

SEQUENCE LISTING

<110> DAIICHI SANKYO COMPANY, LIMITED

<120> ANTIBODY-DRUG CONJUGATE CONTAINING NOVEL CYCLIC DINUCLEOTIDE DERIVATIVE

<130> SAP-865-PCT

<141> 2021-03-05

<150> JP 202038983

<151> 2020-03-06

<160> 70

<170> PatentIn version 3.5

<210> 1

<211> 218

<212> PRT

<213> Homo sapiens

<400> 1

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

Glu Arg Ala Thr Ile Asn Cys Arg Ala Ser Lys Ser Val Ser Thr Ser
 20 25 30

Gly Tyr Ser Phe Met His Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro
 35 40 45

Lys Leu Leu Ile Tyr Leu Ala Ser Asn Leu Glu Ser Gly Val Pro Asp
 50 55 60

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

Ser Leu Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys Gln His Ser Arg
 85 90 95

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

Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln
 115 120 125

Leu Lys Ser Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr
 130 135 140

Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser
 145 150 155 160

Gly Asn Ser Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr
 165 170 175

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

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

Val Thr Lys Ser Phe Asn Arg Gly Glu Cys
 210 215

<210> 2
 <211> 448
 <212> PRT
 <213> Homo sapiens

<400> 2

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

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

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

Gly Trp Ile Asn Thr Tyr Thr Gly Glu Pro Thr Tyr Ala Asp Ala Phe

50		55		60
Lys Gly Arg Val Thr Met Thr Arg Asp Thr Ser Ile Ser Thr Ala Tyr				
65		70		80
Met Glu Leu Ser Arg Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Cys				
	85		90	95
Ala Arg Asp Tyr Gly Asp Tyr Gly Met Asp Tyr Trp Gly Gln Gly Thr				
	100		105	110
Thr Val Thr Val Ser Ser Ala Ser Thr Lys Gly Pro Ser Val Phe Pro				
	115		120	125
Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly Gly Thr Ala Ala Leu Gly				
	130		135	140
Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser Trp Asn				
145		150		160
Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val Leu Gln				
	165		170	175
Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro Ser Ser				
	180		185	190
Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val Asn His Lys Pro Ser				
	195		200	205
Asn Thr Lys Val Asp Lys Arg Val Glu Pro Lys Ser Cys Asp Lys Thr				
	210		215	220
His Thr Cys Pro Pro Cys Pro Ala Pro Glu Ala Ala Gly Gly Pro Ser				
225		230		240
Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg				
	245		250	255

Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro
 260 265 270

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

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

Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr
 305 310 315 320

Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr
 325 330 335

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

Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys
 355 360 365

Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser
 370 375 380

Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp
 385 390 395 400

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

Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala
 420 425 430

Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
 435 440 445

<211> 214
 <212> PRT
 <213> Homo sapiens

<400> 3

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

Glu Arg Ala Thr Leu Ser Cys Arg Ala Ser Gln Ser Val Ser Ser Tyr
 20 25 30

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

Tyr Asp Ala Ser Asn Arg Ala Thr Gly Ile Pro Ala Arg Phe Ser Gly
 50 55 60

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

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

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

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

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

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

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

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

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

Phe Asn Arg Gly Glu Cys
 210

<210> 4

<211> 448

<212> PRT

<213> Homo sapiens

<400> 4

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

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

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

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

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

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

Ala Arg Asp Thr Asp Gly Tyr Asp Phe Asp Tyr Trp Gly Gln Gly Thr
 100 105 110

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

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

Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser Trp Asn
 145 150 155 160

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

Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro Ser Ser
 180 185 190

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

Asn Thr Lys Val Asp Lys Arg Val Glu Pro Lys Ser Cys Asp Lys Thr
 210 215 220

His Thr Cys Pro Pro Cys Pro Ala Pro Glu Ala Ala Gly Gly Pro Ser
 225 230 235 240

Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg
 245 250 255

Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro
 260 265 270

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

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

Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr
 305 310 315 320

Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr

325

330

335

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

Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys
 355 360 365

Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser
 370 375 380

Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp
 385 390 395 400

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

Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala
 420 425 430

Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
 435 440 445

<210> 5

<211> 214

<212> PRT

<213> Homo sapiens

<400> 5

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

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

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

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

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

Glu Asp Phe Ala Val Tyr Tyr Cys Gln Gln His Tyr Ile Thr Pro Leu
 85 90 95

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

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

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

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

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

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

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

Phe Asn Arg Gly Glu Cys
 210

<210> 6

<211> 451

<212> PRT

<213> Homo sapiens

<400> 6

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

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

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

Gly Trp Ile Asn Thr His Ser Gly Val Pro Lys Tyr Ala Glu Asp Phe
 50 55 60

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

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

Ala Arg Ser Gly Phe Gly Ser Ser Tyr Trp Tyr Phe Asp Val Trp Gly
 100 105 110

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

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

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

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

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

Pro Ser Ser Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val Asn His

195

200

205

Lys Pro Ser Asn Thr Lys Val Asp Lys Arg Val Glu Pro Lys Ser Cys
 210 215 220

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Pro Gly Lys
450

$\langle 210 \rangle$	7
$\langle 211 \rangle$	214
$\langle 212 \rangle$	PRT
$\langle 213 \rangle$	Homo sapiens

