leu Ala Pro Thr Met Arg Glu Gly Gln Ala Tyr Pro Ala Asn Phe Pro			
835	840	845	
Tyr Pro Leu Ile Gly Lys Thr Ala Val Asp Ser Ile Thr Gln Lys Lys			
850	855	860	
Phe Leu Cys Asp Arg Thr Leu Trp Arg Ile Pro Phe Ser Ser Asn Phe			
865	870	875	880
Met Ser Met Gly Ala Leu Thr Asp Leu Gly Gln Asn Leu Leu Tyr Ala			
885	890	895	
Asn Ser Ala His Ala Leu Asp Met Thr Phe Glu Val Asp Pro Met Asp			
900	905	910	
Glu Pro Thr Leu Leu Tyr Val Leu Phe Glu Val Phe Asp Val Val Arg			
915	920	925	
Val His Gln Pro His Arg Gly Val Ile Glu Thr Val Tyr Leu Arg Thr			
930	935	940	
Pro Phe Ser Ala Gly Asn Ala Thr Thr			
945	950		

<210> 37
<211> 959
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 37

Met Ala Thr Pro Ser Met Met Pro Gln Trp Ser Tyr Met His Ile Ser
1 5 10 15

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

Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
50 55 60

Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

Ala Pro Asn Pro Cys Glu Trp Asp Glu Gln Gly Pro Gly Ala Pro Gln
130 135 140

Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala
145 150 155 160

Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro
165 170 175

Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Lys
180 185 190

Thr His Val Phe Gly Gln Ala Pro Tyr Ser Gly Ile Asn Ile Thr Lys
195 200 205

Glu Gly Ile Gln Ile Gly Val Glu Gly Gln Thr Pro Lys Tyr Ala Asp
210 215 220

Lys Thr Phe Gln Pro Glu Pro Gln Ile Gly Glu Ser Gln Trp Tyr Glu
225 230 235 240

Thr Glu Ile Asn His Ala Ala Gly Arg Val Leu Lys Lys Thr Thr Pro
245 250 255

Met Lys Pro Cys Tyr Gly Ser Tyr Ala Lys Pro Thr Asn Glu Asn Gly
260 265 270

Gly Gln Gly Ile Leu Val Lys Gln Gln Asn Gly Lys Leu Glu Ser Gln
275 280 285

Val Glu Met Gln Phe Phe Ser Thr Thr Glu Ala Ala Ala Gly Asn Gly
290 295 300

Asp Asn Leu Thr Pro Lys Val Val Leu Tyr Ser Glu Asp Val Asp Ile
305 310 315 320

Glu Thr Pro Asp Thr His Ile Ser Tyr Met Pro Thr Ile Lys Glu Gly
325 330 335

Asn Ser Arg Glu Leu Met Gly Gln Gln Ser Met Pro Asn Arg Pro Asn
340 345 350

Tyr Ile Ala Phe Arg Asp Asn Phe Ile Gly Leu Met Tyr Tyr Asn Ser
355 360 365

Thr Gly Asn Met Gly Val Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala
370 375 380

Val Val Asp Leu Gln Asp Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu
385 390 395 400

Leu Asp Ser Ile Gly Asp Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln
405 410 415

Leu Pro Asn Tyr Cys Phe Pro Leu Gly Gly Val Ile Asn Thr Glu Thr
420 425 430

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

Asp Ala Thr Glu Phe Ser Asp Lys Asn Glu Ile Arg Val Gly Asn Asn
450 455 460

Phe Ala Met Glu Ile Asn Leu Asn Ala Asn Leu Trp Arg Asn Phe Leu
465 470 475 480

Tyr Ser Asn Ile Ala Leu Tyr Leu Pro Asp Lys Leu Lys Tyr Ser Pro
485 490 495

Ser Asn Val Lys Ile Ser Asp Asn Pro Asn Thr Tyr Asp Tyr Met Asn
500 505 510

Lys Arg Val Val Ala Pro Gly Leu Val Asp Cys Tyr Ile Asn Leu Gly
515 520 525

Ala Arg Trp Ser Leu Asp Tyr Met Asp Asn Val Asn Pro Phe Asn His
530 535 540

His Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly
545 550 555 560

Arg Tyr Val Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe Ala Ile

565	570	575
Lys Asn Leu Leu Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe		
580	585	590
Arg Lys Asp Val Asn Met Val Leu Gln Ser Ser Leu Gly Asn Asp Leu		
595	600	605
Arg Val Asp Gly Ala Ser Ile Lys Phe Asp Ser Ile Cys Leu Tyr Ala		
610	615	620
Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu Ala Met		
625	630	635
Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala		
645	650	655
Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val Pro Ile		
660	665	670
Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp Ala Phe Thr		
675	680	685
Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly Tyr Asp Pro		
690	695	700
Tyr Tyr Thr Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr		
705	710	715
Leu Asn His Thr Phe Lys Lys Val Ala Ile Thr Phe Asp Ser Ser Val		
725	730	735
Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile		
740	745	750
Lys Arg Ser Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys Asn Met		
755	760	765

Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala Asn Tyr Asn Ile Gly
770 775 780

Tyr Gln Gly Phe Tyr Ile Pro Glu Ser Tyr Lys Asp Arg Met Tyr Ser
785 790 795 800

Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp Asp Thr
805 810 815

Lys Tyr Lys Asp Tyr Gln Gln Val Gly Ile Leu His Gln His Asn Asn
820 825 830

Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Glu Gly Gln Ala
835 840 845

Tyr Pro Ala Asn Phe Pro Tyr Pro Leu Ile Gly Lys Thr Ala Val Asp
850 855 860

Ser Ile Thr Gln Lys Lys Phe Leu Cys Asp Arg Thr Leu Trp Arg Ile
865 870 875 880

Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp Leu Gly
885 890 895

Gln Asn Leu Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met Thr Phe
900 905 910

Glu Val Asp Pro Met Asp Glu Pro Thr Leu Leu Tyr Val Leu Phe Glu
915 920 925

Val Phe Asp Val Val Arg Val His Gln Pro His Arg Gly Val Ile Glu
930 935 940

Thr Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala Thr Thr
945 950 955

<210> 38

<211> 971

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Construct

<400> 38

Met Ala Thr Pro Ser Met Met Pro Gln Trp Ser Tyr Met His Ile Ser
1 5 10 15

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

Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
50 55 60

Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

Ala Pro Asn Pro Cys Glu Trp Asp Glu Gln Gly Pro Gly Ala Pro Gln
130 135 140

Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala
145 150 155 160

Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro
165 170 175

Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln
180 185 190

Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Lys Thr His Val Phe
195 200 205

Gly Gln Ala Pro Tyr Ser Gly Ile Asn Ile Thr Lys Glu Gly Ile Gln
210 215 220

Ile Gly Val Glu Gly Gln Thr Pro Lys Tyr Ala Asp Lys Thr Phe Gln
225 230 235 240

Pro Glu Pro Gln Ile Gly Glu Ser Gln Trp Tyr Glu Thr Glu Ile Asn
245 250 255

His Ala Ala Gly Arg Val Leu Lys Lys Thr Thr Pro Met Lys Pro Cys
260 265 270

Tyr Gly Ser Tyr Ala Lys Pro Thr Asn Glu Asn Gly Gly Gln Gly Ile
275 280 285

Leu Val Lys Gln Gln Asn Gly Lys Leu Glu Ser Gln Val Glu Met Gln
290 295 300

Phe Phe Ser Thr Thr Glu Ala Ala Ala Gly Asn Gly Asp Asn Leu Thr
305 310 315 320

Pro Lys Val Val Leu Tyr Ser Glu Asp Val Asp Ile Glu Thr Pro Asp
325 330 335

Thr His Ile Ser Tyr Met Pro Thr Ile Lys Glu Gly Asn Ser Arg Glu
340 345 350

Leu Met Gly Gln Gln Ser Met Pro Asn Arg Pro Asn Tyr Ile Ala Phe
355 360 365

Arg Asp Asn Phe Ile Gly Leu Met Tyr Tyr Asn Ser Thr Gly Asn Met
370 375 380

Gly Val Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala Val Val Asp Leu
385 390 395 400

Gln Asp Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu Leu Asp Ser Ile
 405 410 415

Gly Asp Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Leu Pro Asn Tyr
 420 425 430

Cys Phe Pro Leu Gly Gly Val Ile Asn Thr Glu Thr Leu Thr Lys Val
 435 440 445

Lys Pro Lys Thr Gly Gln Glu Asn Gly Trp Glu Lys Asp Ala Thr Glu
 450 455 460

Phe Ser Asp Lys Asn Glu Ile Arg Val Gly Asn Asn Phe Ala Met Glu
465 470 475 480

Ile Asn Leu Asn Ala Asn Leu Trp Arg Asn Phe Leu Tyr Ser Asn Ile
 485 490 495

Ala Leu Tyr Leu Pro Asp Lys Leu Lys Tyr Ser Pro Ser Asn Val Lys
 500 505 510

Ile Ser Asp Asn Pro Asn Thr Tyr Asp Tyr Met Asn Lys Arg Val Val
 515 520 525

Ala Pro Gly Leu Val Asp Cys Tyr Ile Asn Leu Gly Ala Arg Trp Ser
 530 535 540

Leu Asp Tyr Met Asp Asn Val Asn Pro Phe Asn His His Arg Asn Ala
545 550 555 560

Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly Arg Tyr Val Pro
 565 570 575

Phe His Ile Gln Val Pro Gln Lys Phe Phe Ala Ile Lys Asn Leu Leu

580 585 590

Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe Arg Lys Asp Val
595 600 605

Asn Met Val Leu Gln Ser Ser Leu Gly Asn Asp Leu Arg Val Asp Gly
610 615 620

Ala Ser Ile Lys Phe Asp Ser Ile Cys Leu Tyr Ala Thr Phe Phe Pro
625 630 635 640

Met Ala His Asn Thr Ala Ser Thr Leu Glu Ala Met Leu Arg Asn Asp
645 650 655

Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala Ala Asn Met Leu
660 665 670

Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val Pro Ile Ser Ile Pro Ser
675 680 685

Arg Asn Trp Ala Ala Phe Arg Gly Trp Ala Phe Thr Arg Leu Lys Thr
690 695 700

Lys Glu Thr Pro Ser Leu Gly Ser Gly Tyr Asp Pro Tyr Tyr Thr Tyr
705 710 715 720

Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr Leu Asn His Thr
725 730 735

Phe Lys Lys Val Ala Ile Thr Phe Asp Ser Ser Val Ser Trp Pro Gly
740 745 750

Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile Lys Arg Ser Val
755 760 765

Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys Asn Met Thr Lys Asp Trp
770 775 780

