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SEQUENCE LISTING

<110> SANOFI PASTEUR INC.

<120> MODIFICATION OF ENGINEERED INFLUENZA HEMAGGLUTININ POLYPEPTIDES

<130> SPR-003WO

<140> PCT/US2017/035738

<141> 2017-06-02

<150> 62/345,502

<151> 2016-06-03

<160> 37

<170> PatentIn version 3.5

<210> 1

<211> 565

<212> PRT

<213> Artificial Sequence

<220>

<221> source

<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

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

Val Asp Thr Val Leu Glu Lys Asn Val Thr Val Thr His Ser Val Asn
35 40 45

Ile Leu Glu Asp Ser His Asn Gly Lys Leu Cys Leu Leu Lys Gly Ile
50 55 60

Ala Pro Leu Gln Leu Gly Asn Cys Ser Val Ala Gly Trp Ile Leu Gly
65 70 75 80

Asn Pro Glu Cys Glu Leu Leu Ile Ser Lys Glu Ser Trp Ser Tyr Ile
85 90 95

Val Glu Lys Pro Asn Pro Glu Asn Gly Thr Cys Tyr Pro Gly Tyr Phe
100 105 110

Ala Asp Tyr Glu Glu Leu Arg Glu Gln Leu Ser Ser Val Ser Ser Phe
115 120 125

Glu Arg Phe Glu Ile Phe Pro Lys Glu Ser Ser Trp Pro Asn His Thr
130 135 140

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

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

435 440 445
 Arg Thr Leu Asp Phe His Asp Ser Asn Val Lys Asn Leu Tyr Glu Lys
 450 455 460
 Val Lys Ser Gln Leu Lys Asn Asn Ala Lys Glu Ile Gly Asn Gly Cys
 465 470 475 480
 Phe Glu Phe Tyr His Lys Cys Asn Asp Glu Cys Met Glu Ser Val Lys
 485 490 495
 Asn Gly Thr Tyr Asp Tyr Pro Lys Tyr Ser Glu Glu Ser Lys Leu Asn
 500 505 510
 Arg Glu Lys Ile Asp Gly Val Lys Leu Glu Ser Met Gly Val Tyr Gln
 515 520 525
 Ile Leu Ala Ile Tyr Ser Thr Val Ala Ser Ser Leu Val Leu Leu Val
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 <223> Any amino acid

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

Val Glu Thr Pro Ser Ser Asp Asn Gly Thr Cys Tyr Pro Gly Asp Phe
 100 105 110
 Ile Asp Tyr Glu Glu Leu Arg Glu Gln Leu Ser Ser Val Ser Ser Phe
 115 120 125
 Glu Arg Phe Glu Ile Phe Pro Lys Thr Ser Ser Trp Pro Asn His Asp
 130 135 140
 Ser Asn Lys Gly Val Thr Ala Ala Cys Pro His Ala Gly Ala Lys Ser
 145 150 155 160
 Phe Tyr Lys Asn Leu Ile Trp Leu Val Lys Lys Gly Asn Ser Tyr Pro
 165 170 175
 Lys Leu Ser Lys Ser Tyr Ile Asn Asp Lys Gly Lys Glu Val Leu Val
 180 185 190
 Leu Trp Gly Ile His His Pro Ser Thr Ser Ala Asp Gln Gln Ser Leu
 195 200 205
 Tyr Gln Asn Ala Asp Ala Tyr Val Phe Val Gly Ser Ser Arg Tyr Ser
 210 215 220
 Lys Lys Phe Lys Pro Glu Ile Ala Ile Arg Pro Lys Val Arg Xaa Xaa
 225 230 235 240
 Glu Gly Arg Met Asn Tyr Tyr Trp Thr Leu Val Glu Pro Gly Asp Lys
 245 250 255
 Ile Thr Phe Glu Ala Thr Gly Asn Leu Val Val Pro Arg Tyr Ala Phe
 260 265 270
 Ala Met Glu Arg Asn Ala Gly Ser Gly Ile Ile Ile Ser Asp Thr Pro
 275 280 285
 Val His Asp Cys Asn Thr Thr Cys Gln Thr Pro Lys Gly Ala Ile Asn
 290 295 300
 Thr Ser Leu Pro Phe Gln Asn Ile His Pro Ile Thr Ile Gly Lys Cys
 305 310 315 320
 Pro Lys Tyr Val Lys Ser Thr Lys Leu Arg Leu Ala Thr Gly Leu Arg
 325 330 335
 Asn Ile Pro Ser Ile Gln Ser Arg Gly Leu Phe Gly Ala Ile Ala Gly
 340 345 350
 Phe Ile Glu Gly Gly Trp Thr Gly Met Val Asp Gly Trp Tyr Gly Tyr
 355 360 365