<400> 7

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

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

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

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

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

Glu Asp Phe Ala Val Tyr Tyr Cys Gln Gln His Tyr Ile Thr Pro Leu
85 90 95

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

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

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

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

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

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

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

Phe Asn Arg Gly Glu Cys
 210

<210> 8
 <211> 451
 <212> PRT
 <213> Homo sapiens

<400> 8

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

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

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

Gly Trp Ile Asn Thr His Ser Gly Val Pro Lys Tyr Ala Glu Asp Phe

50 55 60
 Lys Gly Arg Val Thr Ile Ser Ala Asp Thr Ser Thr Ser Thr Ala Tyr
 65 70 75 80
 Leu Gln Leu Ser Ser Leu Lys Ser Glu Asp Thr Ala Val Tyr Tyr Cys
 85 90 95
 Ala Arg Ser Gly Phe Gly Ser Ser Tyr Trp Tyr Phe Asp Val Trp Gly
 100 105 110
 Gln Gly Thr Leu Val Thr Val Ser Ser Ala Ser Thr Lys Gly Pro Ser
 115 120 125
 Val Phe Pro Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly Gly Thr Ala
 130 135 140
 Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val
 145 150 155 160
 Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala
 165 170 175
 Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val
 180 185 190
 Pro Ser Ser Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val Asn His
 195 200 205
 Lys Pro Ser Asn Thr Lys Val Asp Lys Arg Val Glu Pro Lys Ser Cys
 210 215 220
 Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Ala Ala Gly
 225 230 235 240
 Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met
 245 250 255

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

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

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

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

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

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

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

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

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

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

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

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

Pro Gly Lys

450

<210> 9
 <211> 214
 <212> PRT
 <213> Homo sapiens

<400> 9

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

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

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

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

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

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

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

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

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

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

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

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

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

Phe Asn Arg Gly Glu Cys
 210

<210> 10
 <211> 449
 <212> PRT
 <213> Homo sapiens

<400> 10

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

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

Asp Tyr Tyr Trp Thr Trp Ile Arg Gln Ser Pro Gly Lys Gly Leu Glu
 35 40 45

Trp Ile Gly His Ile Tyr Tyr Ser Gly Asn Thr Asn Tyr Asn Pro Ser
 50 55 60

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

Ser Leu Lys Leu Ser Ser Val Thr Ala Ala Asp Thr Ala Ile Tyr Tyr
 85 90 95

Cys Val Arg Asp Arg Val Thr Gly Ala Phe Asp Ile Trp Gly Gln Gly
 100 105 110

Thr Met Val Thr Val Ser Ser Ala Ser Thr Lys Gly Pro Ser Val Phe
 115 120 125

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

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

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

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

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

Ser Asn Thr Lys Val Asp Lys Arg Val Glu Pro Lys Ser Cys Asp Lys
 210 215 220

Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Ala Ala Gly Gly Pro
 225 230 235 240

Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser
 245 250 255

Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp
 260 265 270

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

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

Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu

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

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

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

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

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

Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu
420 425 430

Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly
435 440 445

Lys

$\langle 210 \rangle$	11
$\langle 211 \rangle$	214
$\langle 212 \rangle$	PRT
$\langle 213 \rangle$	Homo sapiens

<400> 11

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

Asp Thr Val Ser Ile Thr Cys His Ser Ser Gln Asp Ile Asn Ser Asn
 20 25 30

Ile Gly Trp Leu Gln Gln Arg Pro Gly Lys Ser Phe Lys Gly Leu Ile
 35 40 45

Tyr His Gly Thr Asn Leu Asp Asp Glu Val Pro Ser Arg Phe Ser Gly
 50 55 60

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

Glu Asp Phe Ala Asp Tyr Tyr Cys Val Gln Tyr Ala Gln Phe Pro Trp
 85 90 95

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

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

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

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

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

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

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

Phe Asn Arg Gly Glu Cys
 210

<210> 12
 <211> 446
 <212> PRT
 <213> Homo sapiens

<400> 12

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

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

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

Met Gly Tyr Ile Ser Tyr Ser Gly Asn Thr Arg Tyr Asn Pro Ser Leu
 50 55 60

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

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

Val Thr Ala Gly Arg Gly Phe Pro Tyr Trp Gly Gln Gly Thr Leu Val
 100 105 110

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

Pro Ser Ser Lys Ser Thr Ser Gly Gly Thr Ala Ala Leu Gly Cys Leu
 130 135 140

Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly
 145 150 155 160

Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val Leu Gln Ser Ser

165

170

175

Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro Ser Ser Ser Leu
 180 185 190