Phe Leu Val Gln Met Leu Ala Asn Tyr Asn Ile Gly Tyr Gln Gly Phe
785 790 795 800

Tyr Ile Pro Glu Ser Tyr Lys Asp Arg Met Tyr Ser Phe Phe Arg Asn
805 810 815

Phe Gln Pro Met Ser Arg Gln Val Val Asp Asp Thr Lys Tyr Lys Asp
820 825 830

Tyr Gln Gln Val Gly Ile Leu His Gln His Asn Asn Ser Gly Phe Val
835 840 845

Gly Tyr Leu Ala Pro Thr Met Arg Glu Gly Gln Ala Tyr Pro Ala Asn
850 855 860

Phe Pro Tyr Pro Leu Ile Gly Lys Thr Ala Val Asp Ser Ile Thr Gln
865 870 875 880

Lys Lys Phe Leu Cys Asp Arg Thr Leu Trp Arg Ile Pro Phe Ser Ser
885 890 895

Asn Phe Met Ser Met Gly Ala Leu Thr Asp Leu Gly Gln Asn Leu Leu
900 905 910

Tyr Ala Asn Ser Ala His Ala Leu Asp Met Thr Phe Glu Val Asp Pro
915 920 925

Met Asp Glu Pro Thr Leu Leu Tyr Val Leu Phe Glu Val Phe Asp Val
930 935 940

Val Arg Val His Gln Pro His Arg Gly Val Ile Glu Thr Val Tyr Leu
945 950 955 960

Arg Thr Pro Phe Ser Ala Gly Asn Ala Thr Thr
965 970

<210> 39

<211> 977
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 39

Met Ala Thr Pro Ser Met Met Pro Gln Trp Ser Tyr Met His Ile Ser
1 5 10 15

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

Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
50 55 60

Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

Ala Pro Asn Pro Cys Glu Trp Asp Glu Gln Gly Pro Gly Ala Pro Gln
130 135 140

Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala
145 150 155 160

Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro
165 170 175

Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln
180 185 190

Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala
195 200 205

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

Thr Lys Glu Gly Ile Gln Ile Gly Val Glu Gly Gln Thr Pro Lys Tyr
225 230 235 240

Ala Asp Lys Thr Phe Gln Pro Glu Pro Gln Ile Gly Glu Ser Gln Trp
245 250 255

Tyr Glu Thr Glu Ile Asn His Ala Ala Gly Arg Val Leu Lys Lys Thr
260 265 270

Thr Pro Met Lys Pro Cys Tyr Gly Ser Tyr Ala Lys Pro Thr Asn Glu
275 280 285

Asn Gly Gly Gln Gly Ile Leu Val Lys Gln Gln Asn Gly Lys Leu Glu
290 295 300

Ser Gln Val Glu Met Gln Phe Phe Ser Thr Thr Glu Ala Ala Ala Gly
305 310 315 320

Asn Gly Asp Asn Leu Thr Pro Lys Val Val Leu Tyr Ser Glu Asp Val
325 330 335

Asp Ile Glu Thr Pro Asp Thr His Ile Ser Tyr Met Pro Thr Ile Lys
340 345 350

Glu Gly Asn Ser Arg Glu Leu Met Gly Gln Gln Ser Met Pro Asn Arg
355 360 365

Pro Asn Tyr Ile Ala Phe Arg Asp Asn Phe Ile Gly Leu Met Tyr Tyr

370	375	380	
Asn Ser Thr Gly Asn Met Gly Val Leu Ala Gly Gln Ala Ser Gln Leu			
385	390	395	400
Asn Ala Val Val Asp Leu Gln Asp Arg Asn Thr Glu Leu Ser Tyr Gln			
	405	410	415
Leu Leu Leu Asp Ser Ile Gly Asp Arg Thr Arg Tyr Phe Ser Met Trp			
	420	425	430
Asn Gln Leu Pro Asn Tyr Cys Phe Pro Leu Gly Gly Val Ile Asn Thr			
	435	440	445
Glu Thr Leu Thr Lys Val Lys Pro Lys Thr Gly Gln Glu Asn Gly Trp			
	450	455	460
Glu Lys Asp Ala Thr Glu Phe Ser Asp Lys Asn Glu Ile Arg Val Gly			
	465	470	480
Asn Asn Phe Ala Met Glu Ile Asn Leu Asn Ala Asn Leu Trp Arg Asn			
	485	490	495
Phe Leu Tyr Ser Asn Ile Ala Leu Tyr Leu Pro Asp Lys Leu Lys Tyr			
	500	505	510
Ser Pro Ser Asn Val Lys Ile Ser Asp Asn Pro Asn Thr Tyr Asp Tyr			
	515	520	525
Met Asn Lys Arg Val Val Ala Pro Gly Leu Val Asp Cys Tyr Ile Asn			
	530	535	540
Leu Gly Ala Arg Trp Ser Leu Asp Tyr Met Asp Asn Val Asn Pro Phe			
	545	550	560
Asn His His Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly			
	565	570	575

Asn Gly Arg Tyr Val Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe
580 585 590

Ala Ile Lys Asn Leu Leu Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp
595 600 605

Asn Phe Arg Lys Asp Val Asn Met Val Leu Gln Ser Ser Leu Gly Asn
610 615 620

Asp Leu Arg Val Asp Gly Ala Ser Ile Lys Phe Asp Ser Ile Cys Leu
625 630 635 640

Tyr Ala Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu
645 650 655

Ala Met Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu
660 665 670

Ser Ala Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val
675 680 685

Pro Ile Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Leu Leu Thr
690 695 700

Pro Asn Glu Phe Glu Ile Lys Arg Ser Val Asp Gly Glu Gly Tyr Asn
705 710 715 720

Asp Pro Tyr Tyr Thr Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr
725 730 735

Phe Tyr Leu Asn His Thr Phe Lys Lys Val Ala Ile Thr Phe Asp Ser
740 745 750

Ser Val Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe
755 760 765

Glu Ile Lys Arg Ser Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys
770 775 780

Asn Met Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala Asn Tyr Asn
785 790 795 800

Ile Gly Tyr Gln Gly Phe Tyr Ile Pro Glu Ser Tyr Lys Asp Arg Met
805 810 815

Tyr Ser Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp
820 825 830

Asp Thr Lys Tyr Lys Asp Tyr Gln Gln Val Gly Ile Leu His Gln His
835 840 845

Asn Asn Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Glu Gly
850 855 860

Gln Ala Tyr Pro Ala Asn Phe Pro Tyr Pro Leu Ile Gly Lys Thr Ala
865 870 875 880

Val Asp Ser Ile Thr Gln Lys Lys Phe Leu Cys Asp Arg Thr Leu Trp
885 890 895

Arg Ile Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp
900 905 910

Leu Gly Gln Asn Leu Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met
915 920 925

Thr Phe Glu Val Asp Pro Met Asp Glu Pro Thr Leu Leu Tyr Val Leu
930 935 940

Phe Glu Val Phe Asp Val Val Arg Val His Gln Pro His Arg Gly Val
945 950 955 960

Ile Glu Thr Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala Thr
965 970 975

Thr

<210> 40
<211> 975
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 40

Met Ala Thr Pro Ser Met Met Pro Gln Trp Ser Tyr Met His Ile Ser
1 5 10 15

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

Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
50 55 60

Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

Ala Pro Asn Pro Cys Glu Trp Asp Glu Ala Ala Thr Ala Leu Glu Ile
130 135 140

Asn Leu Glu Glu Glu Asp Asp Asp Asn Glu Asp Glu Val Asp Glu Gln
145 150 155 160

Ala Glu Gln Gln Lys Thr His Val Phe Gly Gln Ala Pro Tyr Ser Gly
165 170 175

Ile Asn Ile Thr Lys Glu Gly Ile Gln Ile Gly Val Glu Gly Gln Thr
180 185 190

Pro Lys Tyr Ala Asp Lys Thr Phe Gln Pro Glu Pro Gln Ile Gly Glu
195 200 205

Ser Gln Trp Tyr Glu Thr Glu Ile Asn His Ala Ala Gly Arg Val Leu
210 215 220

Lys Lys Thr Thr Pro Met Lys Pro Cys Tyr Gly Ser Tyr Ala Lys Pro
225 230 235 240

Thr Asn Glu Asn Gly Gly Gln Gly Ile Leu Val Lys Gln Gln Asn Gly
245 250 255

Lys Leu Glu Ser Gln Val Glu Met Gln Phe Phe Ser Ala Ser Gln Gly
260 265 270

Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro
275 280 285

Gly Thr Ser Thr Thr Glu Ala Ala Ala Gly Asn Gly Asp Asn Leu Thr
290 295 300

Pro Lys Val Val Leu Tyr Ser Glu Asp Val Asp Ile Glu Thr Pro Asp
305 310 315 320

Thr His Ile Ser Tyr Met Pro Thr Ile Lys Glu Gly Asn Ser Arg Glu
325 330 335

Leu Met Gly Gln Gln Ser Met Pro Asn Arg Pro Asn Tyr Ile Ala Phe
340 345 350

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

355	360	365	
Gly Val Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala Val Val Asp Leu			
370	375	380	
Gln Asp Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu Leu Asp Ser Ile			
385	390	395	400
Gly Asp Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Ala Val Asp Ser			
405	410	415	
Tyr Asp Pro Asp Val Arg Ile Ile Glu Asn His Gly Thr Glu Asp Glu			
420	425	430	
Leu Pro Asn Tyr Cys Phe Pro Leu Gly Gly Val Ile Asn Thr Glu Thr			
435	440	445	
Leu Thr Lys Val Lys Pro Lys Thr Gly Gln Glu Asn Gly Trp Glu Lys			
450	455	460	
Asp Ala Thr Glu Phe Ser Asp Lys Asn Glu Ile Arg Val Gly Asn Asn			
465	470	475	480
Phe Ala Met Glu Ile Asn Leu Asn Ala Asn Leu Trp Arg Asn Phe Leu			
485	490	495	
Tyr Ser Asn Ile Ala Leu Tyr Leu Pro Asp Lys Leu Lys Tyr Ser Pro			
500	505	510	
Ser Asn Val Lys Ile Ser Asp Asn Pro Asn Thr Tyr Asp Tyr Met Asn			
515	520	525	
Lys Arg Val Val Ala Pro Gly Leu Val Asp Cys Tyr Ile Asn Leu Gly			
530	535	540	
Ala Arg Trp Ser Leu Asp Tyr Met Asp Asn Val Asn Pro Phe Asn His			
545	550	555	560

His Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly
565 570 575

Arg Tyr Val Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe Ala Ile
580 585 590

Lys Asn Leu Leu Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe
595 600 605

Arg Lys Asp Val Asn Met Val Leu Gln Ser Ser Leu Gly Asn Asp Leu
610 615 620

Arg Val Asp Gly Ala Ser Ile Lys Phe Asp Ser Ile Cys Leu Tyr Ala
625 630 635 640

Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu Ala Met
645 650 655

Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala
660 665 670

Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val Pro Ile
675 680 685

Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp Ala Phe Thr
690 695 700

Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly Tyr Asp Pro
705 710 715 720

Tyr Tyr Thr Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr
725 730 735

Leu Asn His Thr Phe Lys Lys Val Ala Ile Thr Phe Asp Ser Ser Val
740 745 750

Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile
755 760 765

Lys Arg Ser Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys Asn Met
770 775 780

Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala Asn Tyr Asn Ile Gly
785 790 795 800

Tyr Gln Gly Phe Tyr Ile Pro Glu Ser Tyr Lys Asp Arg Met Tyr Ser
805 810 815

Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp Asp Thr
820 825 830

Lys Tyr Lys Asp Tyr Gln Gln Val Gly Ile Leu His Gln His Asn Asn
835 840 845

Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Glu Gly Gln Ala
850 855 860

Tyr Pro Ala Asn Phe Pro Tyr Pro Leu Ile Gly Lys Thr Ala Val Asp
865 870 875 880

Ser Ile Thr Gln Lys Lys Phe Leu Cys Asp Arg Thr Leu Trp Arg Ile
885 890 895

Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp Leu Gly
900 905 910

Gln Asn Leu Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met Thr Phe
915 920 925

