

SEQUENCE LISTING

<110> Eli Lilly and Company

<120> GDF15 Agonists and Uses Thereof

<130> X21678

<150> US 62/653,759

<151> 2018-04-06

<160> 17

<170> PatentIn version 3.5

<210> 1

<211> 112

<212> PRT

<213> Homo sapiens

<400> 1

Ala	Arg	Asn	Gly	Asp	His	Cys	Pro	Leu	Gly	Pro	Gly	Arg	Cys	Cys	Arg
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Leu	His	Thr	Val	Arg	Ala	Ser	Leu	Glu	Asp	Leu	Gly	Trp	Ala	Asp	Trp
			20					25					30		

Val	Leu	Ser	Pro	Arg	Glu	Val	Gln	Val	Thr	Met	Cys	Ile	Gly	Ala	Cys
		35					40					45			

Pro	Ser	Gln	Phe	Arg	Ala	Ala	Asn	Met	His	Ala	Gln	Ile	Lys	Thr	Ser
		50				55					60				

Leu	His	Arg	Leu	Lys	Pro	Asp	Thr	Val	Pro	Ala	Pro	Cys	Cys	Val	Pro
65					70					75					80

Ala	Ser	Tyr	Asn	Pro	Met	Val	Leu	Ile	Gln	Lys	Thr	Asp	Thr	Gly	Val
			85						90					95	

Ser	Leu	Gln	Thr	Tyr	Asp	Asp	Leu	Leu	Ala	Lys	Asp	Cys	His	Cys	Ile
			100					105						110	

<210> 2

<211> 351

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Construct

<400> 2

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

Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val
 20 25 30

Asp Val Ser Gln Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp
 35 40 45

Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe
 50 55 60

Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp
 65 70 75 80

Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu
 85 90 95

Pro Ser Ser Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg
 100 105 110

Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Gln Glu Glu Met Thr Lys
 115 120 125

Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp
 130 135 140

Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys
 145 150 155 160

Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Gln Leu Glu Ser
 165 170 175