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

Lys Val Asp Lys Arg Val Glu Pro Lys Ser Cys Asp Lys Thr His Thr
 210 215 220

Cys Pro Pro Cys Pro Ala Pro Glu Ala Ala Gly Gly Pro Ser Val Phe
 225 230 235 240

Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro
 245 250 255

Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val
 260 265 270

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

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

Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys
 305 310 315 320

Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser
 325 330 335

Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro
 340 345 350

Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val
 355 360 365

Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly
 370 375 380

Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp
 385 390 395 400

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

Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His
 420 425 430

Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
 435 440 445

<210> 13
 <211> 379
 <212> PRT
 <213> Homo sapiens

<400> 13

Met Pro His Ser Ser Leu His Pro Ser Ile Pro Cys Pro Arg Gly His
 1 5 10 15

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

Leu Trp Gly Leu Gly Glu Pro Pro Glu His Thr Leu Arg Tyr Leu Val
 35 40 45

Leu His Leu Ala Ser Leu Gln Leu Gly Leu Leu Leu Asn Gly Val Cys
 50 55 60

Ser Leu Ala Glu Glu Leu Arg His Ile His Ser Arg Tyr Arg Gly Ser
 65 70 75 80

Tyr Trp Arg Thr Val Arg Ala Cys Leu Gly Cys Pro Leu Arg Arg Gly
 85 90 95

Ala Leu Leu Leu Leu Ser Ile Tyr Phe Tyr Tyr Ser Leu Pro Asn Ala
 100 105 110

Val Gly Pro Pro Phe Thr Trp Met Leu Ala Leu Leu Gly Leu Ser Gln
 115 120 125

Ala Leu Asn Ile Leu Leu Gly Leu Lys Gly Leu Ala Pro Ala Glu Ile
 130 135 140

Ser Ala Val Cys Glu Lys Gly Asn Phe Asn Val Ala His Gly Leu Ala
 145 150 155 160

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

Ala Arg Ile Arg Thr Tyr Asn Gln His Tyr Asn Asn Leu Leu Arg Gly
 180 185 190

Ala Val Ser Gln Arg Leu Tyr Ile Leu Leu Pro Leu Asp Cys Gly Val
 195 200 205

Pro Asp Asn Leu Ser Met Ala Asp Pro Asn Ile Arg Phe Leu Asp Lys
 210 215 220

Leu Pro Gln Gln Thr Gly Asp Arg Ala Gly Ile Lys Asp Arg Val Tyr
 225 230 235 240

Ser Asn Ser Ile Tyr Glu Leu Leu Glu Asn Gly Gln Arg Ala Gly Thr
 245 250 255

Cys Val Leu Glu Tyr Ala Thr Pro Leu Gln Thr Leu Phe Ala Met Ser
 260 265 270

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

Lys Leu Phe Cys Arg Thr Leu Glu Asp Ile Leu Ala Asp Ala Pro Glu
 290 295 300

Ser Gln Asn Asn Cys Arg Leu Ile Ala Tyr Gln Glu Pro Ala Asp Asp
 305 310 315 320

Ser Ser Phe Ser Leu Ser Gln Glu Val Leu Arg His Leu Arg Gln Glu
 325 330 335

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

Ser Thr Ser Thr Met Ser Gln Glu Pro Glu Leu Leu Ile Ser Gly Met
 355 360 365

Glu Lys Pro Leu Pro Leu Arg Thr Asp Phe Ser
 370 375

<210> 14
 <211> 1140
 <212> DNA
 <213> Homo sapiens

<400> 14
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 gagcacactc tccgtacct ggtgtccac ctgacctccc tgcagctggg actgtgtta 180
 aacggggctc gcagcctggc tgaggagctg cgccacatcc actccaggta ccggggcagc 240
 tactggagga ctgtgcgggc ctgcctgggc tgccccctcc gccgtggggc cctgttctg 300
 ctgtccatct atttctacta ctccctccca aatgcggtcg gcccgccctt cacttgatg 360
 cttgccctcc tgggcctctc gcaggcactg aacatctccc tgggcctcaa gggcctggcc 420
 ccagctgaga tctctgcagt gtgtgaaaaa gggaatttca acgtggccca tgggctggca 480
 tggatcatatt acatcgata tctgcgctg atcctgccag agtccaggc ccggttcga 540
 attacaatc agcattacaa caacctgcta cggggtgcag tgagccagcg gctgtatatt 600

ctctcccat tggactgtgg ggtgcctgat aacctgagta tggtgacct caacattcgc 660
 ttcttgata aactgcccc gcagaccggt gaccatgctg gcatcaagga tcgggtttac 720
 agcaacagca tctatgagct tctggagaac gggcagcggg cgggcacctg tgtcctggag 780
 tacgccacc ccttgagac tttgtttgcc atgtcacaat acagtcaagc ttgcttttagc 840
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 gatccccctg agtctcagaa caactgccgc ctcatcgct accaggaacc tgcagatgac 960
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 gttactgtgg gcagcttgaa gacctcagcg gtgccagta cctccacgat gtccaagag 1080
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<210> 15
 <211> 379
 <212> PRT
 <213> Homo sapiens