Glu Val Asp Pro Met Asp Glu Pro Thr Leu Leu Tyr Val Leu Phe Glu
930 935 940

Val Phe Asp Val Val Arg Val His Gln Pro His Arg Gly Val Ile Glu
945 950 955 960

Thr Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala Thr Thr
965 970 975

<210> 41
<211> 599
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 41

Met Lys Arg Ala Arg Pro Ser Glu Asp Thr Phe Asn Pro Val Tyr Pro
1 5 10 15

Tyr Asp Thr Glu Thr Gly Pro Pro Thr Val Pro Phe Leu Thr Pro Pro
20 25 30

Phe Val Ser Pro Asn Gly Phe Gln Glu Ser Pro Pro Gly Val Leu Ser
35 40 45

Leu Arg Leu Ser Glu Pro Leu Val Thr Ser Asn Gly Met Leu Ala Leu
50 55 60

Lys Met Gly Asn Gly Leu Ser Leu Asp Glu Ala Gly Asn Leu Thr Ser
65 70 75 80

Gln Asn Val Thr Thr Val Ser Pro Pro Leu Lys Lys Thr Lys Ser Asn
85 90 95

Ile Asn Leu Glu Ile Ser Ala Pro Leu Thr Val Thr Ser Glu Ala Leu
100 105 110

Thr Val Ala Ala Ala Ala Pro Leu Met Val Ala Gly Asn Thr Leu Thr
115 120 125

Met Gln Ser Gln Ala Pro Leu Thr Val His Asp Ser Lys Leu Ser Ile
130 135 140

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

145 150 155 160

Thr Ser Gly Pro Leu Thr Thr Thr Asp Ser Ser Thr Leu Thr Ile Thr
 165 170 175

Ala Ser Pro Pro Leu Thr Thr Ala Thr Gly Ser Leu Gly Ile Asp Leu
 180 185 190

Lys Glu Pro Ile Tyr Thr Gln Asn Gly Lys Leu Gly Leu Lys Tyr Gly
 195 200 205

Ala Pro Leu His Val Thr Asp Asp Leu Asn Thr Leu Thr Val Ala Thr
 210 215 220

Gly Pro Gly Val Thr Ile Asn Asn Thr Ser Leu Gln Thr Lys Val Thr
225 230 235 240

Gly Ala Leu Gly Phe Asp Ser Gln Gly Asn Met Gln Leu Asn Val Ala
 245 250 255

Gly Gly Leu Arg Ile Asp Ser Gln Asn Arg Arg Leu Ile Leu Asp Val
 260 265 270

Ser Tyr Pro Phe Asp Ala Gln Asn Gln Leu Asn Leu Arg Leu Gly Gln
 275 280 285

Gly Pro Leu Phe Ile Asn Ser Ala His Asn Leu Asp Ile Asn Tyr Asn
 290 295 300

Lys Gly Leu Tyr Leu Phe Thr Ala Ser Asn Asn Ser Lys Lys Leu Glu
305 310 315 320

Val Asn Leu Ser Thr Ala Lys Gly Leu Met Phe Asp Ala Thr Ala Ile
 325 330 335

Ala Ile Asn Ala Gly Asp Gly Leu Glu Phe Gly Ser Pro Asn Ala Pro
 340 345 350

Asn Thr Asn Pro Leu Lys Thr Lys Ile Gly His Gly Leu Glu Phe Asp
355 360 365

Ser Asn Lys Ala Met Val Pro Lys Leu Gly Thr Gly Leu Ser Phe Asp
370 375 380

Ser Thr Gly Ala Ile Thr Val Gly Asn Lys Asn Asn Asp Lys Leu Thr
385 390 395 400

Leu Trp Thr Thr Pro Ala Pro Ser Pro Asn Cys Arg Leu Asn Ala Glu
405 410 415

Lys Asp Ala Lys Leu Thr Leu Val Leu Thr Lys Cys Gly Ser Gln Ile
420 425 430

Leu Ala Thr Val Ser Val Leu Ala Val Lys Gly Ser Leu Ala Pro Ile
435 440 445

Ser Gly Thr Val Gln Ser Ala His Leu Ile Ile Arg Phe Asp Glu Asn
450 455 460

Gly Val Leu Leu Asn Asn Ser Phe Leu Asp Pro Glu Tyr Trp Asn Phe
465 470 475 480

Arg Asn Gly Asp Leu Thr Glu Gly Thr Ala Tyr Thr Asn Ala Val Gly
485 490 495

Phe Met Pro Asn Leu Ser Ala Tyr Pro Lys Ser His Gly Lys Thr Ala
500 505 510

Lys Ser Asn Ile Val Ser Gln Val Tyr Leu Asn Gly Asp Lys Thr Lys
515 520 525

Pro Val Thr Leu Thr Ile Thr Leu Asn Gly Thr Gln Glu Thr Gly Gln
530 535 540

Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala
545 550 555 560

Pro Asp Thr Thr Pro Ser Ala Tyr Ser Met Ser Phe Ser Trp Asp Trp
565 570 575

Ser Gly His Asn Tyr Ile Asn Glu Ile Phe Ala Thr Ser Ser Tyr Thr
580 585 590

Phe Ser Tyr Ile Ala Gln Glu
595

<210> 42

<211> 227

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Construct

<400> 42

Met Ser Ile Leu Ile Ser Pro Ser Asn Asn Thr Gly Trp Gly Leu Arg
1 5 10 15

Phe Pro Ser Lys Met Phe Gly Gly Ala Lys Lys Arg Ser Asp Gln His
20 25 30

Pro Val Arg Val Arg Gly His Tyr Arg Ala Pro Trp Gly Ala His Lys
35 40 45

Arg Gly Arg Thr Gly Arg Thr Thr Val Asp Asp Ala Ile Asp Ala Val
50 55 60

Val Glu Glu Ala Arg Asn Tyr Thr Pro Thr Pro Pro Pro Val Ser Thr
65 70 75 80

Val Asp Ala Ala Ile Gln Thr Val Val Arg Gly Ala Arg Arg Tyr Ala
85 90 95

Lys Met Lys Arg Arg Arg Arg Val Ala Arg Arg His Arg Arg Arg
100 105 110

Pro Gly Thr Ala Ala Gln Arg Ala Ala Ala Ala Leu Leu Asn Arg Ala
115 120 125

Arg Arg Thr Gly Arg Arg Ala Ala Met Arg Ala Ala Arg Arg Leu Ala
130 135 140

Ala Gly Ile Val Thr Val Pro Pro Arg Ser Arg Arg Arg Ala Ala Ala
145 150 155 160

Ala Ala Ala Ala Ala Ile Ser Ala Met Thr Gln Gly Arg Arg Gly Asn
165 170 175

Val Tyr Trp Val Arg Asp Ser Val Ser Gly Leu Arg Val Pro Val Arg
180 185 190

Thr Arg Pro Pro Arg Asn Val Arg Thr Arg Pro Pro Arg Asn Tyr Asn
195 200 205

Arg Asn Ile Val Asn Arg Leu Leu Gly Asp Ala Leu Asn Gly Lys Pro
210 215 220

Glu Glu Lys
225

<210> 43
<211> 374
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 43

Met Met Arg Lys Leu Ala Ile Leu Ser Val Ser Ser Phe Leu Phe Val
1 5 10 15

Glu Ala Leu Phe Gln Glu Tyr Gln Cys Tyr Gly Ser Ser Ser Asn Thr
180/247

20 25 30

Arg Val Leu Asn Glu Leu Asn Tyr Asp Asn Ala Gly Thr Asn Leu Tyr
35 40 45

Asn Glu Leu Glu Met Asn Tyr Tyr Gly Lys Gln Glu Asn Trp Tyr Ser
50 55 60

Leu Lys Lys Asn Ser Arg Ser Leu Gly Glu Asn Asp Asp Gly Asn Asn
65 70 75 80

Glu Asp Asn Glu Lys Leu Arg Lys Pro Lys His Lys Lys Leu Lys Gln
85 90 95

Pro Ala Asp Gly Asn Pro Asp Pro Asn Ala Asn Pro Asn Val Asp Pro
100 105 110

Asn Ala Asn Pro Asn Val Asp Pro Asn Ala Asn Pro Asn Val Asp Pro
115 120 125

Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro
130 135 140

Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro
145 150 155 160

Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro
165 170 175

Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro
180 185 190

Asn Ala Asn Pro Asn Val Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro
195 200 205

Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro
210 215 220

Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro
225 230 235 240

Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro
 245 250 255

Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro
 260 265 270

Asn Lys Asn Asn Gln Gly Asn Gly Gln Gly His Asn Met Pro Asn Asp
 275 280 285

Pro Asn Arg Asn Val Asp Glu Asn Ala Asn Ala Asn Ser Ala Val Lys
 290 295 300

Asn Asn Asn Asn Glu Glu Pro Ser Asp Lys His Ile Lys Glu Tyr Leu
305 310 315 320

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

Thr Cys Gly Asn Gly Ile Gln Val Arg Ile Lys Pro Gly Ser Ala Asn
 340 345 350

Lys Pro Lys Asp Glu Leu Asp Tyr Ala Asn Asp Ile Glu Lys Lys Ile
 355 360 365

Cys Lys Met Glu Lys Cys
 370

<210> 44

<211> 941

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Construct

<400> 44

Met Ala Thr Pro Ser Met Met Pro Gln Trp Ser Tyr Met His Ile Ser
1 5 10 15

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

Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
50 55 60

Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

Ala Pro Asn Pro Cys Glu Trp Asp Glu Asn Ala Asn Pro Asn Ala Asn
130 135 140

Pro Asn Ala Asn Pro Asn Ala Asn Pro Lys Thr His Val Phe Gly Gln
145 150 155 160

Ala Pro Tyr Ser Gly Ile Asn Ile Thr Lys Glu Gly Ile Gln Ile Gly
165 170 175

Val Glu Gly Gln Thr Pro Lys Tyr Ala Asp Lys Thr Phe Gln Pro Glu
180 185 190

Pro Gln Ile Gly Glu Ser Gln Trp Tyr Glu Thr Glu Ile Asn His Ala
195 200 205

Ala Gly Arg Val Leu Lys Lys Thr Thr Pro Met Lys Pro Cys Tyr Gly
210 215 220

Ser Tyr Ala Lys Pro Thr Asn Glu Asn Gly Gly Gln Gly Ile Leu Val
225 230 235 240

Lys Gln Gln Asn Gly Lys Leu Glu Ser Gln Val Glu Met Gln Phe Phe
245 250 255

Ser Thr Thr Glu Ala Ala Ala Gly Asn Gly Asp Asn Leu Thr Pro Lys
260 265 270

Val Val Leu Tyr Ser Glu Asp Val Asp Ile Glu Thr Pro Asp Thr His
275 280 285

Ile Ser Tyr Met Pro Thr Ile Lys Glu Gly Asn Ser Arg Glu Leu Met
290 295 300

Gly Gln Gln Ser Met Pro Asn Arg Pro Asn Tyr Ile Ala Phe Arg Asp
305 310 315 320

Asn Phe Ile Gly Leu Met Tyr Tyr Asn Ser Thr Gly Asn Met Gly Val
325 330 335

Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala Val Val Asp Leu Gln Asp
340 345 350

Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu Leu Asp Ser Ile Gly Asp
355 360 365

Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Ala Val Asp Ser Tyr Asp
370 375 380

Pro Asp Val Arg Ile Ile Glu Asn His Gly Thr Glu Asp Glu Leu Pro
385 390 395 400

Asn Tyr Cys Phe Pro Leu Gly Gly Val Ile Asn Thr Glu Thr Leu Thr

405	410	415
Lys Val Lys Pro Lys Thr Gly Gln Glu Asn Gly Trp Glu Lys Asp Ala		
420	425	430
Thr Glu Phe Ser Asp Lys Asn Glu Ile Arg Val Gly Asn Asn Phe Ala		
435	440	445
Met Glu Ile Asn Leu Asn Ala Asn Leu Trp Arg Asn Phe Leu Tyr Ser		
450	455	460
Asn Ile Ala Leu Tyr Leu Pro Asp Lys Leu Lys Tyr Ser Pro Ser Asn		
465	470	475
Val Lys Ile Ser Asp Asn Pro Asn Thr Tyr Asp Tyr Met Asn Lys Arg		
485	490	495
Val Val Ala Pro Gly Leu Val Asp Cys Tyr Ile Asn Leu Gly Ala Arg		
500	505	510
Trp Ser Leu Asp Tyr Met Asp Asn Val Asn Pro Phe Asn His His Arg		
515	520	525
Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly Arg Tyr		
530	535	540
Val Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe Ala Ile Lys Asn		
545	550	555
Leu Leu Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe Arg Lys		
565	570	575
Asp Val Asn Met Val Leu Gln Ser Ser Leu Gly Asn Asp Leu Arg Val		
580	585	590
Asp Gly Ala Ser Ile Lys Phe Asp Ser Ile Cys Leu Tyr Ala Thr Phe		
595	600	605

Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu Ala Met Leu Arg
610 615 620

Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala Ala Asn
625 630 635 640

Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val Pro Ile Ser Ile
645 650 655

Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp Ala Phe Thr Arg Leu
660 665 670

Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly Tyr Asp Pro Tyr Tyr
675 680 685

Thr Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr Leu Asn
690 695 700

His Thr Phe Lys Lys Val Ala Ile Thr Phe Asp Ser Ser Val Ser Trp
705 710 715 720

Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile Lys Arg
725 730 735

Ser Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys Asn Met Thr Lys
740 745 750

Asp Trp Phe Leu Val Gln Met Leu Ala Asn Tyr Asn Ile Gly Tyr Gln
755 760 765

Gly Phe Tyr Ile Pro Glu Ser Tyr Lys Asp Arg Met Tyr Ser Phe Phe
770 775 780

Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp Asp Thr Lys Tyr
785 790 795 800

Lys Asp Tyr Gln Gln Val Gly Ile Leu His Gln His Asn Asn Ser Gly
805 810 815

Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Glu Gly Gln Ala Tyr Pro
820 825 830

Ala Asn Phe Pro Tyr Pro Leu Ile Gly Lys Thr Ala Val Asp Ser Ile
835 840 845

Thr Gln Lys Lys Phe Leu Cys Asp Arg Thr Leu Trp Arg Ile Pro Phe
850 855 860

Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp Leu Gly Gln Asn
865 870 875 880

Leu Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met Thr Phe Glu Val
885 890 895