His His Gln Asn Glu Gln Gly Ser Gly Tyr Ala Ala Asp Leu Lys Ser
 370 375 380
 Thr Gln Asn Ala Ile Asp Glu Ile Thr Asn Lys Val Asn Ser Val Ile
 385 390 395 400
 Glu Lys Met Asn Thr Gln Phe Thr Ala Val Gly Lys Glu Phe Asn His
 405 410 415
 Leu Glu Lys Arg Ile Glu Asn Leu Asn Lys Lys Val Asp Asp Gly Phe
 420 425 430
 Leu Asp Ile Trp Thr Tyr Asn Ala Glu Leu Leu Val Leu Leu Glu Asn
 435 440 445
 Glu Arg Thr Leu Asp Tyr His Asp Ser Asn Val Lys Asn Leu Tyr Glu
 450 455 460
 Lys Val Arg Ser Gln Leu Lys Asn Asn Ala Lys Glu Ile Gly Asn Gly
 465 470 475 480
 Cys Phe Glu Phe Tyr His Lys Cys Asp Asn Thr Cys Met Glu Ser Val
 485 490 495
 Lys Asn Gly Thr Tyr Asp Tyr Pro Lys Tyr Ser Glu Glu Ala Lys Leu
 500 505 510
 Asn Arg Glu Glu Ile Asp Gly Val Lys Leu Glu Ser Thr Arg Ile Tyr
 515 520 525
 Gln Ile Leu Ala Ile Tyr Ser Thr Val Ala Ser Ser Leu Val Leu Val
 530 535 540
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 Gln Cys Arg Ile Cys Ile
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<210> 6
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 <213> Artificial Sequence

<220>
 <221> source
 <223> /note="Description of Artificial Sequence: Synthetic polypeptide"

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Ala Asp Thr Ile Cys Ile Gly Tyr His Ala Asn Asn Ser Thr Asp Thr
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Val Asp Thr Val Leu Glu Lys Asn Val Thr Val Thr His Ser Val Asn
 35 40 45

Leu Leu Glu Asp Ser His Asn Gly Lys Leu Cys Lys Leu Lys Gly Ile
 50 55 60

Ala Pro Leu Gln Leu Gly Lys Cys Ser Val Ala Gly Trp Ile Leu Gly
 65 70 75 80

Asn Pro Glu Cys Glu Ser Leu Ser Thr Ala Ser Ser Trp Ser Tyr Ile
 85 90 95

Val Glu Thr Ser Ser Pro Asp Asn Gly Thr Cys Tyr Pro Gly Tyr Phe
 100 105 110

Ala Asp Tyr Glu Glu Leu Arg Glu Gln Leu Ser Ser Val Ser Ser Phe
 115 120 125

Glu Arg Phe Glu Ile Phe Pro Lys Thr Ser Ser Trp Pro Asn His Asp
 130 135 140

Ser Asn Gly Val Thr Ala Ser Cys Pro His Ala Gly Ala Lys Ser Phe
 145 150 155 160

Tyr Arg Asn Leu Leu Trp Leu Val Lys Lys Gly Asn Ser Tyr Pro Lys
 165 170 175

Leu Ser Lys Ser Tyr Ile Asn Asp Lys Gly Lys Glu Val Leu Val Leu
 180 185 190

Trp Gly Val His His Pro Ser Thr Ser Ala Asp Gln Gln Ser Leu Tyr
 195 200 205

Gln Asn Ala Asn Ala Tyr Val Ser Val Val Thr Ser Arg Tyr Ser Arg
 210 215 220

Arg Phe Thr Pro Glu Ile Ala Ile Arg Pro Lys Val Arg Asp Gln Glu
 225 230 235 240
 Gly Arg Met Asn Tyr Tyr Trp Thr Leu Val Glu Pro Gly Asp Thr Ile
 245 250 255
 Ile Phe Glu Ala Thr Gly Asn Leu Ile Ala Pro Trp Tyr Ala Phe Ala
 260 265 270
 Leu Ser Arg Gly Phe Gly Ser Gly Ile Ile Thr Ser Asp Thr Pro Val
 275 280 285
 His Asp Cys Asn Thr Thr Cys Gln Thr Pro Gln Gly Ala Ile Asn Ser
 290 295 300
 Ser Leu Pro Phe Gln Asn Val His Pro Val Thr Ile Gly Glu Cys Pro
 305 310 315 320
 Lys Tyr Val Arg Ser Ala Lys Leu Arg Met Ala Thr Gly Leu Arg Asn
 325 330 335
 Ile Pro Ser Ile Gln Ser Arg Gly Leu Phe Gly Ala Ile Ala Gly Phe
 340 345 350
 Ile Glu Gly Gly Trp Thr Gly Met Val Asp Gly Trp Tyr Gly Tyr His
 355 360 365
 His Gln Asn Glu Gln Gly Ser Gly Tyr Ala Ala Asp Leu Lys Ser Thr
 370 375 380
 Gln Asn Ala Ile Asp Gly Ile Thr Asn Lys Val Asn Ser Val Ile Glu
 385 390 395 400
 Lys Met Asn Thr Gln Phe Thr Ala Val Gly Lys Glu Phe Asn Lys Leu
 405 410 415
 Glu Arg Arg Met Glu Asn Leu Asn Lys Lys Val Asp Asp Gly Phe Leu
 420 425 430
 Asp Ile Trp Thr Tyr Asn Ala Glu Leu Leu Val Leu Leu Glu Asn Glu
 435 440 445
 Arg Thr Leu Asp Phe His Asp Ser Asn Val Lys Asn Leu Tyr Glu Lys
 450 455 460
 Val Lys Ser Gln Leu Lys Asn Asn Ala Lys Glu Ile Gly Asn Gly Cys
 465 470 475 480
 Phe Glu Phe Tyr His Lys Cys Asn Asn Thr Cys Met Glu Ser Val Lys
 485 490 495
 Asn Gly Thr Tyr Asp Tyr Pro Lys Tyr Ser Glu Glu Ser Lys Leu Asn