<400> 15

Met Pro His Ser Ser Leu His Pro Ser Ile Pro Cys Pro Arg Gly His
 1 5 10 15

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

Leu Trp Gly Leu Gly Glu Pro Pro Glu His Thr Leu Arg Tyr Leu Val
 35 40 45

Leu His Leu Ala Ser Leu Gln Leu Gly Leu Leu Leu Asn Gly Val Cys
 50 55 60

Ser Leu Ala Glu Glu Leu Arg His Ile His Ser Arg Tyr Arg Gly Ser
 65 70 75 80

Tyr Trp Arg Thr Val Arg Ala Cys Leu Gly Cys Pro Leu Arg Arg Gly
 85 90 95

Ala Leu Leu Leu Leu Ser Ile Tyr Phe Tyr Tyr Ser Leu Pro Asn Ala
 100 105 110

Val Gly Pro Pro Phe Thr Trp Met Leu Ala Leu Leu Gly Leu Ser Gln
 115 120 125

Ala Leu Asn Ile Leu Leu Gly Leu Lys Gly Leu Ala Pro Ala Glu Ile
 130 135 140

Ser Ala Val Cys Glu Lys Gly Asn Phe Asn Val Ala His Gly Leu Ala
 145 150 155 160

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

Ala Arg Ile Arg Thr Tyr Asn Gln His Tyr Asn Asn Leu Leu Arg Gly
 180 185 190

Ala Val Ser Gln Arg Leu Tyr Ile Leu Leu Pro Leu Asp Cys Gly Val
 195 200 205

Pro Asp Asn Leu Ser Met Ala Asp Pro Asn Ile Arg Phe Leu Asp Lys
 210 215 220

Leu Pro Gln Gln Thr Gly Asp His Ala Gly Ile Lys Asp Arg Val Tyr
 225 230 235 240

Ser Asn Ser Ile Tyr Glu Leu Leu Glu Asn Gly Gln Arg Ala Gly Thr
 245 250 255

Cys Val Leu Glu Tyr Ala Thr Pro Leu Gln Thr Leu Phe Ala Met Ser
 260 265 270

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

Lys Leu Phe Cys Arg Thr Leu Glu Asp Ile Leu Ala Asp Ala Pro Glu
 290 295 300

Ser Gln Asn Asn Cys Arg Leu Ile Ala Tyr Gln Glu Pro Ala Asp Asp
 305 310 315 320

Ser Ser Phe Ser Leu Ser Gln Glu Val Leu Arg His Leu Arg Gln Glu
 325 330 335

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

Ser Thr Ser Thr Met Ser Gln Glu Pro Glu Leu Leu Ile Ser Gly Met
 355 360 365

Glu Lys Pro Leu Pro Leu Arg Thr Asp Phe Ser
 370 375

<210> 16
 <211> 1140
 <212> DNA
 <213> Homo sapiens

<400> 16
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 gagcacactc tccgtacct ggtgtccac ctagectccc tgcagctggg actgtgtta 180
 aacggggctc gcagcctggc tgaggagctg cgccacatcc actccaggta ccggggcagc 240
 tactggagga ctgtgcgggc ctgcctgggc tgccccctcc gccgtggggc cctgttctg 300
 ctgtccatct atttctacta ctccctccca aatgcggtcg gcccgccctt cacttggatg 360
 cttgccctcc tgggcctctc gcaggcactg aacatcctcc tgggcctcaa gggcctggcc 420
 ccagctgaga tctctgcagt gtgtgaaaaa gggaatttca acgtggccca tgggctggca 480
 tggatcatatt acatcgata tctgcggctg atcctgccag agctccaggc ccggaatcga 540
 acttacaatc agcattacaa caacctgcta cgggggtgcag tgagccagcg gctgtatatt 600
 ctctcccat tggactgtgg ggtgcctgat aacctgagta tggetgacct caacattcgc 660

ttcttgata aactgcccc gcagaccggt gaccgtgctg gcatcaagga tcgggtttac 720
 agcaacagca tctatgagct tctggagaac gggcagcggg cgggcacctg tgtcctggag 780
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 gatgccctg agtctcagaa caactgccgc ctcattgcct accaggaacc tgcagatgac 960
 agcagcttct cgctgtccca ggaggttctc cggcacctgc ggcaggagga aaaggaagag 1020
 gttactgtgg gcagcttgaa gacctcagcg gtgccagta cctccacgat gtcccaagag 1080
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<210> 17
 <211> 379
 <212> PRT
 <213> Homo sapiens