Asp Pro Met Asp Glu Pro Thr Leu Leu Tyr Val Leu Phe Glu Val Phe
900 905 910

Asp Val Val Arg Val His Gln Pro His Arg Gly Val Ile Glu Thr Val
915 920 925

Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala Thr Thr
930 935 940

<210> 45

<211> 929

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Construct

<400> 45

Met Ala Thr Pro Ser Met Met Pro Gln Trp Ser Tyr Met His Ile Ser
1 5 10 15

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

Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
50 55 60

Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

Ala Pro Asn Pro Cys Glu Trp Asp Glu Asn Ala Asn Pro Asn Ala Asn
130 135 140

Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
145 150 155 160

Pro Lys Thr His Val Phe Gly Gln Ala Pro Tyr Ser Gly Ile Asn Ile
165 170 175

Thr Lys Glu Gly Ile Gln Ile Gly Val Glu Gly Gln Thr Pro Lys Tyr
180 185 190

Ala Asp Lys Thr Phe Gln Pro Glu Pro Gln Ile Gly Glu Ser Gln Trp
195 200 205

Tyr Glu Thr Glu Ile Asn His Ala Ala Gly Arg Val Leu Lys Lys Thr
210 215 220

Thr Pro Met Lys Pro Cys Tyr Gly Ser Tyr Ala Lys Pro Thr Asn Glu

225 230 235 240

Asn Gly Gly Gln Gly Ile Leu Val Lys Gln Gln Asn Gly Lys Leu Glu
 245 250 255

Ser Gln Val Glu Met Gln Phe Phe Ser Thr Thr Glu Ala Ala Ala Gly
 260 265 270

Asn Gly Asp Asn Leu Thr Pro Lys Val Val Leu Tyr Ser Glu Asp Val
 275 280 285

Asp Ile Glu Thr Pro Asp Thr His Ile Ser Tyr Met Pro Thr Ile Lys
 290 295 300

Glu Gly Asn Ser Arg Glu Leu Met Gly Gln Gln Ser Met Pro Asn Arg
305 310 315 320

Pro Asn Tyr Ile Ala Phe Arg Asp Asn Phe Ile Gly Leu Met Tyr Tyr
 325 330 335

Asn Ser Thr Gly Asn Met Gly Val Leu Ala Gly Gln Ala Ser Gln Leu
 340 345 350

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

Leu Leu Leu Asp Ser Ile Gly Asp Arg Thr Arg Tyr Phe Ser Met Trp
 370 375 380

Asn Gln Leu Pro Asn Tyr Cys Phe Pro Leu Gly Gly Val Ile Asn Thr
385 390 395 400

Glu Thr Leu Thr Lys Val Lys Pro Lys Thr Gly Gln Glu Asn Gly Trp
 405 410 415

Glu Lys Asp Ala Thr Glu Phe Ser Asp Lys Asn Glu Ile Arg Val Gly
 420 425 430

Asn Asn Phe Ala Met Glu Ile Asn Leu Asn Ala Asn Leu Trp Arg Asn
435 440 445

Phe Leu Tyr Ser Asn Ile Ala Leu Tyr Leu Pro Asp Lys Leu Lys Tyr
450 455 460

Ser Pro Ser Asn Val Lys Ile Ser Asp Asn Pro Asn Thr Tyr Asp Tyr
465 470 475 480

Met Asn Lys Arg Val Val Ala Pro Gly Leu Val Asp Cys Tyr Ile Asn
485 490 495

Leu Gly Ala Arg Trp Ser Leu Asp Tyr Met Asp Asn Val Asn Pro Phe
500 505 510

Asn His His Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly
515 520 525

Asn Gly Arg Tyr Val Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe
530 535 540

Ala Ile Lys Asn Leu Leu Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp
545 550 555 560

Asn Phe Arg Lys Asp Val Asn Met Val Leu Gln Ser Ser Leu Gly Asn
565 570 575

Asp Leu Arg Val Asp Gly Ala Ser Ile Lys Phe Asp Ser Ile Cys Leu
580 585 590

Tyr Ala Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu
595 600 605

Ala Met Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu
610 615 620

Ser Ala Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val
625 630 635 640

Pro Ile Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp Ala
645 650 655

Phe Thr Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly Tyr
660 665 670

Asp Pro Tyr Tyr Thr Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr
675 680 685

Phe Tyr Leu Asn His Thr Phe Lys Lys Val Ala Ile Thr Phe Asp Ser
690 695 700

Ser Val Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe
705 710 715 720

Glu Ile Lys Arg Ser Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys
725 730 735

Asn Met Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala Asn Tyr Asn
740 745 750

Ile Gly Tyr Gln Gly Phe Tyr Ile Pro Glu Ser Tyr Lys Asp Arg Met
755 760 765

Tyr Ser Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp
770 775 780

Asp Thr Lys Tyr Lys Asp Tyr Gln Gln Val Gly Ile Leu His Gln His
785 790 795 800

Asn Asn Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Glu Gly
805 810 815

Gln Ala Tyr Pro Ala Asn Phe Pro Tyr Pro Leu Ile Gly Lys Thr Ala
820 825 830

Val Asp Ser Ile Thr Gln Lys Lys Phe Leu Cys Asp Arg Thr Leu Trp
835 840 845

Arg Ile Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp
850 855 860

Leu Gly Gln Asn Leu Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met
865 870 875 880

Thr Phe Glu Val Asp Pro Met Asp Glu Pro Thr Leu Leu Tyr Val Leu
885 890 895

Phe Glu Val Phe Asp Val Val Arg Val His Gln Pro His Arg Gly Val
900 905 910

Ile Glu Thr Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala Thr
915 920 925

Thr

<210> 46
<211> 937
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 46

Met Ala Thr Pro Ser Met Met Pro Gln Trp Ser Tyr Met His Ile Ser
1 5 10 15

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

Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
50 55 60

Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

Ala Pro Asn Pro Cys Glu Trp Asp Glu Asn Ala Asn Pro Asn Ala Asn
130 135 140

Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
145 150 155 160

Pro Asn Ala Asn Pro Asn Ala Asn Pro Lys Thr His Val Phe Gly Gln
165 170 175

Ala Pro Tyr Ser Gly Ile Asn Ile Thr Lys Glu Gly Ile Gln Ile Gly
180 185 190

Val Glu Gly Gln Thr Pro Lys Tyr Ala Asp Lys Thr Phe Gln Pro Glu
195 200 205

Pro Gln Ile Gly Glu Ser Gln Trp Tyr Glu Thr Glu Ile Asn His Ala
210 215 220

Ala Gly Arg Val Leu Lys Lys Thr Thr Pro Met Lys Pro Cys Tyr Gly
225 230 235 240

Ser Tyr Ala Lys Pro Thr Asn Glu Asn Gly Gly Gln Gly Ile Leu Val
245 250 255

Lys Gln Gln Asn Gly Lys Leu Glu Ser Gln Val Glu Met Gln Phe Phe
260 265 270

Ser Thr Thr Glu Ala Ala Ala Gly Asn Gly Asp Asn Leu Thr Pro Lys
275 280 285

Val Val Leu Tyr Ser Glu Asp Val Asp Ile Glu Thr Pro Asp Thr His
290 295 300

Ile Ser Tyr Met Pro Thr Ile Lys Glu Gly Asn Ser Arg Glu Leu Met
305 310 315 320

Gly Gln Gln Ser Met Pro Asn Arg Pro Asn Tyr Ile Ala Phe Arg Asp
325 330 335

Asn Phe Ile Gly Leu Met Tyr Tyr Asn Ser Thr Gly Asn Met Gly Val
340 345 350

Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala Val Val Asp Leu Gln Asp
355 360 365

Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu Leu Asp Ser Ile Gly Asp
370 375 380

Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Leu Pro Asn Tyr Cys Phe
385 390 395 400

Pro Leu Gly Gly Val Ile Asn Thr Glu Thr Leu Thr Lys Val Lys Pro
405 410 415

Lys Thr Gly Gln Glu Asn Gly Trp Glu Lys Asp Ala Thr Glu Phe Ser
420 425 430

Asp Lys Asn Glu Ile Arg Val Gly Asn Asn Phe Ala Met Glu Ile Asn
435 440 445

Leu Asn Ala Asn Leu Trp Arg Asn Phe Leu Tyr Ser Asn Ile Ala Leu
450 455 460

Tyr Leu Pro Asp Lys Leu Lys Tyr Ser Pro Ser Asn Val Lys Ile Ser
465 470 475 480

Asp Asn Pro Asn Thr Tyr Asp Tyr Met Asn Lys Arg Val Val Ala Pro
485 490 495

Gly Leu Val Asp Cys Tyr Ile Asn Leu Gly Ala Arg Trp Ser Leu Asp
500 505 510

Tyr Met Asp Asn Val Asn Pro Phe Asn His His Arg Asn Ala Gly Leu
515 520 525

Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly Arg Tyr Val Pro Phe His
530 535 540

Ile Gln Val Pro Gln Lys Phe Phe Ala Ile Lys Asn Leu Leu Leu Leu
545 550 555 560

Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe Arg Lys Asp Val Asn Met
565 570 575

Val Leu Gln Ser Ser Leu Gly Asn Asp Leu Arg Val Asp Gly Ala Ser
580 585 590

Ile Lys Phe Asp Ser Ile Cys Leu Tyr Ala Thr Phe Phe Pro Met Ala
595 600 605

His Asn Thr Ala Ser Thr Leu Glu Ala Met Leu Arg Asn Asp Thr Asn
610 615 620

Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala Ala Asn Met Leu Tyr Pro
625 630 635 640

Ile Pro Ala Asn Ala Thr Asn Val Pro Ile Ser Ile Pro Ser Arg Asn
645 650 655

Trp Ala Ala Phe Arg Gly Trp Ala Phe Thr Arg Leu Lys Thr Lys Glu

660	665	670
Thr Pro Ser Leu Gly Ser Gly Tyr Asp Pro Tyr Tyr Thr Tyr Ser Gly		
675	680	685
Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr Leu Asn His Thr Phe Lys		
690	695	700
Lys Val Ala Ile Thr Phe Asp Ser Ser Val Ser Trp Pro Gly Asn Asp		
705	710	715
720		
Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile Lys Arg Ser Val Asp Gly		
725	730	735
Glu Gly Tyr Asn Val Ala Gln Cys Asn Met Thr Lys Asp Trp Phe Leu		
740	745	750
Val Gln Met Leu Ala Asn Tyr Asn Ile Gly Tyr Gln Gly Phe Tyr Ile		
755	760	765
Pro Glu Ser Tyr Lys Asp Arg Met Tyr Ser Phe Phe Arg Asn Phe Gln		
770	775	780
Pro Met Ser Arg Gln Val Val Asp Asp Thr Lys Tyr Lys Asp Tyr Gln		
785	790	795
800		
Gln Val Gly Ile Leu His Gln His Asn Asn Ser Gly Phe Val Gly Tyr		
805	810	815
Leu Ala Pro Thr Met Arg Glu Gly Gln Ala Tyr Pro Ala Asn Phe Pro		
820	825	830
Tyr Pro Leu Ile Gly Lys Thr Ala Val Asp Ser Ile Thr Gln Lys Lys		
835	840	845
Phe Leu Cys Asp Arg Thr Leu Trp Arg Ile Pro Phe Ser Ser Asn Phe		
850	855	860

Met Ser Met Gly Ala Leu Thr Asp Leu Gly Gln Asn Leu Leu Tyr Ala
865 870 875 880

Asn Ser Ala His Ala Leu Asp Met Thr Phe Glu Val Asp Pro Met Asp
 885 890 895

Glu Pro Thr Leu Leu Tyr Val Leu Phe Glu Val Phe Asp Val Val Arg
 900 905 910

Val His Gln Pro His Arg Gly Val Ile Glu Thr Val Tyr Leu Arg Thr
 915 920 925

Pro Phe Ser Ala Gly Asn Ala Thr Thr
 930 935

<210> 47

<211> 945

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Construct

<400> 47

Met Ala Thr Pro Ser Met Met Pro Gln Trp Ser Tyr Met His Ile Ser
1 5 10 15

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

Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
 35 40 45

Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
 50 55 60

Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

Ala Pro Asn Pro Cys Glu Trp Asp Glu Asn Ala Asn Pro Asn Ala Asn
130 135 140

Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
145 150 155 160

Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
165 170 175

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

Thr Lys Glu Gly Ile Gln Ile Gly Val Glu Gly Gln Thr Pro Lys Tyr
195 200 205

Ala Asp Lys Thr Phe Gln Pro Glu Pro Gln Ile Gly Glu Ser Gln Trp
210 215 220

Tyr Glu Thr Glu Ile Asn His Ala Ala Gly Arg Val Leu Lys Lys Thr
225 230 235 240

Thr Pro Met Lys Pro Cys Tyr Gly Ser Tyr Ala Lys Pro Thr Asn Glu
245 250 255

Asn Gly Gly Gln Gly Ile Leu Val Lys Gln Gln Asn Gly Lys Leu Glu
260 265 270

Ser Gln Val Glu Met Gln Phe Phe Ser Thr Thr Glu Ala Ala Ala Gly
275 280 285

Asn Gly Asp Asn Leu Thr Pro Lys Val Val Leu Tyr Ser Glu Asp Val
290 295 300

Asp Ile Glu Thr Pro Asp Thr His Ile Ser Tyr Met Pro Thr Ile Lys
305 310 315 320

Glu Gly Asn Ser Arg Glu Leu Met Gly Gln Gln Ser Met Pro Asn Arg
325 330 335

Pro Asn Tyr Ile Ala Phe Arg Asp Asn Phe Ile Gly Leu Met Tyr Tyr
340 345 350

Asn Ser Thr Gly Asn Met Gly Val Leu Ala Gly Gln Ala Ser Gln Leu
355 360 365

Asn Ala Val Val Asp Leu Gln Asp Arg Asn Thr Glu Leu Ser Tyr Gln
370 375 380

Leu Leu Leu Asp Ser Ile Gly Asp Arg Thr Arg Tyr Phe Ser Met Trp
385 390 395 400

Asn Gln Leu Pro Asn Tyr Cys Phe Pro Leu Gly Gly Val Ile Asn Thr
405 410 415

Glu Thr Leu Thr Lys Val Lys Pro Lys Thr Gly Gln Glu Asn Gly Trp
420 425 430

Glu Lys Asp Ala Thr Glu Phe Ser Asp Lys Asn Glu Ile Arg Val Gly
435 440 445

Asn Asn Phe Ala Met Glu Ile Asn Leu Asn Ala Asn Leu Trp Arg Asn
450 455 460

Phe Leu Tyr Ser Asn Ile Ala Leu Tyr Leu Pro Asp Lys Leu Lys Tyr
465 470 475 480

Ser Pro Ser Asn Val Lys Ile Ser Asp Asn Pro Asn Thr Tyr Asp Tyr

485	490	495
Met Asn Lys Arg Val Val Ala Pro Gly Leu Val Asp Cys Tyr Ile Asn		
500	505	510
Leu Gly Ala Arg Trp Ser Leu Asp Tyr Met Asp Asn Val Asn Pro Phe		
515	520	525
Asn His His Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly		
530	535	540
Asn Gly Arg Tyr Val Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe		
545	550	555
Ala Ile Lys Asn Leu Leu Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp		
565	570	575
Asn Phe Arg Lys Asp Val Asn Met Val Leu Gln Ser Ser Leu Gly Asn		
580	585	590
Asp Leu Arg Val Asp Gly Ala Ser Ile Lys Phe Asp Ser Ile Cys Leu		
595	600	605
Tyr Ala Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu		
610	615	620
Ala Met Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu		
625	630	635
Ser Ala Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val		
645	650	655
Pro Ile Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp Ala		
660	665	670
Phe Thr Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly Tyr		
675	680	685