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

Asp Ile Trp Thr Tyr Asn Ala Glu Leu Leu Val Leu Leu Glu Asn Glu
435 440 445

Arg Thr Leu Asp Phe His Asp Ser Asn Val Lys Asn Leu Tyr Glu Lys
450 455 460

Val Lys Ser Gln Leu Lys Asn Asn Ala Lys Glu Ile Gly Asn Gly Cys
465 470 475 480

Phe Glu Phe Tyr His Lys Cys Asn Asn Thr Cys Met Glu Ser Val Lys
485 490 495

Asn Gly Thr Tyr Asp Tyr Pro Lys Tyr Ser Glu Glu Ser Lys Leu Asn
500 505 510

Arg Glu Lys Ile Asp Gly Val Lys Leu Glu Ser Met Gly Val Tyr Gln
515 520 525

Ile Leu Ala Ile Tyr Ser Thr Val Ala Ser Ser Leu Val Leu Leu Val
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Ser Leu Gly Ala Ile Ser Phe Trp Met Cys Ser Asn Gly Ser Leu Gln
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Cys Arg Ile Cys Ile
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<213> Artificial Sequence

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Val Asp Thr Val Leu Glu Lys Asn Val Thr Val Thr His Ser Val Asn
35 40 45

Leu Leu Glu Asp Lys His Asn Gly Lys Leu Cys Lys Leu Arg Gly Ile
50 55 60

Ala Pro Leu Gln Leu Gly Asn Cys Ser Val Ala Gly Trp Ile Leu Gly
65 70 75 80

Asn Pro Glu Cys Glu Leu Leu Ile Ser Lys Glu Ser Trp Ser Tyr Ile
85 90 95

Val Glu Lys Pro Asn Pro Glu Asn Gly Thr Cys Tyr Pro Gly Tyr Phe
 100 105 110
 Ala Asp Tyr Glu Glu Leu Arg Glu Gln Leu Ser Ser Val Ser Ser Phe
 115 120 125
 Glu Arg Phe Glu Ile Phe Pro Lys Glu Ser Ser Trp Pro Asn His Thr
 130 135 140
 Val Thr Gly Val Ser Ala Ser Cys Ser His Asn Gly Lys Ser Ser Phe
 145 150 155 160
 Tyr Arg Asn Leu Leu Trp Leu Thr Gly Lys Asn Gly Leu Tyr Pro Asn
 165 170 175
 Leu Ser Lys Ser Tyr Ala Asn Asn Lys Glu Lys Glu Val Leu Val Leu
 180 185 190
 Trp Gly Val His His Pro Pro Asn Ile Gly Asp Gln Arg Ala Leu Tyr
 195 200 205
 His Thr Glu Asn Ala Tyr Val Ser Val Val Ser Ser His Tyr Ser Arg
 210 215 220
 Arg Phe Thr Pro Glu Ile Ala Lys Arg Pro Lys Val Arg Asp Gln Glu
 225 230 235 240
 Gly Arg Ile Asn Tyr Tyr Trp Thr Leu Leu Glu Pro Gly Asp Thr Ile
 245 250 255
 Ile Phe Glu Ala Asn Gly Asn Leu Ile Ala Pro Trp Tyr Ala Phe Ala
 260 265 270
 Leu Ser Arg Gly Ala Gly Ser Gly Ile Ile Ile Ser Asp Thr Pro Val
 275 280 285
 His Asp Cys Asn Thr Thr Cys Gln Thr Pro Lys Gly Ala Ile Asn Thr
 290 295 300
 Ser Leu Pro Phe Gln Asn Ile His Pro Ile Thr Ile Gly Lys Cys Pro
 305 310 315 320
 Lys Tyr Val Lys Ser Thr Lys Leu Arg Leu Ala Thr Gly Leu Arg Asn
 325 330 335
 Ile Pro Ser Ile Gln Ser Arg Gly Leu Phe Gly Ala Ile Ala Gly Phe
 340 345 350
 Ile Glu Gly Gly Trp Thr Gly Met Val Asp Gly Trp Tyr Gly Tyr His
 355 360 365