<400> 17

Met Pro His Ser Ser Leu His Pro Ser Ile Pro Cys Pro Arg Gly His
1 5 10 15

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

Leu Trp Gly Leu Gly Glu Pro Pro Glu His Thr Leu Arg Tyr Leu Val
35 40 45

Leu His Leu Ala Ser Leu Gln Leu Gly Leu Leu Leu Asn Gly Val Cys
50 55 60

Ser Leu Ala Glu Glu Leu His His Ile His Ser Arg Tyr Arg Gly Ser
65 70 75 80

Tyr Trp Arg Thr Val Arg Ala Cys Leu Gly Cys Pro Leu Arg Arg Gly
85 90 95

Ala Leu Leu Leu Leu Ser Ile Tyr Phe Tyr Tyr Ser Leu Pro Asn Ala
100 105 110

Val Gly Pro Pro Phe Thr Trp Met Leu Ala Leu Leu Gly Leu Ser Gln
 115 120 125

Ala Leu Asn Ile Leu Leu Gly Leu Lys Gly Leu Ala Pro Ala Glu Ile
 130 135 140

Ser Ala Val Cys Glu Lys Gly Asn Phe Asn Val Ala His Gly Leu Ala
 145 150 155 160

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

Ala Arg Ile Arg Thr Tyr Asn Gln His Tyr Asn Asn Leu Leu Arg Gly
 180 185 190

Ala Val Ser Gln Arg Leu Tyr Ile Leu Leu Pro Leu Asp Cys Gly Val
 195 200 205

Pro Asp Asn Leu Ser Met Ala Asp Pro Asn Ile Arg Phe Leu Asp Lys
 210 215 220

Leu Pro Gln Gln Thr Ala Asp Arg Ala Gly Ile Lys Asp Arg Val Tyr
 225 230 235 240

Ser Asn Ser Ile Tyr Glu Leu Leu Glu Asn Gly Gln Arg Ala Gly Thr
 245 250 255

Cys Val Leu Glu Tyr Ala Thr Pro Leu Gln Thr Leu Phe Ala Met Ser
 260 265 270

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

Lys Leu Phe Cys Gln Thr Leu Glu Asp Ile Leu Ala Asp Ala Pro Glu
 290 295 300

Ser Gln Asn Asn Cys Arg Leu Ile Ala Tyr Gln Glu Pro Ala Asp Asp
 305 310 315 320

Ser Ser Phe Ser Leu Ser Gln Glu Val Leu Arg His Leu Arg Gln Glu
 325 330 335

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

Ser Thr Ser Thr Met Ser Gln Glu Pro Glu Leu Leu Ile Ser Gly Met
 355 360 365

Glu Lys Pro Leu Pro Leu Arg Thr Asp Phe Ser
 370 375

<210> 18
 <211> 1140
 <212> DNA
 <213> Homo sapiens

<400> 18
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 gagcacactc tccgtacct ggtgtccac ctagectccc tgcagctggg actgtgttta 180
 aacgggtct gcagctggc tggagagctg caccacatcc actccaggta ccggggcagc 240
 tactggagga ctgtgctggc ctgcctgggc tgccccctcc gccgtggggc cctgttctg 300
 ctgtccatct atttctacta ctccctccca aatgcggtcg gcccgccctt cacttgatg 360
 cttgccctcc tgggcctctc gcaggcactg aacatcctcc tgggcctcaa gggcctggcc 420
 ccagctgaga tctctgcagt gtgtgaaaaa gggaatttca acgtggcca tgggctggca 480
 tggatcatatt acatcgata tctgcgctg atcctgccag agtccaggc ccgattcga 540
 acttacaatc agcattacaa caactgcta cgggtgcag tgagccagcg gctgtatatt 600
 ctctcccat tggactgtgg ggtgcctgat aacctgagta tggtgacct caacattcgc 660
 ttcttgata aactgcccc gcagaccgt gaccgtgctg gcatcaagga tcgggtttac 720

agcaacagca tctatgagct tctggagaac gggcagcggg cgggcacctg tgtcctggag 780
 tacgccaccc ccttgagac tttgtttgcc atgtcacaat acagtcaagc tggcttttagc 840
 cgggaggata ggcttgagca ggccaaactc ttctgccaga cacttgagga catcctggca 900
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 gttactgtgg gcagcttgaa gacctcagcg gtgccagta cctccacgat gtccaagag 1080
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<210> 19
 <211> 378
 <212> PRT
 <213> Mus musculus