Asp Pro Tyr Tyr Thr Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr
690 695 700

Phe Tyr Leu Asn His Thr Phe Lys Lys Val Ala Ile Thr Phe Asp Ser
705 710 715 720

Ser Val Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe
725 730 735

Glu Ile Lys Arg Ser Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys
740 745 750

Asn Met Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala Asn Tyr Asn
755 760 765

Ile Gly Tyr Gln Gly Phe Tyr Ile Pro Glu Ser Tyr Lys Asp Arg Met
770 775 780

Tyr Ser Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp
785 790 795 800

Asp Thr Lys Tyr Lys Asp Tyr Gln Gln Val Gly Ile Leu His Gln His
805 810 815

Asn Asn Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Glu Gly
820 825 830

Gln Ala Tyr Pro Ala Asn Phe Pro Tyr Pro Leu Ile Gly Lys Thr Ala
835 840 845

Val Asp Ser Ile Thr Gln Lys Lys Phe Leu Cys Asp Arg Thr Leu Trp
850 855 860

Arg Ile Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp
865 870 875 880

Leu Gly Gln Asn Leu Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met
885 890 895

Thr Phe Glu Val Asp Pro Met Asp Glu Pro Thr Leu Leu Tyr Val Leu
900 905 910

Phe Glu Val Phe Asp Val Val Arg Val His Gln Pro His Arg Gly Val
915 920 925

Ile Glu Thr Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala Thr
930 935 940

Thr
945

<210> 48
<211> 953
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 48

Met Ala Thr Pro Ser Met Met Pro Gln Trp Ser Tyr Met His Ile Ser
1 5 10 15

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

Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
50 55 60

Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

Ala Pro Asn Pro Cys Glu Trp Asp Glu Asn Ala Asn Pro Asn Ala Asn
130 135 140

Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
145 150 155 160

Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
165 170 175

Pro Asn Ala Asn Pro Asn Ala Asn Pro Lys Thr His Val Phe Gly Gln
180 185 190

Ala Pro Tyr Ser Gly Ile Asn Ile Thr Lys Glu Gly Ile Gln Ile Gly
195 200 205

Val Glu Gly Gln Thr Pro Lys Tyr Ala Asp Lys Thr Phe Gln Pro Glu
210 215 220

Pro Gln Ile Gly Glu Ser Gln Trp Tyr Glu Thr Glu Ile Asn His Ala
225 230 235 240

Ala Gly Arg Val Leu Lys Lys Thr Thr Pro Met Lys Pro Cys Tyr Gly
245 250 255

Ser Tyr Ala Lys Pro Thr Asn Glu Asn Gly Gly Gln Gly Ile Leu Val
260 265 270

Lys Gln Gln Asn Gly Lys Leu Glu Ser Gln Val Glu Met Gln Phe Phe
275 280 285

Ser Thr Thr Glu Ala Ala Ala Gly Asn Gly Asp Asn Leu Thr Pro Lys

290	295	300	
Val Val Leu Tyr Ser Glu Asp Val Asp Ile Glu Thr Pro Asp Thr His			
305	310	315	320
Ile Ser Tyr Met Pro Thr Ile Lys Glu Gly Asn Ser Arg Glu Leu Met			
	325	330	335
Gly Gln Gln Ser Met Pro Asn Arg Pro Asn Tyr Ile Ala Phe Arg Asp			
	340	345	350
Asn Phe Ile Gly Leu Met Tyr Tyr Asn Ser Thr Gly Asn Met Gly Val			
	355	360	365
Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala Val Val Asp Leu Gln Asp			
	370	375	380
Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu Leu Asp Ser Ile Gly Asp			
385	390	395	400
Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Leu Pro Asn Tyr Cys Phe			
	405	410	415
Pro Leu Gly Gly Val Ile Asn Thr Glu Thr Leu Thr Lys Val Lys Pro			
	420	425	430
Lys Thr Gly Gln Glu Asn Gly Trp Glu Lys Asp Ala Thr Glu Phe Ser			
	435	440	445
Asp Lys Asn Glu Ile Arg Val Gly Asn Asn Phe Ala Met Glu Ile Asn			
	450	455	460
Leu Asn Ala Asn Leu Trp Arg Asn Phe Leu Tyr Ser Asn Ile Ala Leu			
465	470	475	480
Tyr Leu Pro Asp Lys Leu Lys Tyr Ser Pro Ser Asn Val Lys Ile Ser			
	485	490	495

Asp Asn Pro Asn Thr Tyr Asp Tyr Met Asn Lys Arg Val Val Ala Pro
500 505 510

Gly Leu Val Asp Cys Tyr Ile Asn Leu Gly Ala Arg Trp Ser Leu Asp
515 520 525

Tyr Met Asp Asn Val Asn Pro Phe Asn His His Arg Asn Ala Gly Leu
530 535 540

Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly Arg Tyr Val Pro Phe His
545 550 555 560

Ile Gln Val Pro Gln Lys Phe Phe Ala Ile Lys Asn Leu Leu Leu Leu
565 570 575

Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe Arg Lys Asp Val Asn Met
580 585 590

Val Leu Gln Ser Ser Leu Gly Asn Asp Leu Arg Val Asp Gly Ala Ser
595 600 605

Ile Lys Phe Asp Ser Ile Cys Leu Tyr Ala Thr Phe Phe Pro Met Ala
610 615 620

His Asn Thr Ala Ser Thr Leu Glu Ala Met Leu Arg Asn Asp Thr Asn
625 630 635 640

Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala Ala Asn Met Leu Tyr Pro
645 650 655

Ile Pro Ala Asn Ala Thr Asn Val Pro Ile Ser Ile Pro Ser Arg Asn
660 665 670

Trp Ala Ala Phe Arg Gly Trp Ala Phe Thr Arg Leu Lys Thr Lys Glu
675 680 685

Thr Pro Ser Leu Gly Ser Gly Tyr Asp Pro Tyr Tyr Thr Tyr Ser Gly
690 695 700

Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr Leu Asn His Thr Phe Lys
705 710 715 720

Lys Val Ala Ile Thr Phe Asp Ser Ser Val Ser Trp Pro Gly Asn Asp
 725 730 735

Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile Lys Arg Ser Val Asp Gly
 740 745 750

Glu Gly Tyr Asn Val Ala Gln Cys Asn Met Thr Lys Asp Trp Phe Leu
 755 760 765

Val Gln Met Leu Ala Asn Tyr Asn Ile Gly Tyr Gln Gly Phe Tyr Ile
 770 775 780

Pro Glu Ser Tyr Lys Asp Arg Met Tyr Ser Phe Phe Arg Asn Phe Gln
785 790 795 800

Pro Met Ser Arg Gln Val Val Asp Asp Thr Lys Tyr Lys Asp Tyr Gln
 805 810 815

Gln Val Gly Ile Leu His Gln His Asn Asn Ser Gly Phe Val Gly Tyr
 820 825 830

Leu Ala Pro Thr Met Arg Glu Gly Gln Ala Tyr Pro Ala Asn Phe Pro
 835 840 845

Tyr Pro Leu Ile Gly Lys Thr Ala Val Asp Ser Ile Thr Gln Lys Lys
 850 855 860

Phe Leu Cys Asp Arg Thr Leu Trp Arg Ile Pro Phe Ser Ser Asn Phe
865 870 875 880

Met Ser Met Gly Ala Leu Thr Asp Leu Gly Gln Asn Leu Leu Tyr Ala
 885 890 895

Asn Ser Ala His Ala Leu Asp Met Thr Phe Glu Val Asp Pro Met Asp
 900 905 910

Glu Pro Thr Leu Leu Tyr Val Leu Phe Glu Val Phe Asp Val Val Arg
915 920 925

Val His Gln Pro His Arg Gly Val Ile Glu Thr Val Tyr Leu Arg Thr
930 935 940

Pro Phe Ser Ala Gly Asn Ala Thr Thr
945 950

<210> 49
<211> 961
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 49

Met Ala Thr Pro Ser Met Met Pro Gln Trp Ser Tyr Met His Ile Ser
1 5 10 15

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

Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
50 55 60

Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

Ala Ser Thr Tyr Phe Asp Ile Arg Gly Val Leu Asp Arg Gly Pro Thr

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

Asn Gly Asp Asn Leu Thr Pro Lys Val Val Leu Tyr Ser Glu Asp Val
305 310 315 320

Asp Ile Glu Thr Pro Asp Thr His Ile Ser Tyr Met Pro Thr Ile Lys
 325 330 335

Glu Gly Asn Ser Arg Glu Leu Met Gly Gln Gln Ser Met Pro Asn Arg
 340 345 350

Pro Asn Tyr Ile Ala Phe Arg Asp Asn Phe Ile Gly Leu Met Tyr Tyr
 355 360 365

Asn Ser Thr Gly Asn Met Gly Val Leu Ala Gly Gln Ala Ser Gln Leu
 370 375 380

Asn Ala Val Val Asp Leu Gln Asp Arg Asn Thr Glu Leu Ser Tyr Gln
385 390 395 400

Leu Leu Leu Asp Ser Ile Gly Asp Arg Thr Arg Tyr Phe Ser Met Trp
 405 410 415

Asn Gln Leu Pro Asn Tyr Cys Phe Pro Leu Gly Gly Val Ile Asn Thr
 420 425 430

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

Glu Lys Asp Ala Thr Glu Phe Ser Asp Lys Asn Glu Ile Arg Val Gly
 450 455 460

Asn Asn Phe Ala Met Glu Ile Asn Leu Asn Ala Asn Leu Trp Arg Asn
465 470 475 480

Phe Leu Tyr Ser Asn Ile Ala Leu Tyr Leu Pro Asp Lys Leu Lys Tyr
 485 490 495

Ser Pro Ser Asn Val Lys Ile Ser Asp Asn Pro Asn Thr Tyr Asp Tyr
 500 505 510

Met Asn Lys Arg Val Val Ala Pro Gly Leu Val Asp Cys Tyr Ile Asn
515 520 525

Leu Gly Ala Arg Trp Ser Leu Asp Tyr Met Asp Asn Val Asn Pro Phe
530 535 540

Asn His His Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly
545 550 555 560

Asn Gly Arg Tyr Val Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe
565 570 575

Ala Ile Lys Asn Leu Leu Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp
580 585 590

Asn Phe Arg Lys Asp Val Asn Met Val Leu Gln Ser Ser Leu Gly Asn
595 600 605

Asp Leu Arg Val Asp Gly Ala Ser Ile Lys Phe Asp Ser Ile Cys Leu
610 615 620

Tyr Ala Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu
625 630 635 640

Ala Met Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu
645 650 655

Ser Ala Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val
660 665 670

Pro Ile Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp Ala
675 680 685

Phe Thr Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly Tyr
690 695 700

Asp Pro Tyr Tyr Thr Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr
705 710 715 720

Phe Tyr Leu Asn His Thr Phe Lys Lys Val Ala Ile Thr Phe Asp Ser
725 730 735

Ser Val Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe
740 745 750

Glu Ile Lys Arg Ser Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys
755 760 765

Asn Met Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala Asn Tyr Asn
770 775 780