His Gln Asn Glu Gln Gly Ser Gly Tyr Ala Ala Asp Leu Lys Ser Thr
 370 375 380
 Gln Asn Ala Ile Asp Glu Ile Thr Asn Lys Val Asn Ser Val Ile Glu
 385 390 395 400
 Lys Met Asn Thr Gln Phe Thr Ala Val Gly Lys Glu Phe Asn His Leu
 405 410 415
 Glu Lys Arg Ile Glu Asn Leu Asn Lys Lys Val Asp Asp Gly Phe Leu
 420 425 430
 Asp Ile Trp Thr Tyr Asn Ala Glu Leu Leu Val Leu Leu Glu Asn Glu
 435 440 445
 Arg Thr Leu Asp Tyr His Asp Ser Asn Val Lys Asn Leu Tyr Glu Lys
 450 455 460
 Val Arg Ser Gln Leu Lys Asn Asn Ala Lys Glu Ile Gly Asn Gly Cys
 465 470 475 480
 Phe Glu Phe Tyr His Lys Cys Asp Asn Thr Cys Met Glu Ser Val Lys
 485 490 495
 Asn Gly Thr Tyr Asp Tyr Pro Lys Tyr Ser Glu Glu Ala Lys Leu Asn
 500 505 510
 Arg Glu Glu Ile Asp Gly Val Lys Leu Glu Ser Thr Arg Ile Tyr Gln
 515 520 525
 Ile Leu Ala Ile Tyr Ser Thr Val Ala Ser Ser Leu Val Leu Val Val
 530 535 540
 Ser Leu Gly Ala Ile Ser Phe Trp Met Cys Ser Asn Gly Ser Leu Gln
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 Cys Arg Ile Cys Ile
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Ala Asp Thr Ile Cys Ile Gly Tyr His Ala Asn Asn Ser Thr Asp Thr

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Val Asp Thr Val Leu Glu Lys Asn Val Thr Val Thr His Ser Val Asn
35 40 45

Leu Leu Glu Asp Ser His Asn Gly Lys Leu Cys Lys Leu Lys Gly Ile
50 55 60

Ala Pro Leu Gln Leu Gly Asn Cys Ser Val Ala Gly Trp Ile Leu Gly
65 70 75 80

Asn Pro Glu Cys Glu Leu Leu Ile Ser Lys Glu Ser Trp Ser Tyr Ile
85 90 95

Val Glu Lys Pro Asn Pro Glu Asn Gly Thr Cys Tyr Pro Gly Tyr Phe
100 105 110

Ala Asp Tyr Glu Glu Leu Arg Glu Gln Leu Ser Ser Val Ser Ser Phe
115 120 125

Glu Arg Phe Glu Ile Phe Pro Lys Glu Ser Ser Trp Pro Asn His Thr
130 135 140

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

Tyr Arg Asn Leu Leu Trp Leu Thr Gly Lys Asn Gly Leu Tyr Pro Asn
165 170 175

Leu Ser Lys Ser Tyr Ala Asn Asn Lys Glu Lys Glu Val Leu Val Leu
180 185

Trp Gly Val His His Pro Pro Asn Ile Gly Asp Gln Arg Ala Leu Tyr
195 200 205

His Thr Glu Asn Ala Tyr Val Ser Val Val Ser Ser His Tyr Ser Arg
210 215 220

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

Gly Arg Ile Asn Tyr Tyr Trp Thr Leu Leu Glu Pro Gly Asp Thr Ile
245 250 255

Ile Phe Glu Ala Asn Gly Asn Leu Ile Ala Pro Trp Tyr Ala Phe Ala
260 265 270

Leu Ser Arg Gly Ser Gly Ser Gly Ile Ile Thr Ser Asp Ala Pro Val
275 280 285

His Asp Cys Asn Thr Lys Cys Gln Thr Pro His Gly Ala Ile Asn Ser
290 295 300

Ser Leu Pro Phe Gln Asn Ile His Pro Val Thr Ile Gly Glu Cys Pro
 305 310 315 320
 Lys Tyr Val Arg Ser Thr Lys Leu Arg Met Ala Thr Gly Leu Arg Asn
 325 330 335
 Ile Pro Ser Ile Gln Ser Arg Gly Leu Phe Gly Ala Ile Ala Gly Phe
 340 345 350
 Ile Glu Gly Gly Trp Thr Gly Met Ile Asp Gly Trp Tyr Gly Tyr His
 355 360 365
 His Gln Asn Glu Gln Gly Ser Gly Tyr Ala Ala Asp Gln Lys Ser Thr
 370 375 380
 Gln Asn Ala Ile Asp Gly Ile Thr Asn Lys Val Asn Ser Val Ile Glu
 385 390 395 400
 Lys Met Asn Thr Gln Phe Thr Ala Val Gly Lys Glu Phe Asn Asn Leu
 405 410 415
 Glu Arg Arg Ile Glu Asn Leu Asn Lys Lys Val Asp Asp Gly Phe Leu
 420 425 430
 Asp Ile Trp Thr Tyr Asn Ala Glu Leu Leu Val Leu Leu Glu Asn Glu
 435 440 445
 Arg Thr Leu Asp Phe His Asp Ser Asn Val Arg Asn Leu Tyr Glu Lys
 450 455 460
 Val Lys Ser Gln Leu Lys Asn Asn Ala Lys Glu Ile Gly Asn Gly Cys
 465 470 475 480
 Phe Glu Phe Tyr His Lys Cys Asp Asp Ala Cys Met Glu Ser Val Arg
 485 490 495
 Asn Gly Thr Tyr Asp Tyr Pro Lys Tyr Ser Glu Glu Ser Lys Leu Asn
 500 505 510
 Arg Glu Glu Ile Asp Gly Val Lys Leu Glu Ser Met Gly Val Tyr Gln
 515 520 525
 Ile Leu Ala Ile Tyr Ser Thr Val Ala Ser Ser Leu Val Leu Leu Val
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 Cys Arg Ile Cys Ile
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Ala Asp Thr Leu Cys Ile Gly Tyr His Ala Asn Asn Ser Thr Asp Thr
 20 25 30