<400> 19

Met Pro Tyr Ser Asn Leu His Pro Ala Ile Pro Arg Pro Arg Gly His
1 5 10 15

Arg Ser Lys Tyr Val Ala Leu Ile Phe Leu Val Ala Ser Leu Met Ile
20 25 30

Leu Trp Val Ala Lys Asp Pro Pro Asn His Thr Leu Lys Tyr Leu Ala
35 40 45

Leu His Leu Ala Ser His Glu Leu Gly Leu Leu Leu Lys Asn Leu Cys
50 55 60

Cys Leu Ala Glu Glu Leu Cys His Val Gln Ser Arg Tyr Gln Gly Ser
65 70 75 80

Tyr Trp Lys Ala Val Arg Ala Cys Leu Gly Cys Pro Ile His Cys Met
85 90 95

Ala Met Ile Leu Leu Ser Ser Tyr Phe Tyr Phe Leu Gln Asn Thr Ala
100 105 110

Asp Ile Tyr Leu Ser Trp Met Phe Gly Leu Leu Val Leu Tyr Lys Ser
 115 120 125

Leu Ser Met Leu Leu Gly Leu Gln Ser Leu Thr Pro Ala Glu Val Ser
 130 135 140

Ala Val Cys Glu Glu Lys Lys Leu Asn Val Ala His Gly Leu Ala Trp
 145 150 155 160

Ser Tyr Tyr Ile Gly Tyr Leu Arg Leu Ile Leu Pro Gly Leu Gln Ala
 165 170 175

Arg Ile Arg Met Phe Asn Gln Leu His Asn Asn Met Leu Ser Gly Ala
 180 185 190

Gly Ser Arg Arg Leu Tyr Ile Leu Phe Pro Leu Asp Cys Gly Val Pro
 195 200 205

Asp Asn Leu Ser Val Val Asp Pro Asn Ile Arg Phe Arg Asp Met Leu
 210 215 220

Pro Gln Gln Asn Ile Asp Arg Ala Gly Ile Lys Asn Arg Val Tyr Ser
 225 230 235 240

Asn Ser Val Tyr Glu Ile Leu Glu Asn Gly Gln Pro Ala Gly Val Cys
 245 250 255

Ile Leu Glu Tyr Ala Thr Pro Leu Gln Thr Leu Phe Ala Met Ser Gln
 260 265 270

Asp Ala Lys Ala Gly Phe Ser Arg Glu Asp Arg Leu Glu Gln Ala Lys
 275 280 285

Leu Phe Cys Arg Thr Leu Glu Glu Ile Leu Glu Asp Val Pro Glu Ser
 290 295 300

Arg Asn Asn Cys Arg Leu Ile Val Tyr Gln Glu Pro Thr Asp Gly Asn
 305 310 315 320

Ser Phe Ser Leu Ser Gln Glu Val Leu Arg His Ile Arg Gln Glu Glu
 325 330 335

Lys Glu Glu Val Thr Met Asn Ala Pro Met Thr Ser Val Ala Pro Pro
 340 345 350

Pro Ser Val Leu Ser Gln Glu Pro Arg Leu Leu Ile Ser Gly Met Asp
 355 360 365

Gln Pro Leu Pro Leu Arg Thr Asp Leu Ile
 370 375

<210> 20
 <211> 1137
 <212> DNA
 <213> Mus musculus

<400> 20
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 aatcacactc tgaagtacct agcacttcac cttagcctcg acgaacttgg actactgttg 180
 aaaaacctct gctgtctggc tgaagagctg tgccatgtcc agtccaggta ccagggcagc 240
 tactggaagg ctgtgcgcgc ctgcctggga tgccccatcc actgtatggc tatgattcta 300
 ctatcgtctt atttctattt cctccaaaac actgctgaca tatactcag ttggatgttt 360
 ggctttctgg tctctataa gtcctaagc atgctcctgg gccttcagag cttgactcca 420
 gcggaagtct ctgcagtctg tgaagaaaag aagttaaag ttgcccacgg gctggcctgg 480
 tcatactaca ttgggtactt gcggttgatc ttaccagggc tccaggcccg gatccgaatg 540
 ttcaatcagc tacataacaa catgctcagt ggtgcaggga gccgaagact gtacatcctc 600
 tttccattgg actgtggggt gcctgacaac ctgagtgtag ttgaccccaa cattcgattc 660
 cgagatatgc tgccccagca aaacatcgac cgtgctggca tcaagaatcg ggtttattcc 720
 aacagcgtct acgagattct ggagaacgga cagccagcag gcgtctgtat cctggagtac 780

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gccacccct tgcagacct gtttgccatg tcacaggatg ccaaagctgg cttcagtcgg      840
gaggatcggc ttgagcagge taaactcttc tgccggacac ttgaggaaat cctggaagat      900
gtccccgagt ctgaaataa ctgccgcctc attgtctacc aagaaccac agacggaaac      960
agttttctcac tgtctcagga ggtgctccgg cacattcgtc aggaagaaaa ggaggaggtt    1020
accatgaatg ccccatgac ctcagtggca cctctccct cegtactgtc ccaagagcca    1080
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<210> 21
<211> 243
<212> PRT
<213> Homo sapiens

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<400> 21
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Met Gly Ser Ser His His His His His His Ser Ser Gly Ser Gly Leu
1           5           10           15

```

```

Asn Asp Ile Phe Glu Ala Gln Lys Ile Glu Trp His Glu Gly Gly Ser
          20           25           30

```

```

Glu Asn Leu Tyr Phe Gln Gly Leu Ala Pro Ala Glu Ile Ser Ala Val
          35           40           45

```

```

Cys Glu Lys Gly Asn Phe Asn Val Ala His Gly Leu Ala Trp Ser Tyr
          50           55           60

```

```

Tyr Ile Gly Tyr Leu Arg Leu Ile Leu Pro Glu Leu Gln Ala Arg Ile
65           70           75           80

```

```

Arg Thr Tyr Asn Gln His Tyr Asn Asn Leu Leu Arg Gly Ala Val Ser
          85           90           95

```

```

Gln Arg Leu Tyr Ile Leu Leu Pro Leu Asp Cys Gly Val Pro Asp Asn
          100          105          110

```

```

Leu Ser Met Ala Asp Pro Asn Ile Arg Phe Leu Asp Lys Leu Pro Gln
          115          120          125

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Gln Thr Gly Asp Arg Ala Gly Ile Lys Asp Arg Val Tyr Ser Asn Ser
 130 135 140