Arg Leu Thr Val Asp Lys Ser Arg Trp Gln Glu Gly Asn Val Phe Ser
 180 185 190

Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser
195 200 205

Leu Ser Leu Ser Leu Gly Gly Gly Gly Gly Ala Pro Ala Pro Ala Pro
210 215 220

Ala Pro Ala Pro Ala Pro Ala Pro Ala Pro Ala Pro Ala Pro Gly Gly
225 230 235 240

Gly Gly Gly Asp His Cys Pro Leu Gly Pro Gly Arg Cys Cys Arg Leu
245 250 255

His Thr Val Arg Ala Ser Leu Glu Asp Leu Gly Trp Ala Asp Trp Val
260 265 270

Leu Ser Pro Arg Glu Val Gln Val Thr Met Cys Ile Gly Ala Cys Pro
275 280 285

Ser Gln Phe Arg Ala Ala Asn Met His Ala Gln Ile Lys Thr Ser Leu
290 295 300

His Arg Leu Lys Pro Asp Thr Val Pro Ala Pro Cys Cys Val Pro Ala
305 310 315 320

Ser Tyr Asn Pro Met Val Leu Ile Gln Lys Thr Asp Thr Gly Val Ser
325 330 335

Leu Gln Thr Tyr Asp Asp Leu Leu Ala Lys Asp Cys His Cys Ile
340 345 350

<210> 3
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 3

Met Glu Thr Asp Thr Leu Leu Leu Trp Val Leu Leu Leu Trp Val Pro
1 5 10 15

Gly Ser Thr Gly
20

<210> 4
<211> 325
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 4

Gln Thr Asn Asn Cys Thr Tyr Leu Arg Glu Gln Cys Leu Arg Asp Ala
1 5 10 15

Asn Gly Cys Lys His Ala Trp Arg Val Met Glu Asp Ala Cys Asn Asp
20 25 30

Ser Asp Pro Gly Asp Pro Cys Lys Met Arg Asn Ser Ser Tyr Cys Asn
35 40 45

Leu Ser Ile Gln Tyr Leu Val Glu Ser Asn Phe Gln Phe Lys Glu Cys
50 55 60

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

Lys Cys Ile Asn Lys Ser Asp Asn Val Lys Glu Asp Lys Phe Lys Trp
85 90 95

Asn Leu Thr Thr Arg Ser His His Gly Phe Lys Gly Met Trp Ser Cys
100 105 110

Leu Glu Val Ala Glu Ala Cys Val Gly Asp Val Val Cys Asn Ala Gln
115 120 125

Leu Ala Ser Tyr Leu Lys Ala Cys Ser Ala Asn Gly Asn Pro Cys Asp
130 135 140

Leu Lys Gln Cys Gln Ala Ala Ile Arg Phe Phe Tyr Gln Asn Ile Pro
145 150 155 160

Phe Asn Ile Ala Gln Met Leu Ala Phe Cys Asp Cys Ala Gln Ser Asp
 165 170 175

Ile Pro Cys Gln Gln Ser Lys Glu Ala Leu His Ser Lys Thr Cys Ala
 180 185 190

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

Gln Asn Asp Glu Leu Cys Arg Arg His Tyr Arg Thr Phe Gln Ser Lys
 210 215 220

Cys Trp Gln Arg Val Thr Arg Lys Cys His Glu Asp Glu Asn Cys Ile
 225 230 235 240

Ser Thr Leu Ser Lys Gln Asp Leu Thr Cys Ser Gly Ser Asp Asp Cys
 245 250 255

Lys Ala Ala Tyr Ile Asp Ile Leu Gly Thr Val Leu Gln Val Gln Cys
 260 265 270

Thr Cys Arg Thr Ile Thr Gln Ser Glu Glu Ser Leu Cys Lys Ile Phe
 275 280 285

Gln His Met Leu His Arg Lys Ser Cys Phe Asn Tyr Pro Thr Leu Ser
 290 295 300

Asn Val Lys Gly Met Ala Leu Tyr Thr Arg Lys His Ala Asn Lys His
 305 310 315 320

His His His His His
 325

<210> 5
 <211> 616
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Synthetic Construct

<400> 5

Glu Arg Lys Ser Ser Val Glu Cys Pro Pro Cys Pro Ala Pro Pro Val
1 5 10 15

Ala Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu
20 25 30

Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser
35 40 45

His Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val Glu
50 55 60

Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr
65 70 75 80

Phe Arg Val Val Ser Val Leu Thr Val Val His Gln Asp Trp Leu Asn
85 90 95

Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ala Pro
100 105 110

Ile Glu Lys Thr Ile Ser Lys Thr Lys Gly Gln Pro Arg Glu Pro Gln
115 120 125

Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val
130 135 140

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

Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro
165 170 175

Pro Met Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr
180 185 190

Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val
195 200 205

Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu
210 215 220

Ser Pro Gly Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly
 225 230 235 240

Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly
 245 250 255

Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Glu Arg Lys Ser Ser
 260 265 270

Val Glu Cys Pro Pro Cys Pro Ala Pro Pro Val Ala Gly Pro Ser Val
 275 280 285

Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr
 290 295 300

Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu
 305 310 315 320

Val Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys
 325 330 335

Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg Val Val Ser
 340 345 350

Val Leu Thr Val Val His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys
 355 360 365

Cys Lys Val Ser Asn Lys Gly Leu Pro Ala Pro Ile Glu Lys Thr Ile
 370 375 380

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

Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu
 405 410 415

Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn
 420 425 430

Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Met Leu Asp Ser
 435 440 445

Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg
 450 455 460

Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu
 465 470 475 480

His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Gly Gly
 485 490 495

Gly Ser Gly Gly Gly Gly Ala Ser Ala Arg Asn Gly Asp His Cys Pro
 500 505 510

Leu Gly Pro Gly Arg Cys Cys Arg Leu His Thr Val Arg Ala Ser Leu
 515 520 525

Glu Asp Leu Gly Trp Ala Asp Trp Val Leu Ser Pro Arg Glu Val Gln
 530 535 540

Val Thr Met Cys Ile Gly Ala Cys Pro Ser Gln Phe Arg Ala Ala Asn
 545 550 555 560

Met His Ala Gln Ile Lys Thr Ser Leu His Arg Leu Lys Pro Asp Thr
 565 570 575

Val Pro Ala Pro Cys Cys Val Pro Ala Ser Tyr Asn Pro Met Val Leu
 580 585 590

Ile Gln Lys Thr Asp Thr Gly Val Ser Leu Gln Thr Tyr Asp Asp Leu
 595 600 605

Leu Ala Lys Asp Cys His Cys Ile
 610 615

<210> 6

<211> 361

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Construct

<400> 6

Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Ala Leu Gly Gly
 1 5 10 15

Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile
 20 25 30

Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu
 35 40 45

Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His
 50 55 60

Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg
 65 70 75 80

Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys
 85 90 95

Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu
 100 105 110

Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr
 115 120 125

Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu
 130 135 140

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

Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val
 165 170 175

Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp
 180 185 190

Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His
 195 200 205

Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro
 210 215 220

Gly Lys Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly
 225 230 235 240

Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Asn Gly Thr His Cys
 245 250 255

Pro Leu Gly Pro Gly Arg Cys Cys Arg Leu His Thr Val Arg Ala Ser
 260 265 270

Leu Glu Asp Leu Gly Trp Ala Asp Trp Val Leu Ser Pro Arg Glu Val
 275 280 285

Gln Val Thr Met Cys Ile Gly Ala Cys Pro Ser Gln Phe Arg Ala Ala
 290 295 300

Asn Met His Ala Gln Ile Lys Thr Ser Leu His Arg Leu Lys Pro Asp
 305 310 315 320

Thr Val Pro Ala Pro Cys Cys Val Pro Ala Ser Tyr Asn Pro Met Val
 325 330 335

Leu Ile Gln Lys Thr Asp Thr Gly Val Ser Leu Gln Thr Tyr Asp Asp
 340 345 350

Leu Leu Ala Lys Asp Cys His Cys Ile
 355 360

<210> 7
 <211> 353
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Synthetic Construct

<400> 7

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

Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val
 20 25 30

Val Val Asp Val Ser Gln Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr
 35 40 45

Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu
 50 55 60

Gln Phe Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His
 65 70 75 80

Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys
 85 90 95

Gly Leu Pro Ser Ser Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln
 100 105 110

Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Gln Glu Glu Met
 115 120 125

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

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

Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Gln Leu
 165 170 175

Glu Ser Arg Leu Thr Val Asp Lys Ser Arg Trp Gln Glu Gly Asn Val
 180 185 190

Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln
 195 200 205

Lys Ser Leu Ser Leu Ser Leu Gly Gly Gly Gly Gly Gln Gly Gly Gly
 210 215 220

Gly Gln Gly Gly Gly Gly Gln Gly Gly Gly Gly Gln Gly Gly Gly Gly
225 230 235 240

Gln Gly Gly Gly Gly Asp His Cys Pro Leu Gly Pro Gly Arg Cys Cys
245 250 255

Arg Leu His Thr Val Arg Ala Ser Leu Glu Asp Leu Gly Trp Ala Asp
260 265 270

Trp Val Leu Ser Pro Arg Glu Val Gln Val Thr Met Cys Ile Gly Ala
275 280 285

Cys Pro Ser Gln Phe Arg Ala Ala Asn Met His Ala Gln Ile Lys Thr
290 295 300

Ser Leu His Arg Leu Lys Pro Asp Thr Val Pro Ala Pro Cys Cys Val
305 310 315 320

Pro Ala Ser Tyr Asn Pro Met Val Leu Ile Gln Lys Thr Asp Thr Gly
325 330 335

Val Ser Leu Gln Thr Tyr Asp Asp Leu Leu Ala Lys Asp Cys His Cys
340 345 350

Ile

<210> 8
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 8

Glu Ser Lys Tyr Gly Pro Pro Cys Pro Pro Cys Pro
1 5 10

<210> 9
<211> 353
<212> PRT
<213> Artificial Sequence

<220>

<223> Synthetic Construct

<400> 9

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

Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val
 20 25 30

Val Val Asp Val Ser Gln Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr
 35 40 45

Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu
 50 55 60

Gln Phe Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His
 65 70 75 80

Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys
 85 90 95

Gly Leu Pro Ser Ser Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln
 100 105 110

Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Gln Glu Glu Met
 115 120 125