Val Asp Thr Val Leu Glu Lys Asn Val Thr Val Thr His Ser Val Asn
 35 40 45

Leu Leu Glu Asp Arg His Asn Gly Lys Leu Cys Lys Leu Gly Gly Ile
 50 55 60

Ala Pro Leu Gln Leu Gly Asn Cys Ser Val Ala Gly Trp Ile Leu Gly
 65 70 75 80

Asn Pro Glu Cys Glu Leu Leu Ile Ser Lys Glu Ser Trp Ser Tyr Ile
 85 90 95

Val Glu Lys Pro Asn Pro Glu Asn Gly Thr Cys Tyr Pro Gly Tyr Phe
 100 105 110

Ala Asp Tyr Glu Glu Leu Arg Glu Gln Leu Ser Ser Val Ser Ser Phe
 115 120 125

Glu Arg Phe Glu Ile Phe Pro Lys Glu Ser Ser Trp Pro Asn His Thr
 130 135 140

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

Tyr Arg Asn Leu Leu Trp Leu Thr Gly Lys Asn Gly Leu Tyr Pro Asn
 165 170 175

Leu Ser Lys Ser Tyr Ala Asn Asn Lys Glu Lys Glu Val Leu Val Leu
 180 185 190

Trp Gly Val His His Pro Pro Asn Ile Gly Asp Gln Arg Ala Leu Tyr
 195 200 205

His Thr Glu Asn Ala Tyr Val Ser Val Val Ser Ser His Tyr Ser Arg
 210 215 220

Arg Phe Thr Pro Glu Ile Ala Lys Arg Pro Lys Val Arg Asp Gln Glu

Page 16

225		230		235		240
Gly	Arg	Ile	Asn	Tyr	Tyr	Trp
			245			
					Leu	Leu
					250	
					Glu	Pro
					Gly	Asp
						Thr
						Ile
						255
Ile	Phe	Glu	Ala	Asn	Gly	Asn
			260			
					Leu	Ile
					265	
					Ala	Pro
					Trp	Tyr
						Ala
						Phe
						Ala
						270
Leu	Ser	Arg	Gly	Ser	Gly	Ser
		275				
					Gly	Ile
					280	
					Ile	Ile
						Ile
						Ser
						Asp
						285
						Ala
						Pro
						Val
His	Asp	Cys	Asn	Thr	Lys	Cys
	290					295
					Gln	Thr
					Pro	Lys
						Gly
						300
						Ala
						Ile
						Asn
						Thr
Ser	Leu	Pro	Phe	Gln	Asn	Ile
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						His
						Pro
						Val
						Thr
						315
						Ile
						Gly
						Glu
						Cys
						Pro
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						Ala
						Thr
						Gly
						Leu
						Arg
						335
						Asn
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						Gly
						Leu
						345
						Phe
						Gly
						Ala
						Ile
						Ala
						350
						Gly
						Phe
Ile	Glu	Gly	Gly	Trp	Thr	Gly
						Met
						360
						Ile
						Asp
						Gly
						Trp
						Tyr
						365
						Gly
						Tyr
						His
His	Gln	Asn	Glu	Gln	Gly	Ser
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						Gly
						Tyr
						Ala
						Ala
						Asp
						380
						Gln
						Arg
						Ser
						Thr
Gln	Asn	Ala	Ile	Asp	Gly	Ile
						390
						Thr
						Asn
						Lys
						Val
						395
						Asn
						Ser
						Val
						Ile
						Glu
						400
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						Ala
						Val
						Gly
						410
						Lys
						Glu
						Phe
						Asn
						His
						415
						Leu
Glu	Lys	Arg	Ile	Glu	Asn	Leu
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						Asn
						Lys
						425
						Lys
						Val
						Asp
						Asp
						Gly
						430
						Phe
						Leu
Asp	Ile	Trp	Thr	Tyr	Asn	Ala
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						Glu
						440
						Leu
						Leu
						Val
						Leu
						Leu
						445
						Glu
						Asn
						Glu
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						Val
						Lys
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						460
						Leu
						Tyr
						Glu
						Lys
Val	Arg	Ser	Gln	Leu	Arg	Asn
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						Ala
						Lys
						Glu
						475
						Ile
						Gly
						Asn
						Gly
						Cys
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						Asp
						Asp
						Thr
						490
						Cys
						Met
						Glu
						Ser
						Val
						495
						Lys
Asn	Gly	Thr	Tyr	Asp	Tyr	Pro
						500
						Lys
						505
						Ser
						Glu
						Glu
						Ser
						Lys
						510
						Leu
						Asn