Ile Tyr Glu Leu Leu Glu Asn Gly Gln Arg Ala Gly Thr Cys Val Leu
 145 150 155 160

Glu Tyr Ala Thr Pro Leu Gln Thr Leu Phe Ala Met Ser Gln Tyr Ser
 165 170 175

Gln Ala Gly Phe Ser Arg Glu Asp Arg Leu Glu Gln Ala Lys Leu Phe
 180 185 190

Cys Arg Thr Leu Glu Asp Ile Leu Ala Asp Ala Pro Glu Ser Gln Asn
 195 200 205

Asn Cys Arg Leu Ile Ala Tyr Gln Glu Pro Ala Asp Asp Ser Ser Phe
 210 215 220

Ser Leu Ser Gln Glu Val Leu Arg His Leu Arg Gln Glu Glu Lys Glu
 225 230 235 240

Glu Val Thr

<210> 22
 <211> 243
 <212> PRT
 <213> Homo sapiens

<400> 22

Met Gly Ser Ser His His His His His Ser Ser Gly Ser Gly Leu
 1 5 10 15

Asn Asp Ile Phe Glu Ala Gln Lys Ile Glu Trp His Glu Gly Gly Ser
 20 25 30

Glu Asn Leu Tyr Phe Gln Gly Leu Ala Pro Ala Glu Ile Ser Ala Val

35

40

45

Cys Glu Lys Gly Asn Phe Asn Val Ala His Gly Leu Ala Trp Ser Tyr
 50 55 60

Tyr Ile Gly Tyr Leu Arg Leu Ile Leu Pro Glu Leu Gln Ala Arg Ile
 65 70 75 80

Arg Thr Tyr Asn Gln His Tyr Asn Asn Leu Leu Arg Gly Ala Val Ser
 85 90 95

Gln Arg Leu Tyr Ile Leu Leu Pro Leu Asp Cys Gly Val Pro Asp Asn
 100 105 110

Leu Ser Met Ala Asp Pro Asn Ile Arg Phe Leu Asp Lys Leu Pro Gln
 115 120 125

Gln Thr Gly Asp His Ala Gly Ile Lys Asp Arg Val Tyr Ser Asn Ser
 130 135 140

Ile Tyr Glu Leu Leu Glu Asn Gly Gln Arg Ala Gly Thr Cys Val Leu
 145 150 155 160

Glu Tyr Ala Thr Pro Leu Gln Thr Leu Phe Ala Met Ser Gln Tyr Ser
 165 170 175

Gln Ala Gly Phe Ser Arg Glu Asp Arg Leu Glu Gln Ala Lys Leu Phe
 180 185 190

Cys Arg Thr Leu Glu Asp Ile Leu Ala Asp Ala Pro Glu Ser Gln Asn
 195 200 205

Asn Cys Arg Leu Ile Ala Tyr Gln Glu Pro Ala Asp Asp Ser Ser Phe
 210 215 220

Ser Leu Ser Gln Glu Val Leu Arg His Leu Arg Gln Glu Glu Lys Glu
 225 230 235 240

Glu Val Thr

<210> 23
 <211> 243
 <212> PRT
 <213> Homo sapiens

<400> 23

Met Gly Ser Ser His His His His His Ser Ser Gly Ser Gly Leu
 1 5 10 15

Asn Asp Ile Phe Glu Ala Gln Lys Ile Glu Trp His Glu Gly Gly Ser
 20 25 30

Glu Asn Leu Tyr Phe Gln Gly Leu Ala Pro Ala Glu Ile Ser Ala Val
 35 40 45

Cys Glu Lys Gly Asn Phe Asn Val Ala His Gly Leu Ala Trp Ser Tyr
 50 55 60

Tyr Ile Gly Tyr Leu Arg Leu Ile Leu Pro Glu Leu Gln Ala Arg Ile
 65 70 75 80

Arg Thr Tyr Asn Gln His Tyr Asn Asn Leu Leu Arg Gly Ala Val Ser
 85 90 95

Gln Arg Leu Tyr Ile Leu Leu Pro Leu Asp Cys Gly Val Pro Asp Asn
 100 105 110

Leu Ser Met Ala Asp Pro Asn Ile Arg Phe Leu Asp Lys Leu Pro Gln
 115 120 125

Gln Thr Ala Asp Arg Ala Gly Ile Lys Asp Arg Val Tyr Ser Asn Ser
 130 135 140

Ile Tyr Glu Leu Leu Glu Asn Gly Gln Arg Ala Gly Thr Cys Val Leu
 145 150 155 160

Glu Tyr Ala Thr Pro Leu Gln Thr Leu Phe Ala Met Ser Gln Tyr Ser
 165 170 175

Gln Ala Gly Phe Ser Arg Glu Asp Arg Leu Glu Gln Ala Lys Leu Phe
 180 185 190

Cys Gln Thr Leu Glu Asp Ile Leu Ala Asp Ala Pro Glu Ser Gln Asn
 195 200 205

Asn Cys Arg Leu Ile Ala Tyr Gln Glu Pro Ala Asp Asp Ser Ser Phe
 210 215 220

Ser Leu Ser Gln Glu Val Leu Arg His Leu Arg Gln Glu Glu Lys Glu
 225 230 235 240

Glu Val Thr

<210> 24
 <211> 243
 <212> PRT
 <213> Homo sapiens

<400> 24

Met Gly Ser Ser His His His His His His Ser Ser Gly Ser Gly Leu
 1 5 10 15

Asn Asp Ile Phe Glu Ala Gln Lys Ile Glu Trp His Glu Gly Gly Ser
 20 25 30

Glu Asn Leu Tyr Phe Gln Gly Leu Thr Pro Ala Glu Val Ser Ala Val
 35 40 45

Cys Glu Glu Lys Lys Leu Asn Val Ala His Gly Leu Ala Trp Ser Tyr
 50 55 60

Tyr Ile Gly Tyr Leu Arg Leu Ile Leu Pro Gly Leu Gln Ala Arg Ile

40

65

70

75

80

Arg Met Phe Asn Gln Leu His Asn Asn Met Leu Ser Gly Ala Gly Ser
85 90 95

Arg Arg Leu Tyr Ile Leu Phe Pro Leu Asp Cys Gly Val Pro Asp Asn
100 105 110

Leu Ser Val Val Asp Pro Asn Ile Arg Phe Arg Asp Met Leu Pro Gln
115 120 125

Gln Asn Ile Asp Arg Ala Gly Ile Lys Asn Arg Val Tyr Ser Asn Ser
130 135 140

Val Tyr Glu Ile Leu Glu Asn Gly Gln Pro Ala Gly Val Cys Ile Leu
145 150 155 160

Glu Tyr Ala Thr Pro Leu Gln Thr Leu Phe Ala Met Ser Gln Asp Ala
165 170 175

Lys Ala Gly Phe Ser Arg Glu Asp Arg Leu Glu Gln Ala Lys Leu Phe
180 185 190

Cys Arg Thr Leu Glu Glu Ile Leu Glu Asp Val Pro Glu Ser Arg Asn
195 200 205

Asn Cys Arg Leu Ile Val Tyr Gln Glu Pro Thr Asp Gly Asn Ser Phe
210 215 220

Ser Leu Ser Gln Glu Val Leu Arg His Ile Arg Gln Glu Glu Lys Glu
225 230 235 240

Glu Val Thr

<210> 25

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 25