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

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

Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Gln Leu
 165 170 175

Tyr Ser Arg Leu Thr Val Asp Lys Ser Arg Trp Gln Glu Gly Asn Val
 180 185 190

Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln
 195 200 205

Lys Ser Leu Ser Leu Ser Leu Gly Gly Gly Gly Gly Gln Gly Gly Gly
 210 215 220

Gly Gln Gly Gly Gly Gly Gln Gly Gly Gly Gly Gln Gly Gly Gly Gly
 225 230 235 240

Gln Gly Gly Gly Gly Asp His Cys Pro Leu Gly Pro Gly Arg Cys Cys
 245 250 255

Arg Leu His Thr Val Arg Ala Ser Leu Glu Asp Leu Gly Trp Ala Asp
 260 265 270

Trp Val Leu Ser Pro Arg Glu Val Gln Val Thr Met Cys Ile Gly Ala
 275 280 285

Cys Pro Ser Gln Phe Arg Ala Ala Asn Met His Ala Gln Ile Lys Thr
 290 295 300

Ser Leu His Arg Leu Lys Pro Asp Thr Val Pro Ala Pro Cys Cys Val
 305 310 315 320

Pro Ala Ser Tyr Asn Pro Met Val Leu Ile Gln Lys Thr Asp Thr Gly
 325 330 335

Val Ser Leu Gln Thr Tyr Asp Asp Leu Leu Ala Lys Asp Cys His Cys
 340 345 350

Ile

<210> 10
 <211> 353
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Synthetic Construct

<400> 10

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

Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val
 20 25 30

Val Val Asp Val Ser Gln Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr
 35 40 45

Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu
 50 55 60

Gln Phe Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His
 65 70 75 80

Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys
 85 90 95

Gly Leu Pro Ser Ser Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln
 100 105 110

Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Gln Glu Glu Met
 115 120 125

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

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

Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu
 165 170 175

Glu Ser Arg Leu Thr Val Asp Lys Ser Arg Trp Gln Glu Gly Asn Val
 180 185 190

Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln
 195 200 205

Lys Ser Leu Ser Leu Ser Leu Gly Gly Gly Gly Gly Gln Gly Gly Gly
 210 215 220

Gly Gln Gly Gly Gly Gly Gln Gly Gly Gly Gly Gln Gly Gly Gly Gly
 225 230 235 240

Gln Gly Gly Gly Gly Asp His Cys Pro Leu Gly Pro Gly Arg Cys Cys
 245 250 255

Arg Leu His Thr Val Arg Ala Ser Leu Glu Asp Leu Gly Trp Ala Asp
 260 265 270

Trp Val Leu Ser Pro Arg Glu Val Gln Val Thr Met Cys Ile Gly Ala
 275 280 285

Cys Pro Ser Gln Phe Arg Ala Ala Asn Met His Ala Gln Ile Lys Thr
 290 295 300

Ser Leu His Arg Leu Lys Pro Asp Thr Val Pro Ala Pro Cys Cys Val
 305 310 315 320

Pro Ala Ser Tyr Asn Pro Met Val Leu Ile Gln Lys Thr Asp Thr Gly
 325 330 335

Val Ser Leu Gln Thr Tyr Asp Asp Leu Leu Ala Lys Asp Cys His Cys
 340 345 350

Ile

<210> 11
 <211> 355
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Synthetic Construct

<400> 11

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

Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val
 20 25 30

Val Val Asp Val Ser Gln Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr
 35 40 45

Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu
 50 55 60

Gln Phe Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His
 65 70 75 80

Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys
 85 90 95

Gly Leu Pro Ser Ser Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln
 100 105 110

Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Gln Glu Glu Met
 115 120 125