Arg Glu Glu Ile Asp Gly Val Lys Leu Glu Ser Thr Arg Ile Tyr Gln
515 520 525

Ile Leu Ala Ile Tyr Ser Thr Val Ala Ser Ser Leu Val Leu Leu Val
530 535 540

Ser Leu Gly Ala Ile Ser Phe Trp Met Cys Ser Asn Gly Ser Leu Gln
545 550 555 560

Cys Arg Ile Cys Ile
565

<210> 11
<211> 565
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 11
Met Lys Ala Lys Leu Leu Val Leu Leu Cys Thr Phe Thr Ala Thr Tyr
1 5 10 15

Ala Asp Thr Ile Cys Ile Gly Tyr His Ala Asn Asn Ser Thr Asp Thr
20 25 30

Val Asp Thr Val Leu Glu Lys Asn Val Thr Val Thr His Ser Val Asn
35 40 45

Leu Leu Glu Asp Ser His Asn Gly Lys Leu Cys Lys Leu Lys Gly Ile
50 55 60

Ala Pro Leu Gln Leu Gly Lys Cys Ser Val Ala Gly Trp Ile Leu Gly
65 70 75 80

Asn Pro Glu Cys Glu Ser Leu Ser Thr Ala Ser Ser Trp Ser Tyr Ile
85 90 95

Val Glu Thr Ser Ser Pro Asp Asn Gly Thr Cys Tyr Pro Gly Tyr Phe
100 105 110

Ala Asp Tyr Glu Glu Leu Arg Glu Gln Leu Ser Ser Val Ser Ser Phe
115 120 125

Glu Arg Phe Glu Ile Phe Pro Lys Glu Ser Ser Trp Pro Asn His Thr
130 135 140

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

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

435 440 445
 Arg Thr Leu Asp Phe His Asp Ser Asn Val Lys Asn Leu Tyr Glu Lys
 450 455 460
 Val Lys Ser Gln Leu Lys Asn Asn Ala Lys Glu Ile Gly Asn Gly Cys
 465 470 475 480
 Phe Glu Phe Tyr His Lys Cys Asn Asn Thr Cys Met Glu Ser Val Lys
 485 490 495
 Asn Gly Thr Tyr Asp Tyr Pro Lys Tyr Ser Glu Glu Ser Lys Leu Asn
 500 505 510
 Arg Glu Lys Ile Asp Gly Val Lys Leu Glu Ser Met Gly Val Tyr Gln
 515 520 525
 Ile Leu Ala Ile Tyr Ser Thr Val Ala Ser Ser Leu Val Leu Leu Val
 530 535 540
 Ser Leu Gly Ala Ile Ser Phe Trp Met Cys Ser Asn Gly Ser Leu Gln
 545 550 555 560
 Cys Arg Ile Cys Ile
 565