cgtgctggca tcaaggatcg ggtttac

27

<210> 26

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 26

gtcaccggtc tgctggggca gtttacc

27

<210> 27

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 27

gctgaccgtg ctggcatcaa ggatcgggtt tac

33

<210> 28

<211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 28

ggtctgctgg ggcagtttat ccagg

25

<210> 29

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 29

caccacatcc actccaggta ccgg

24

<210> 30

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 30

cagctectca gccaggtgc agac

24

<210> 31

<211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 31

cagacacttg aggacatcct ggcag

25

<210> 32

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 32

gcagaagagt ttggcctgct caa

23

<210> 33

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 33
 acctgtattt tcagggcctg gccccagctg agatctctg 39

<210> 34
 <211> 44
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> primer

<400> 34
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<210> 35
 <211> 15
 <212> PRT
 <213> Homo sapiens

<400> 35
 Arg Ala Ser Lys Ser Val Ser Thr Ser Gly Tyr Ser Phe Met His
 1 5 10 15

<210> 36
 <211> 7
 <212> PRT
 <213> Homo sapiens

<400> 36
 Leu Ala Ser Asn Leu Glu Ser
 1 5

<210> 37
 <211> 9
 <212> PRT
 <213> Homo sapiens

<400> 37
 Gln His Ser Arg Glu Val Pro Trp Thr
 1 5

<210> 38
 <211> 10
 <212> PRT
 <213> Homo sapiens

<400> 38

Gly Tyr Thr Phe Thr Asn Tyr Gly Met Asn
 1 5 10

<210> 39
 <211> 17
 <212> PRT
 <213> Homo sapiens

<400> 39

Trp Ile Asn Thr Tyr Thr Gly Glu Pro Thr Tyr Ala Asp Ala Phe Lys
 1 5 10 15

Gly

<210> 40
 <211> 9
 <212> PRT
 <213> Homo sapiens

<400> 40

Asp Tyr Gly Asp Tyr Gly Met Asp Tyr
 1 5

<210> 41
 <211> 11
 <212> PRT
 <213> Homo sapiens

<400> 41

Arg Ala Ser Gln Ser Val Ser Ser Tyr Leu Ala
 1 5 10

<210> 42
 <211> 7

<212> PRT

<213> Homo sapiens

<400> 42

Asp Ala Ser Asn Arg Ala Thr
1 5

<210> 43

<211> 9

<212> PRT

<213> Homo sapiens

<400> 43

Gln Gln Arg Thr Asn Trp Pro Leu Thr
1 5

<210> 44

<211> 5

<212> PRT

<213> Homo sapiens

<400> 44

Ser Tyr Ile Met His
1 5

<210> 45

<211> 17

<212> PRT

<213> Homo sapiens

<400> 45

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

Gly

<210> 46

<211> 9

<212> PRT

<213> Homo sapiens

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Asp Thr Asp Gly Tyr Asp Phe Asp Tyr
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Lys Ala Ser Gln Asp Val Ser Thr Ala Val Ala
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Ser Ala Ser Tyr Arg Tyr Thr
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Gln Gln His Tyr Ile Thr Pro Leu Thr
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Thr Ala Gly Met Gln
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Gly

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1				5					10		

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

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Ser Gly Phe Gly Ser Ser Tyr Trp Tyr Phe Asp Val
 1 5 10

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Gln	Ala	Ser	Gln	Asp	Ile	Ser	Asn	Tyr	Leu	Asn
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Asp	Ala	Ser	Asn	Leu	Glu	Thr
1				5		

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Gln	His	Phe	Asp	His	Leu	Pro	Leu	Ala
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Ser	Gly	Asp	Tyr	Tyr	Trp	Thr
1				5		

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Gly	His	Ile	Tyr	Tyr	Ser	Gly	Asn	Thr	Asn	Tyr	Asn	Pro	Ser	Leu	Lys
1					5				10					15	

Ser

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Asp Arg Val Thr Gly Ala Phe Asp Ile
 1 5

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His Ser Ser Gln Asp Ile Asn Ser Asn Ile Gly
 1 5 10

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His Gly Thr Asn Leu Asp Asp
 1 5

<210> 67
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Val Gln Tyr Ala Gln Phe Pro Trp Thr
 1 5

<210> 68
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Gly Tyr Ser Ile Thr Ser Asp Phe Ala Trp Asn
 1 5 10

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Gly Tyr Ile Ser Tyr Ser Gly Asn Thr Arg Tyr Asn Pro Ser Leu Lys
 1 5 10 15

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Val Thr Ala Gly Arg Gly Phe Pro Tyr
 1 5