Ile Gly Tyr Gln Gly Phe Tyr Ile Pro Glu Ser Tyr Lys Asp Arg Met
785 790 795 800

Tyr Ser Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp
805 810 815

Asp Thr Lys Tyr Lys Asp Tyr Gln Gln Val Gly Ile Leu His Gln His
820 825 830

Asn Asn Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Glu Gly
835 840 845

Gln Ala Tyr Pro Ala Asn Phe Pro Tyr Pro Leu Ile Gly Lys Thr Ala
850 855 860

Val Asp Ser Ile Thr Gln Lys Lys Phe Leu Cys Asp Arg Thr Leu Trp
865 870 875 880

Arg Ile Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp
885 890 895

Leu Gly Gln Asn Leu Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met
900 905 910

Thr Phe Glu Val Asp Pro Met Asp Glu Pro Thr Leu Leu Tyr Val Leu

915 920 925

Phe Glu Val Phe Asp Val Val Arg Val His Gln Pro His Arg Gly Val
930 935 940

Ile Glu Thr Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala Thr
945 950 955 960

Thr

<210> 50
<211> 969
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 50

Met Ala Thr Pro Ser Met Met Pro Gln Trp Ser Tyr Met His Ile Ser
1 5 10 15

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

Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
50 55 60

Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

Ala Ser Thr Tyr Phe Asp Ile Arg Gly Val Leu Asp Arg Gly Pro Thr

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

Ser Thr Thr Glu Ala Ala Ala Gly Asn Gly Asp Asn Leu Thr Pro Lys
305 310 315 320

Val Val Leu Tyr Ser Glu Asp Val Asp Ile Glu Thr Pro Asp Thr His
325 330 335

Ile Ser Tyr Met Pro Thr Ile Lys Glu Gly Asn Ser Arg Glu Leu Met
340 345 350

Gly Gln Gln Ser Met Pro Asn Arg Pro Asn Tyr Ile Ala Phe Arg Asp
355 360 365

Asn Phe Ile Gly Leu Met Tyr Tyr Asn Ser Thr Gly Asn Met Gly Val
370 375 380

Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala Val Val Asp Leu Gln Asp
385 390 395 400

Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu Leu Asp Ser Ile Gly Asp
405 410 415

Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Leu Pro Asn Tyr Cys Phe
420 425 430

Pro Leu Gly Gly Val Ile Asn Thr Glu Thr Leu Thr Lys Val Lys Pro
435 440 445

Lys Thr Gly Gln Glu Asn Gly Trp Glu Lys Asp Ala Thr Glu Phe Ser
450 455 460

Asp Lys Asn Glu Ile Arg Val Gly Asn Asn Phe Ala Met Glu Ile Asn
465 470 475 480

Leu Asn Ala Asn Leu Trp Arg Asn Phe Leu Tyr Ser Asn Ile Ala Leu
485 490 495

Tyr Leu Pro Asp Lys Leu Lys Tyr Ser Pro Ser Asn Val Lys Ile Ser
500 505 510

Asp Asn Pro Asn Thr Tyr Asp Tyr Met Asn Lys Arg Val Val Ala Pro
515 520 525

Gly Leu Val Asp Cys Tyr Ile Asn Leu Gly Ala Arg Trp Ser Leu Asp
530 535 540

Tyr Met Asp Asn Val Asn Pro Phe Asn His His Arg Asn Ala Gly Leu
545 550 555 560

Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly Arg Tyr Val Pro Phe His
565 570 575

Ile Gln Val Pro Gln Lys Phe Phe Ala Ile Lys Asn Leu Leu Leu Leu
580 585 590

Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe Arg Lys Asp Val Asn Met
595 600 605

Val Leu Gln Ser Ser Leu Gly Asn Asp Leu Arg Val Asp Gly Ala Ser
610 615 620

Ile Lys Phe Asp Ser Ile Cys Leu Tyr Ala Thr Phe Phe Pro Met Ala
625 630 635 640

His Asn Thr Ala Ser Thr Leu Glu Ala Met Leu Arg Asn Asp Thr Asn
645 650 655

Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala Ala Asn Met Leu Tyr Pro
660 665 670

Ile Pro Ala Asn Ala Thr Asn Val Pro Ile Ser Ile Pro Ser Arg Asn
675 680 685

Trp Ala Ala Phe Arg Gly Trp Ala Phe Thr Arg Leu Lys Thr Lys Glu
690 695 700

Thr Pro Ser Leu Gly Ser Gly Tyr Asp Pro Tyr Tyr Thr Tyr Ser Gly
705 710 715 720

Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr Leu Asn His Thr Phe Lys
725 730 735

Lys Val Ala Ile Thr Phe Asp Ser Ser Val Ser Trp Pro Gly Asn Asp
740 745 750

Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile Lys Arg Ser Val Asp Gly
755 760 765

Glu Gly Tyr Asn Val Ala Gln Cys Asn Met Thr Lys Asp Trp Phe Leu
770 775 780

Val Gln Met Leu Ala Asn Tyr Asn Ile Gly Tyr Gln Gly Phe Tyr Ile
785 790 795 800

Pro Glu Ser Tyr Lys Asp Arg Met Tyr Ser Phe Phe Arg Asn Phe Gln
805 810 815

Pro Met Ser Arg Gln Val Val Asp Asp Thr Lys Tyr Lys Asp Tyr Gln
820 825 830

Gln Val Gly Ile Leu His Gln His Asn Asn Ser Gly Phe Val Gly Tyr
835 840 845

Leu Ala Pro Thr Met Arg Glu Gly Gln Ala Tyr Pro Ala Asn Phe Pro
850 855 860

Tyr Pro Leu Ile Gly Lys Thr Ala Val Asp Ser Ile Thr Gln Lys Lys
865 870 875 880

Phe Leu Cys Asp Arg Thr Leu Trp Arg Ile Pro Phe Ser Ser Asn Phe
885 890 895

Met Ser Met Gly Ala Leu Thr Asp Leu Gly Gln Asn Leu Leu Tyr Ala
900 905 910

Asn Ser Ala His Ala Leu Asp Met Thr Phe Glu Val Asp Pro Met Asp

915 920 925

Glu Pro Thr Leu Leu Tyr Val Leu Phe Glu Val Phe Asp Val Val Arg
930 935 940

Val His Gln Pro His Arg Gly Val Ile Glu Thr Val Tyr Leu Arg Thr
945 950 955 960

Pro Phe Ser Ala Gly Asn Ala Thr Thr
965

<210> 51
<211> 977
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 51

Met Ala Thr Pro Ser Met Met Pro Gln Trp Ser Tyr Met His Ile Ser
1 5 10 15

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

Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
50 55 60

Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

Ala Pro Asn Pro Cys Glu Trp Asp Glu Asn Ala Asn Pro Asn Ala Asn
130 135 140

Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
145 150 155 160

Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
165 170 175

Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
180 185 190

Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
195 200 205

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

Thr Lys Glu Gly Ile Gln Ile Gly Val Glu Gly Gln Thr Pro Lys Tyr
225 230 235 240

Ala Asp Lys Thr Phe Gln Pro Glu Pro Gln Ile Gly Glu Ser Gln Trp
245 250 255

Tyr Glu Thr Glu Ile Asn His Ala Ala Gly Arg Val Leu Lys Lys Thr
260 265 270

Thr Pro Met Lys Pro Cys Tyr Gly Ser Tyr Ala Lys Pro Thr Asn Glu
275 280 285

Asn Gly Gly Gln Gly Ile Leu Val Lys Gln Gln Asn Gly Lys Leu Glu
290 295 300

Ser Gln Val Glu Met Gln Phe Phe Ser Thr Thr Glu Ala Ala Ala Gly
305 310 315 320

Asn Gly Asp Asn Leu Thr Pro Lys Val Val Leu Tyr Ser Glu Asp Val
325 330 335

Asp Ile Glu Thr Pro Asp Thr His Ile Ser Tyr Met Pro Thr Ile Lys
340 345 350

Glu Gly Asn Ser Arg Glu Leu Met Gly Gln Gln Ser Met Pro Asn Arg
355 360 365

Pro Asn Tyr Ile Ala Phe Arg Asp Asn Phe Ile Gly Leu Met Tyr Tyr
370 375 380

Asn Ser Thr Gly Asn Met Gly Val Leu Ala Gly Gln Ala Ser Gln Leu
385 390 395 400

Asn Ala Val Val Asp Leu Gln Asp Arg Asn Thr Glu Leu Ser Tyr Gln
405 410 415

Leu Leu Leu Asp Ser Ile Gly Asp Arg Thr Arg Tyr Phe Ser Met Trp
420 425 430

Asn Gln Leu Pro Asn Tyr Cys Phe Pro Leu Gly Gly Val Ile Asn Thr
435 440 445

Glu Thr Leu Thr Lys Val Lys Pro Lys Thr Gly Gln Glu Asn Gly Trp
450 455 460

Glu Lys Asp Ala Thr Glu Phe Ser Asp Lys Asn Glu Ile Arg Val Gly
465 470 475 480

Asn Asn Phe Ala Met Glu Ile Asn Leu Asn Ala Asn Leu Trp Arg Asn
485 490 495

Phe Leu Tyr Ser Asn Ile Ala Leu Tyr Leu Pro Asp Lys Leu Lys Tyr
500 505 510

Ser Pro Ser Asn Val Lys Ile Ser Asp Asn Pro Asn Thr Tyr Asp Tyr
515 520 525

Met Asn Lys Arg Val Val Ala Pro Gly Leu Val Asp Cys Tyr Ile Asn
530 535 540

Leu Gly Ala Arg Trp Ser Leu Asp Tyr Met Asp Asn Val Asn Pro Phe
545 550 555 560

Asn His His Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly
565 570 575

Asn Gly Arg Tyr Val Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe
580 585 590

Ala Ile Lys Asn Leu Leu Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp
595 600 605

Asn Phe Arg Lys Asp Val Asn Met Val Leu Gln Ser Ser Leu Gly Asn
610 615 620

Asp Leu Arg Val Asp Gly Ala Ser Ile Lys Phe Asp Ser Ile Cys Leu
625 630 635 640

Tyr Ala Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu
645 650 655

Ala Met Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu
660 665 670

Ser Ala Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val
675 680 685

Pro Ile Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp Ala
690 695 700

Phe Thr Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly Tyr

705 710 715 720

Asp Pro Tyr Tyr Thr Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr
725 730 735

Phe Tyr Leu Asn His Thr Phe Lys Lys Val Ala Ile Thr Phe Asp Ser
740 745 750

Ser Val Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe
755 760 765

Glu Ile Lys Arg Ser Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys
770 775 780

Asn Met Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala Asn Tyr Asn
785 790 795 800

Ile Gly Tyr Gln Gly Phe Tyr Ile Pro Glu Ser Tyr Lys Asp Arg Met
805 810 815

Tyr Ser Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp
820 825 830

Asp Thr Lys Tyr Lys Asp Tyr Gln Gln Val Gly Ile Leu His Gln His
835 840 845

Asn Asn Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Glu Gly
850 855 860

Gln Ala Tyr Pro Ala Asn Phe Pro Tyr Pro Leu Ile Gly Lys Thr Ala
865 870 875 880

Val Asp Ser Ile Thr Gln Lys Lys Phe Leu Cys Asp Arg Thr Leu Trp
885 890 895

Arg Ile Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp
900 905 910

Leu Gly Gln Asn Leu Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met
915 920 925

Thr Phe Glu Val Asp Pro Met Asp Glu Pro Thr Leu Leu Tyr Val Leu
930 935 940

Phe Glu Val Phe Asp Val Val Arg Val His Gln Pro His Arg Gly Val
945 950 955 960

Ile Glu Thr Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala Thr
965 970 975

Thr

<210> 52

<211> 985

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Construct

<400> 52

Met Ala Thr Pro Ser Met Met Pro Gln Trp Ser Tyr Met His Ile Ser
1 5 10 15

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

Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
50 55 60

Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met

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

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

Lys Gln Gln Asn Gly Lys Leu Glu Ser Gln Val Glu Met Gln Phe Phe
305 310 315 320

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

Val Val Leu Tyr Ser Glu Asp Val Asp Ile Glu Thr Pro Asp Thr His
340 345 350

Ile Ser Tyr Met Pro Thr Ile Lys Glu Gly Asn Ser Arg Glu Leu Met
355 360 365

Gly Gln Gln Ser Met Pro Asn Arg Pro Asn Tyr Ile Ala Phe Arg Asp
370 375 380

Asn Phe Ile Gly Leu Met Tyr Tyr Asn Ser Thr Gly Asn Met Gly Val
385 390 395 400

Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala Val Val Asp Leu Gln Asp
405 410 415

Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu Leu Asp Ser Ile Gly Asp
420 425 430

Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Leu Pro Asn Tyr Cys Phe
435 440 445