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

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

Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Gln Leu
 165 170 175

Glu Ser Arg Leu Thr Val Asp Lys Ser Arg Trp Gln Glu Gly Asn Val
 180 185 190

Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln
 195 200 205

Lys Ser Leu Ser Leu Ser Leu Gly Gly Gly Gly Gly Ser Ala Pro Ala
 210 215 220

Pro Ala Pro Ala Pro Ala Pro Ala Pro Ala Pro Ala Pro Ala
 225 230 235 240

Pro Gly Gly Gly Gly Ser Gly Asp His Cys Pro Leu Gly Pro Gly Arg
245 250 255

Cys Cys Arg Leu His Thr Val Arg Ala Ser Leu Glu Asp Leu Gly Trp
260 265 270

Ala Asp Trp Val Leu Ser Pro Arg Glu Val Gln Val Thr Met Cys Ile
275 280 285

Gly Ala Cys Pro Ser Gln Phe Arg Ala Ala Asn Met His Ala Gln Ile
290 295 300

Lys Thr Ser Leu His Arg Leu Lys Pro Asp Thr Val Pro Ala Pro Cys
305 310 315 320

Cys Val Pro Ala Ser Tyr Asn Pro Met Val Leu Ile Gln Lys Thr Asp
325 330 335

Thr Gly Val Ser Leu Gln Thr Tyr Asp Asp Leu Leu Ala Lys Asp Cys
340 345 350

His Cys Ile
355

<210> 12
<211> 25
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 12

Gly Gly Gly Gly Gln Gly Gly Gly Gly Gln Gly Gly Gly Gly Gln Gly
1 5 10 15

Gly Gly Gly Gln Gly Gly Gly Gly Gln
20 25

<210> 13
<211> 20
<212> PRT
<213> Artificial Sequence

<220>

<223> Synthetic Construct

<400> 13

Ala Pro Ala Pro Ala Pro Ala Pro Ala Pro Ala Pro Ala Pro
 1 5 10 15

Ala Pro Ala Pro
 20

<210> 14

<211> 5

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Construct

<400> 14

Gly Gly Gly Gly Ser
 1 5

<210> 15

<211> 4

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Construct

<400> 15

Gly Gly Gly Gly
 1

<210> 16

<211> 1053

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic Construct

<400> 16

gaggccgccg ggggaccatc agtcttcctg ttcccccaa aaccaagga cactctcatg 60

atctcccgga cccctgaggt cacgtgcgtg gtggtggacg tgagccagga agaccccgag 120

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gtccagttca actggtacgt ggatggcgtg gaggtgcata atgccaagac aaagccgcgg      180
gaggagcagt tcaacagcac gtaccgtgtg gtcagcgtcc tcaccgtcct gcaccaggac      240
tggctgaacg gcaaggagta caagtgaag gtctccaaca aaggcctccc gtcctccatc      300
gagaaaacca tctccaaagc caaagggcag ccccgagagc cacaggtgta caccctgccc      360
ccatcccagg aggagatgac caagaaccag gtcagcctga cctgcctggt caaaggcttc      420
taccccagcg acatcgccgt ggagtgggaa agcaatgggc agccggagaa caactacaag      480
accacgcctc ccgtgctgga ctccgacggc tccttcagc tcgagagcag gctaaccgtg      540
gacaagagca ggtggcagga ggggaatgtc ttctcatgct ccgtgatgca tgaggctctg      600
cacaaccact acacacagaa gagcctctcc ctgtctctgg gtggcggtgg tggagctcca      660
gccccagctc ctgctcctgc accagcacct gccccgctc cagcaccgc acctggagga      720
gggggcggtg accactgtcc cctggggcct ggccggtgtt gcagactgca tacagtccgg      780
gcctccctgg aagacctggg ttgggcagat tgggtgctct cacctcgca ggttcaggtg      840
accatgtgca ttggggcttg tccctcaca tttcgcgag ctaacatgca cgcccaaadc      900
aaaacctccc tgcaccggct taaaccggat actgttcctg ctccctgctg cgtgccagca      960
tcctacaacc ccatggtgct gatccagaag acggatacag gggtgtcact gcagacctat     1020
gatgacctcc tggccaaaga ttgccactgt atc                                     1053

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<210> 17
<211> 227
<212> PRT
<213> Artificial Sequence

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<220>
<223> Synthetic Construct

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<400> 17

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```

Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Ala Leu Ala Gly
1           5           10          15

```

```

Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met
          20           25           30

```

```

Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His
          35           40           45

```

Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val
 50 55 60

His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr
 65 70 75 80

Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly
 85 90 95

Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile
 100 105 110

Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val
 115 120 125

Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser
 130 135 140

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

Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro
 165 170 175

Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Val Ser Lys Leu Thr Val
 180 185 190

Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met
 195 200 205

His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser
 210 215 220

Pro Gly Lys
 225