<210> 12

<211> 565

<212> PRT

<213> Artificial Sequence

<220>

<221> source

<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 12

Met Lys Ala Lys Leu Leu Val Leu Leu Cys Thr Phe Thr Ala Thr Tyr
 1 5 10 15

Ala Asp Thr Leu Cys Ile Gly Tyr His Ala Asn Asn Ser Thr Asp Thr
 20 25 30

Val Asp Thr Val Leu Glu Lys Asn Val Thr Val Thr His Ser Val Asn
 35 40 45

Leu Leu Glu Asp Lys His Asn Gly Lys Leu Cys Lys Leu Arg Gly Val
 50 55 60

Ala Pro Leu His Leu Gly Lys Cys Asn Ile Ala Gly Trp Ile Leu Gly
 65 70 75 80

Asn Pro Glu Cys Glu Ser Leu Ser Thr Ala Ser Ser Trp Ser Tyr Ile
 85 90 95

Val Glu Thr Pro Ser Ser Asp Asn Gly Thr Cys Tyr Pro Gly Asp Phe
 100 105 110
 Ile Asp Tyr Glu Glu Leu Arg Glu Gln Leu Ser Ser Val Ser Ser Phe
 115 120 125
 Glu Arg Phe Glu Ile Phe Pro Lys Glu Ser Ser Trp Pro Asn His Thr
 130 135 140
 Val Thr Gly Val Ser Ala Ser Cys Ser His Asn Gly Lys Ser Ser Phe
 145 150 155 160
 Tyr Arg Asn Leu Leu Trp Leu Thr Gly Lys Asn Gly Leu Tyr Pro Asn
 165 170 175
 Leu Ser Lys Ser Tyr Ala Asn Asn Lys Glu Lys Glu Val Leu Val Leu
 180 185 190
 Trp Gly Val His His Pro Pro Asn Ile Gly Asp Gln Arg Ala Leu Tyr
 195 200 205
 His Thr Glu Asn Ala Tyr Val Ser Val Val Ser Ser His Tyr Ser Arg
 210 215 220
 Arg Phe Thr Pro Glu Ile Ala Lys Arg Pro Lys Val Arg Asp Gln Glu
 225 230 235 240
 Gly Arg Ile Asn Tyr Tyr Trp Thr Leu Leu Glu Pro Gly Asp Thr Ile
 245 250 255
 Ile Phe Glu Ala Asn Gly Asn Leu Ile Ala Pro Trp Tyr Ala Phe Ala
 260 265 270
 Leu Ser Arg Gly Ala Gly Ser Gly Ile Ile Ile Ser Asp Thr Pro Val
 275 280 285
 His Asp Cys Asn Thr Thr Cys Gln Thr Pro Lys Gly Ala Ile Asn Thr
 290 295 300
 Ser Leu Pro Phe Gln Asn Ile His Pro Ile Thr Ile Gly Lys Cys Pro
 305 310 315 320
 Lys Tyr Val Lys Ser Thr Lys Leu Arg Leu Ala Thr Gly Leu Arg Asn
 325 330 335
 Ile Pro Ser Ile Gln Ser Arg Gly Leu Phe Gly Ala Ile Ala Gly Phe
 340 345 350
 Ile Glu Gly Gly Trp Thr Gly Met Val Asp Gly Trp Tyr Gly Tyr His
 355 360 365

His Gln Asn Glu Gln Gly Ser Gly Tyr Ala Ala Asp Leu Lys Ser Thr
 370 375 380

Gln Asn Ala Ile Asp Glu Ile Thr Asn Lys Val Asn Ser Val Ile Glu
 385 390 395 400

Lys Met Asn Thr Gln Phe Thr Ala Val Gly Lys Glu Phe Asn His Leu
 405 410 415

Glu Lys Arg Ile Glu Asn Leu Asn Lys Lys Val Asp Asp Gly Phe Leu
 420 425 430

Asp Ile Trp Thr Tyr Asn Ala Glu Leu Leu Val Leu Leu Glu Asn Glu
 435 440 445

Arg Thr Leu Asp Tyr His Asp Ser Asn Val Lys Asn Leu Tyr Glu Lys
 450 455 460

Val Arg Ser Gln Leu Lys Asn Asn Ala Lys Glu Ile Gly Asn Gly Cys
 465 470 475 480

Phe Glu Phe Tyr His Lys Cys Asp Asn Thr Cys Met Glu Ser Val Lys
 485 490 495

Asn Gly Thr Tyr Asp Tyr Pro Lys Tyr Ser Glu Glu Ala Lys Leu Asn
 500 505 510

Arg Glu Glu Ile Asp Gly Val Lys Leu Glu Ser Thr Arg Ile Tyr Gln
 515 520 525

Ile Leu Ala Ile Tyr Ser Thr Val Ala Ser Ser Leu Val Leu Val Val
 530 535 540

Ser Leu Gly Ala Ile Ser Phe Trp Met Cys Ser Asn Gly Ser Leu Gln
 545 550 555 560

Cys Arg Ile Cys Ile
 565

<210> 13
 <211> 565
 <212> PRT
 <213> Artificial Sequence

<220>
 <221> source
 <223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 13
 Met Lys Ala Lys Leu Leu Val Leu Leu Cys Thr Phe Thr Ala Thr Tyr
 1 5 10 15

Ala Asp Thr Ile Cys Ile Gly Tyr His Ala Asn Asn Ser Thr Asp Thr
 20 25 30

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

Ser Leu Pro Phe Gln Asn Ile His Pro Val Thr Ile Gly Glu Cys Pro
 305 310 315 320
 Lys Tyr Val Arg Ser Thr Lys Leu Arg Met Ala Thr Gly Leu Arg Asn
 325 330 335
 Ile Pro Ser Ile Gln Ser Arg Gly Leu Phe Gly Ala Ile Ala Gly Phe
 340 345 350
 Ile Glu Gly Gly Trp Thr Gly Met Ile Asp Gly Trp Tyr Gly Tyr His
 355 360 365
 His Gln Asn Glu Gln Gly Ser Gly Tyr Ala Ala Asp Gln Lys Ser Thr
 370 375 380
 Gln Asn Ala Ile Asp Gly Ile Thr Asn Lys Val Asn Ser Val Ile Glu
 385 390 395 400
 Lys Met Asn Thr Gln Phe Thr Ala Val Gly Lys Glu Phe Asn Asn Leu
 405 410 415
 Glu Arg Arg Ile Glu Asn Leu Asn Lys Lys Val Asp Asp Gly Phe Leu
 420 425 430
 Asp Ile Trp Thr Tyr Asn Ala Glu Leu Leu Val Leu Leu Glu Asn Glu
 435 440 445
 Arg Thr Leu Asp Phe His Asp Ser Asn Val Arg Asn Leu Tyr Glu Lys
 450 455 460
 Val Lys Ser Gln Leu Lys Asn Asn Ala Lys Glu Ile Gly Asn Gly Cys
 465 470 475 480
 Phe Glu Phe Tyr His Lys Cys Asp Asp Ala Cys Met Glu Ser Val Arg
 485 490 495
 Asn Gly Thr Tyr Asp Tyr Pro Lys Tyr Ser Glu Glu Ser Lys Leu Asn
 500 505 510
 Arg Glu Glu Ile Asp Gly Val Lys Leu Glu Ser Met Gly Val Tyr Gln
 515 520 525
 Ile Leu Ala Ile Tyr Ser Thr Val Ala Ser Ser Leu Val Leu Leu Val
 530 535 540
 Ser Leu Gly Ala Ile Ser Phe Trp Met Cys Ser Asn Gly Ser Leu Gln
 545 550 555 560
 Cys Arg Ile Cys Ile
 565