Pro Leu Gly Gly Val Ile Asn Thr Glu Thr Leu Thr Lys Val Lys Pro
450 455 460

Lys Thr Gly Gln Glu Asn Gly Trp Glu Lys Asp Ala Thr Glu Phe Ser
465 470 475 480

Asp Lys Asn Glu Ile Arg Val Gly Asn Asn Phe Ala Met Glu Ile Asn
485 490 495

Leu Asn Ala Asn Leu Trp Arg Asn Phe Leu Tyr Ser Asn Ile Ala Leu
500 505 510

Tyr Leu Pro Asp Lys Leu Lys Tyr Ser Pro Ser Asn Val Lys Ile Ser
515 520 525

Asp Asn Pro Asn Thr Tyr Asp Tyr Met Asn Lys Arg Val Val Ala Pro
530 535 540

Gly Leu Val Asp Cys Tyr Ile Asn Leu Gly Ala Arg Trp Ser Leu Asp
545 550 555 560

Tyr Met Asp Asn Val Asn Pro Phe Asn His His Arg Asn Ala Gly Leu
565 570 575

Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly Arg Tyr Val Pro Phe His
580 585 590

Ile Gln Val Pro Gln Lys Phe Phe Ala Ile Lys Asn Leu Leu Leu Leu
595 600 605

Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe Arg Lys Asp Val Asn Met
610 615 620

Val Leu Gln Ser Ser Leu Gly Asn Asp Leu Arg Val Asp Gly Ala Ser
625 630 635 640

Ile Lys Phe Asp Ser Ile Cys Leu Tyr Ala Thr Phe Phe Pro Met Ala
645 650 655

His Asn Thr Ala Ser Thr Leu Glu Ala Met Leu Arg Asn Asp Thr Asn
660 665 670

Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala Ala Asn Met Leu Tyr Pro
675 680 685

Ile Pro Ala Asn Ala Thr Asn Val Pro Ile Ser Ile Pro Ser Arg Asn
690 695 700

Trp Ala Ala Phe Arg Gly Trp Ala Phe Thr Arg Leu Lys Thr Lys Glu
705 710 715 720

Thr Pro Ser Leu Gly Ser Gly Tyr Asp Pro Tyr Tyr Thr Tyr Ser Gly
 725 730 735

Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr Leu Asn His Thr Phe Lys
 740 745 750

Lys Val Ala Ile Thr Phe Asp Ser Ser Val Ser Trp Pro Gly Asn Asp
 755 760 765

Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile Lys Arg Ser Val Asp Gly
 770 775 780

Glu Gly Tyr Asn Val Ala Gln Cys Asn Met Thr Lys Asp Trp Phe Leu
785 790 795 800

Val Gln Met Leu Ala Asn Tyr Asn Ile Gly Tyr Gln Gly Phe Tyr Ile
 805 810 815

Pro Glu Ser Tyr Lys Asp Arg Met Tyr Ser Phe Phe Arg Asn Phe Gln
 820 825 830

Pro Met Ser Arg Gln Val Val Asp Asp Thr Lys Tyr Lys Asp Tyr Gln
 835 840 845

Gln Val Gly Ile Leu His Gln His Asn Asn Ser Gly Phe Val Gly Tyr
 850 855 860

Leu Ala Pro Thr Met Arg Glu Gly Gln Ala Tyr Pro Ala Asn Phe Pro
865 870 875 880

Tyr Pro Leu Ile Gly Lys Thr Ala Val Asp Ser Ile Thr Gln Lys Lys
 885 890 895

Phe Leu Cys Asp Arg Thr Leu Trp Arg Ile Pro Phe Ser Ser Asn Phe

900 905 910

Met Ser Met Gly Ala Leu Thr Asp Leu Gly Gln Asn Leu Leu Tyr Ala
915 920 925

Asn Ser Ala His Ala Leu Asp Met Thr Phe Glu Val Asp Pro Met Asp
930 935 940

Glu Pro Thr Leu Leu Tyr Val Leu Phe Glu Val Phe Asp Val Val Arg
945 950 955 960

Val His Gln Pro His Arg Gly Val Ile Glu Thr Val Tyr Leu Arg Thr
965 970 975

Pro Phe Ser Ala Gly Asn Ala Thr Thr
980 985

<210> 53
<211> 993
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 53

Met Ala Thr Pro Ser Met Met Pro Gln Trp Ser Tyr Met His Ile Ser
1 5 10 15

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

Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
50 55 60

Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
 85 90 95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
 115 120 125

Ala Pro Asn Pro Cys Glu Trp Asp Glu Asn Ala Asn Pro Asn Ala Asn
 130 135 140

Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
145 150 155 160

Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
 165 170 175

Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
 180 185 190

Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
 195 200 205

Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
 210 215 220

Pro Lys Thr His Val Phe Gly Gln Ala Pro Tyr Ser Gly Ile Asn Ile
225 230 235 240

Thr Lys Glu Gly Ile Gln Ile Gly Val Glu Gly Gln Thr Pro Lys Tyr
 245 250 255

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

Tyr Glu Thr Glu Ile Asn His Ala Ala Gly Arg Val Leu Lys Lys Thr
275 280 285

Thr Pro Met Lys Pro Cys Tyr Gly Ser Tyr Ala Lys Pro Thr Asn Glu
290 295 300

Asn Gly Gly Gln Gly Ile Leu Val Lys Gln Gln Asn Gly Lys Leu Glu
305 310 315 320

Ser Gln Val Glu Met Gln Phe Phe Ser Thr Thr Glu Ala Ala Ala Gly
325 330 335

Asn Gly Asp Asn Leu Thr Pro Lys Val Val Leu Tyr Ser Glu Asp Val
340 345 350

Asp Ile Glu Thr Pro Asp Thr His Ile Ser Tyr Met Pro Thr Ile Lys
355 360 365

Glu Gly Asn Ser Arg Glu Leu Met Gly Gln Gln Ser Met Pro Asn Arg
370 375 380

Pro Asn Tyr Ile Ala Phe Arg Asp Asn Phe Ile Gly Leu Met Tyr Tyr
385 390 395 400

Asn Ser Thr Gly Asn Met Gly Val Leu Ala Gly Gln Ala Ser Gln Leu
405 410 415

Asn Ala Val Val Asp Leu Gln Asp Arg Asn Thr Glu Leu Ser Tyr Gln
420 425 430

Leu Leu Leu Asp Ser Ile Gly Asp Arg Thr Arg Tyr Phe Ser Met Trp
435 440 445

Asn Gln Leu Pro Asn Tyr Cys Phe Pro Leu Gly Gly Val Ile Asn Thr
450 455 460

Glu Thr Leu Thr Lys Val Lys Pro Lys Thr Gly Gln Glu Asn Gly Trp
465 470 475 480

Glu Lys Asp Ala Thr Glu Phe Ser Asp Lys Asn Glu Ile Arg Val Gly
485 490 495

Asn Asn Phe Ala Met Glu Ile Asn Leu Asn Ala Asn Leu Trp Arg Asn
500 505 510

Phe Leu Tyr Ser Asn Ile Ala Leu Tyr Leu Pro Asp Lys Leu Lys Tyr
515 520 525

Ser Pro Ser Asn Val Lys Ile Ser Asp Asn Pro Asn Thr Tyr Asp Tyr
530 535 540

Met Asn Lys Arg Val Val Ala Pro Gly Leu Val Asp Cys Tyr Ile Asn
545 550 555 560

Leu Gly Ala Arg Trp Ser Leu Asp Tyr Met Asp Asn Val Asn Pro Phe
565 570 575

Asn His His Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly
580 585 590

Asn Gly Arg Tyr Val Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe
595 600 605

Ala Ile Lys Asn Leu Leu Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp
610 615 620

Asn Phe Arg Lys Asp Val Asn Met Val Leu Gln Ser Ser Leu Gly Asn
625 630 635 640

Asp Leu Arg Val Asp Gly Ala Ser Ile Lys Phe Asp Ser Ile Cys Leu
645 650 655

Tyr Ala Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu
660 665 670

Ala Met Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu

675	680	685	
Ser Ala Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val			
690	695	700	
Pro Ile Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp Ala			
705	710	715	720
Phe Thr Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly Tyr			
725	730	735	
Asp Pro Tyr Tyr Thr Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr			
740	745	750	
Phe Tyr Leu Asn His Thr Phe Lys Lys Val Ala Ile Thr Phe Asp Ser			
755	760	765	
Ser Val Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe			
770	775	780	
Glu Ile Lys Arg Ser Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys			
785	790	795	800
Asn Met Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala Asn Tyr Asn			
805	810	815	
Ile Gly Tyr Gln Gly Phe Tyr Ile Pro Glu Ser Tyr Lys Asp Arg Met			
820	825	830	
Tyr Ser Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp			
835	840	845	
Asp Thr Lys Tyr Lys Asp Tyr Gln Gln Val Gly Ile Leu His Gln His			
850	855	860	
Asn Asn Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Glu Gly			
865	870	875	880

Gln Ala Tyr Pro Ala Asn Phe Pro Tyr Pro Leu Ile Gly Lys Thr Ala
885 890 895

Val Asp Ser Ile Thr Gln Lys Lys Phe Leu Cys Asp Arg Thr Leu Trp
900 905 910

Arg Ile Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp
915 920 925

Leu Gly Gln Asn Leu Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met
930 935 940

Thr Phe Glu Val Asp Pro Met Asp Glu Pro Thr Leu Leu Tyr Val Leu
945 950 955 960

Phe Glu Val Phe Asp Val Val Arg Val His Gln Pro His Arg Gly Val
965 970 975

Ile Glu Thr Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala Thr
980 985 990

Thr

<210> 54

<211> 1017

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Construct

<400> 54

Met Ala Thr Pro Ser Met Met Pro Gln Trp Ser Tyr Met His Ile Ser
1 5 10 15

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

Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
50 55 60

Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

Ala Pro Asn Pro Cys Glu Trp Asp Glu Asn Ala Asn Pro Asn Ala Asn
130 135 140

Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
145 150 155 160

Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
165 170 175

Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
180 185 190

Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
195 200 205

Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
210 215 220

Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
225 230 235 240

Pro Asn Ala Asn Pro Asn Ala Asn Pro Lys Thr His Val Phe Gly Gln

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

Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu Leu Asp Ser Ile Gly Asp
450 455 460

Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Leu Pro Asn Tyr Cys Phe
465 470 475 480

Pro Leu Gly Gly Val Ile Asn Thr Glu Thr Leu Thr Lys Val Lys Pro
485 490 495

Lys Thr Gly Gln Glu Asn Gly Trp Glu Lys Asp Ala Thr Glu Phe Ser
500 505 510

Asp Lys Asn Glu Ile Arg Val Gly Asn Asn Phe Ala Met Glu Ile Asn
515 520 525

Leu Asn Ala Asn Leu Trp Arg Asn Phe Leu Tyr Ser Asn Ile Ala Leu
530 535 540

Tyr Leu Pro Asp Lys Leu Lys Tyr Ser Pro Ser Asn Val Lys Ile Ser
545 550 555 560

Asp Asn Pro Asn Thr Tyr Asp Tyr Met Asn Lys Arg Val Val Ala Pro
565 570 575

Gly Leu Val Asp Cys Tyr Ile Asn Leu Gly Ala Arg Trp Ser Leu Asp
580 585 590

Tyr Met Asp Asn Val Asn Pro Phe Asn His His Arg Asn Ala Gly Leu
595 600 605

Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly Arg Tyr Val Pro Phe His
610 615 620

Ile Gln Val Pro Gln Lys Phe Phe Ala Ile Lys Asn Leu Leu Leu Leu
625 630 635 640

Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe Arg Lys Asp Val Asn Met
645 650 655

Val Leu Gln Ser Ser Leu Gly Asn Asp Leu Arg Val Asp Gly Ala Ser
660 665 670

Ile Lys Phe Asp Ser Ile Cys Leu Tyr Ala Thr Phe Phe Pro Met Ala
675 680 685

His Asn Thr Ala Ser Thr Leu Glu Ala Met Leu Arg Asn Asp Thr Asn
690 695 700

Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala Ala Asn Met Leu Tyr Pro
705 710 715 720

Ile Pro Ala Asn Ala Thr Asn Val Pro Ile Ser Ile Pro Ser Arg Asn
725 730 735

Trp Ala Ala Phe Arg Gly Trp Ala Phe Thr Arg Leu Lys Thr Lys Glu
740 745 750

Thr Pro Ser Leu Gly Ser Gly Tyr Asp Pro Tyr Tyr Thr Tyr Ser Gly
755 760 765

Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr Leu Asn His Thr Phe Lys
770 775 780

Lys Val Ala Ile Thr Phe Asp Ser Ser Val Ser Trp Pro Gly Asn Asp
785 790 795 800

Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile Lys Arg Ser Val Asp Gly
805 810 815

Glu Gly Tyr Asn Val Ala Gln Cys Asn Met Thr Lys Asp Trp Phe Leu
820 825 830

Val Gln Met Leu Ala Asn Tyr Asn Ile Gly Tyr Gln Gly Phe Tyr Ile
835 840 845

Pro Glu Ser Tyr Lys Asp Arg Met Tyr Ser Phe Phe Arg Asn Phe Gln
850 855 860

Pro Met Ser Arg Gln Val Val Asp Asp Thr Lys Tyr Lys Asp Tyr Gln
865 870 875 880

Gln Val Gly Ile Leu His Gln His Asn Asn Ser Gly Phe Val Gly Tyr
 885 890 895

Leu Ala Pro Thr Met Arg Glu Gly Gln Ala Tyr Pro Ala Asn Phe Pro
 900 905 910

Tyr Pro Leu Ile Gly Lys Thr Ala Val Asp Ser Ile Thr Gln Lys Lys
 915 920 925

Phe Leu Cys Asp Arg Thr Leu Trp Arg Ile Pro Phe Ser Ser Asn Phe
 930 935 940

Met Ser Met Gly Ala Leu Thr Asp Leu Gly Gln Asn Leu Leu Tyr Ala
945 950 955 960

Asn Ser Ala His Ala Leu Asp Met Thr Phe Glu Val Asp Pro Met Asp
 965 970 975

Glu Pro Thr Leu Leu Tyr Val Leu Phe Glu Val Phe Asp Val Val Arg
 980 985 990

Val His Gln Pro His Arg Gly Val Ile Glu Thr Val Tyr Leu Arg Thr
 995 1000 1005

Pro Phe Ser Ala Gly Asn Ala Thr Thr
 1010 1015

<210> 55

<211> 597

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Construct

<400> 55

Met Lys Arg Ala Arg Pro Ser Glu Asp Thr Phe Asn Pro Val Tyr Pro
1 5 10 15

Tyr Asp Thr Glu Thr Gly Pro Pro Thr Val Pro Phe Leu Thr Pro Pro
20 25 30

Phe Val Ser Pro Asn Gly Phe Gln Glu Ser Pro Pro Gly Val Leu Ser
35 40 45

Leu Arg Leu Ser Glu Pro Leu Val Thr Ser Asn Gly Met Leu Ala Leu
50 55 60

Lys Met Gly Asn Gly Leu Ser Leu Asp Glu Ala Gly Asn Leu Thr Ser
65 70 75 80

Gln Asn Val Thr Thr Val Ser Pro Pro Leu Lys Lys Thr Lys Ser Asn
85 90 95

Ile Asn Leu Glu Ile Ser Ala Pro Leu Thr Val Thr Ser Glu Ala Leu
100 105 110

Thr Val Ala Ala Ala Ala Pro Leu Met Val Ala Gly Asn Thr Leu Thr
115 120 125

Met Gln Ser Gln Ala Pro Leu Thr Val His Asp Ser Lys Leu Ser Ile
130 135 140

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

Thr Ser Gly Pro Leu Thr Thr Thr Asp Ser Ser Thr Leu Thr Ile Thr
165 170 175

Ala Ser Pro Pro Leu Thr Thr Ala Thr Gly Ser Leu Gly Ile Asp Leu
180 185 190

Lys Glu Pro Ile Tyr Thr Gln Asn Gly Lys Leu Gly Leu Lys Tyr Gly
195 200 205

Ala Pro Leu His Val Thr Asp Asp Leu Asn Thr Leu Thr Val Ala Thr
210 215 220

Gly Pro Gly Val Thr Ile Asn Asn Thr Ser Leu Gln Thr Lys Val Thr
225 230 235 240

Gly Ala Leu Gly Phe Asp Ser Gln Gly Asn Met Gln Leu Asn Val Ala
245 250 255

Gly Gly Leu Arg Ile Asp Ser Gln Asn Arg Arg Leu Ile Leu Asp Val
260 265 270

Ser Tyr Pro Phe Asp Ala Gln Asn Gln Leu Asn Leu Arg Leu Gly Gln
275 280 285

Gly Pro Leu Phe Ile Asn Ser Ala His Asn Leu Asp Ile Asn Tyr Asn
290 295 300

Lys Gly Leu Tyr Leu Phe Thr Ala Ser Asn Asn Ser Lys Lys Leu Glu
305 310 315 320

Val Asn Leu Ser Thr Ala Lys Gly Leu Met Phe Asp Ala Thr Ala Ile
325 330 335

Ala Ile Asn Ala Gly Asp Gly Leu Glu Phe Gly Ser Pro Asn Ala Pro
340 345 350

Asn Thr Asn Pro Leu Lys Thr Lys Ile Gly His Gly Leu Glu Phe Asp
355 360 365

Ser Asn Lys Ala Met Val Pro Lys Leu Gly Thr Gly Leu Ser Phe Asp
370 375 380

Ser Thr Gly Ala Ile Thr Val Gly Asn Lys Asn Asn Asp Lys Leu Thr
385 390 395 400

Leu Trp Thr Thr Pro Ala Pro Ser Pro Asn Cys Arg Leu Asn Ala Glu
405 410 415

Lys Asp Ala Lys Leu Thr Leu Val Leu Thr Lys Cys Gly Ser Gln Ile
420 425 430

Leu Ala Thr Val Ser Val Leu Ala Val Lys Gly Ser Leu Ala Pro Ile
435 440 445

Ser Gly Thr Val Gln Ser Ala His Leu Ile Ile Arg Phe Asp Glu Asn
450 455 460

Gly Val Leu Leu Asn Asn Ser Phe Leu Asp Pro Glu Tyr Trp Asn Phe
465 470 475 480

Arg Asn Gly Asp Leu Thr Glu Gly Thr Ala Tyr Thr Asn Ala Val Gly
485 490 495

Phe Met Pro Asn Leu Ser Ala Tyr Pro Lys Ser His Gly Lys Thr Ala
500 505 510

Lys Ser Asn Ile Val Ser Gln Val Tyr Leu Asn Gly Asp Lys Thr Lys
515 520 525

Pro Val Thr Leu Thr Ile Thr Leu Asn Gly Thr Gln Glu Thr Gly Asn
530 535 540

Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asp
545 550 555 560

Thr Thr Pro Ser Ala Tyr Ser Met Ser Phe Ser Trp Asp Trp Ser Gly
565 570 575

His Asn Tyr Ile Asn Glu Ile Phe Ala Thr Ser Ser Tyr Thr Phe Ser
580 585 590

Tyr Ile Ala Gln Glu
595

<210> 56
<211> 218
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 56

Met Ser Ile Leu Ile Ser Pro Ser Asn Asn Thr Gly Trp Gly Leu Arg
1 5 10 15

Phe Pro Ser Lys Met Phe Gly Gly Ala Lys Lys Arg Ser Asp Gln His
20 25 30

Pro Val Arg Val Arg Gly His Tyr Arg Ala Pro Trp Gly Ala His Lys
35 40 45

Arg Gly Arg Thr Gly Arg Thr Thr Val Asp Asp Ala Ile Asp Ala Val
50 55 60

Val Glu Glu Ala Arg Asn Tyr Thr Pro Thr Pro Pro Pro Val Ser Thr
65 70 75 80

Val Asp Ala Ala Ile Gln Thr Val Val Arg Gly Ala Arg Arg Tyr Ala
85 90 95

Lys Met Lys Arg Arg Arg Arg Arg Val Ala Arg Arg His Arg Arg Arg
100 105 110

Pro Gly Thr Ala Ala Gln Arg Ala Ala Ala Ala Leu Leu Asn Arg Ala
115 120 125

Arg Arg Thr Gly Arg Arg Ala Ala Met Arg Ala Ala Arg Arg Leu Ala
130 135 140

Ala Gly Ile Val Thr Val Pro Pro Arg Ser Arg Arg Arg Ala Ala Ala
145 150 155 160

Ala Ala Ala Ala Ile Ser Ala Met Thr Gln Gly Arg Arg Gly Asn
165 170 175

Val Tyr Trp Val Arg Asp Ser Val Ser Gly Leu Arg Val Pro Val Arg
180 185 190

Thr Arg Pro Pro Arg Asn Glu Tyr Leu Asn Lys Ile Gln Asn Ser Leu
195 200 205

Ser Thr Glu Trp Ser Pro Cys Ser Val Thr
210 215

<210> 57

<211> 246

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Construct

<400> 57

Met Ser Ile Leu Ile Ser Pro Ser Asn Asn Thr Gly Trp Gly Leu Arg
1 5 10 15

Phe Pro Ser Lys Met Phe Gly Gly Ala Lys Lys Arg Ser Asp Gln His
20 25 30

Pro Val Arg Val Arg Gly His Tyr Arg Ala Pro Trp Gly Ala His Lys
35 40 45

Arg Gly Arg Thr Gly Arg Thr Thr Val Asp Asp Ala Ile Asp Ala Val
50 55 60

Val Glu Glu Ala Arg Asn Tyr Thr Pro Thr Pro Pro Val Ser Thr
65 70 75 80

Val Asp Ala Ala Ile Gln Thr Val Val Arg Gly Ala Glu Tyr Leu Asn
85 90 95

Lys Ile Gln Asn Ser Leu Ser Thr Glu Trp Ser Pro Cys Ser Val Thr
100 105 110

Arg Arg Tyr Ala Lys Met Lys Arg Arg Arg Arg Arg Val Ala Arg Arg
115 120 125

His Arg Arg Arg Pro Gly Thr Ala Ala Gln Arg Ala Ala Ala Leu
130 135 140

Leu Asn Arg Ala Arg Arg Thr Gly Arg Arg Ala Ala Met Arg Ala Ala
145 150 155 160

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

Arg Ala Ala Ala Ala Ala Ala Ala Ala Ile Ser Ala Met Thr Gln Gly
180 185 190

Arg Arg Gly Asn Val Tyr Trp Val Arg Asp Ser Val Ser Gly Leu Arg
195 200 205

Val Pro Val Arg Thr Arg Pro Pro Arg Asn Val Arg Thr Arg Pro Pro
210 215 220

Arg Asn Tyr Asn Arg Asn Ile Val Asn Arg Leu Leu Gly Asp Ala Leu
225 230 235 240

Thr Arg Pro Pro Arg Asn
245

<210> 58

<211> 226

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Construct

<400> 58

Met Ser Ile Leu Ile Ser Pro Ser Asn Asn Thr Gly Trp Gly Leu Arg
1 5 10 15

Phe Pro Ser Lys Met Phe Gly Gly Ala Lys Lys Arg Ser Asp Gln His
20 25 30

Pro Val Arg Val Arg Gly His Tyr Arg Ala Pro Trp Gly Ala His Lys
35 40 45

Arg Gly Arg Thr Gly Arg Thr Thr Val Asp Asp Ala Ile Asp Ala Val
50 55 60

Val Glu Glu Ala Arg Asn Tyr Thr Pro Thr Pro Pro Val Ser Thr
65 70 75 80

Val Asp Ala Ala Ile Gln Thr Val Val Arg Gly Ala Arg Arg Tyr Ala
85 90 95

Lys Met Lys Arg Arg Arg Arg Arg Val Ala Arg Arg His Arg Arg Arg
100 105 110

Pro Gly Thr Ala Ala Gln Arg Ala Ala Ala Ala Leu Leu Asn Arg Ala
115 120 125

Arg Arg Thr Gly Arg Arg Ala Ala Met Arg Ala Ala Glu Tyr Leu Asn
130 135 140

Lys Ile Gln Asn Ser Leu Ser Thr Glu Trp Ser Pro Cys Ser Val Thr
145 150 155 160

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

Arg Ala Ala Ala Ala Ala Ala Ala Ala Ile Ser Ala Met Thr Gln Gly
180 185 190

Arg Arg Gly Asn Val Tyr Trp Val Arg Asp Ser Val Ser Gly Leu Arg
195 200 205

Val Pro Val Arg Thr Arg Pro Pro Arg Asn Val Arg Thr Arg Pro Pro
210 215 220

Arg Asn
225

<210> 59
<211> 6
<212> PRT
<213> Plasmodium yoelii

<400> 59

Gln Gly Pro Gly Ala Pro
1 5

<210> 60
<211> 4
<212> PRT
<213> Plasmodium falciparum

<400> 60

Asn Ala Asn Pro
1

<210> 61
<211> 21
<212> PRT
<213> Plasmodium yoelii

<400> 61

Tyr Asn Arg Asn Ile Val Asn Arg Leu Leu Gly Asp Ala Leu Asn Gly
1 5 10 15

Lys Pro Glu Glu Lys
20

<210> 62
<211> 20

<212> PRT
<213> Plasmodium falciparum

<400> 62

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

Cys Ser Val Thr
20

<210> 63
<211> 9
<212> PRT
<213> Plasmodium vivax

<400> 63

Ala Asn Gly Ala Gly Asn Gln Pro Gly
1 5

<210> 64
<211> 4
<212> PRT
<213> Plasmodium malariae

<400> 64

Asn Ala Ala Gly
1

<210> 65
<211> 4
<212> PRT
<213> Plasmodium yoelii

<400> 65

Gln Gln Pro Pro
1

<210> 66
<211> 9
<212> PRT
<213> Plasmodium yoelii

<400> 66

Ser Tyr Val Pro Ser Ala Glu Gln Ile
1 5