<210> 14
 <211> 565
 <212> PRT
 <213> Artificial Sequence

<220>
 <221> source
 <223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 14

Met Lys Ala Lys Leu Leu Val Leu Leu Cys Thr Phe Thr Ala Thr Tyr
 1 5 10 15

Ala Asp Thr Leu Cys Ile Gly Tyr His Ala Asn Asn Ser Thr Asp Thr
 20 25 30

Val Asp Thr Val Leu Glu Lys Asn Val Thr Val Thr His Ser Val Asn
 35 40 45

Leu Leu Glu Asp Arg His Asn Gly Lys Leu Cys Lys Leu Gly Gly Ile
 50 55 60

Ala Pro Leu His Leu Gly Lys Cys Asn Ile Ala Gly Trp Leu Leu Gly
 65 70 75 80

Asn Pro Glu Cys Glu Leu Leu Leu Thr Val Ser Ser Trp Ser Tyr Ile
 85 90 95

Val Glu Thr Ser Asn Ser Asp Asn Gly Thr Cys Tyr Pro Gly Asp Phe
 100 105 110

Ile Asn Tyr Glu Glu Leu Arg Glu Gln Leu Ser Ser Val Ser Ser Phe
 115 120 125

Glu Arg Phe Glu Ile Phe Pro Lys Glu Ser Ser Trp Pro Asn His Thr
 130 135 140

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

Tyr Arg Asn Leu Leu Trp Leu Thr Gly Lys Asn Gly Leu Tyr Pro Asn
 165 170 175

Leu Ser Lys Ser Tyr Ala Asn Asn Lys Glu Lys Glu Val Leu Val Leu
 180 185 190

Trp Gly Val His His Pro Pro Asn Ile Gly Asp Gln Arg Ala Leu Tyr
 195 200 205

His Thr Glu Asn Ala Tyr Val Ser Val Val Ser Ser His Tyr Ser Arg
 210 215 220

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

Gly Arg Ile Asn Tyr Tyr Trp Thr Leu Leu Glu Pro Gly Asp Thr Ile
 245 250 255
 Ile Phe Glu Ala Asn Gly Asn Leu Ile Ala Pro Trp Tyr Ala Phe Ala
 260 265 270
 Leu Ser Arg Gly Ser Gly Ser Gly Ile Ile Ile Ser Asp Ala Pro Val
 275 280 285
 His Asp Cys Asn Thr Lys Cys Gln Thr Pro Lys Gly Ala Ile Asn Thr
 290 295 300
 Ser Leu Pro Phe Gln Asn Ile His Pro Val Thr Ile Gly Glu Cys Pro
 305 310 315 320
 Lys Tyr Val Lys Ser Thr Lys Leu Arg Met Ala Thr Gly Leu Arg Asn
 325 330 335
 Ile Pro Ser Ile Gln Ser Arg Gly Leu Phe Gly Ala Ile Ala Gly Phe
 340 345 350
 Ile Glu Gly Gly Trp Thr Gly Met Ile Asp Gly Trp Tyr Gly Tyr His
 355 360 365
 His Gln Asn Glu Gln Gly Ser Gly Tyr Ala Ala Asp Gln Arg Ser Thr
 370 375 380
 Gln Asn Ala Ile Asp Gly Ile Thr Asn Lys Val Asn Ser Val Ile Glu
 385 390 395 400
 Lys Met Asn Thr Gln Phe Thr Ala Val Gly Lys Glu Phe Asn His Leu
 405 410 415
 Glu Lys Arg Ile Glu Asn Leu Asn Lys Lys Val Asp Asp Gly Phe Leu
 420 425 430
 Asp Ile Trp Thr Tyr Asn Ala Glu Leu Leu Val Leu Leu Glu Asn Glu
 435 440 445
 Arg Thr Leu Asp Phe His Asp Ser Asn Val Lys Asn Leu Tyr Glu Lys
 450 455 460
 Val Arg Ser Gln Leu Arg Asn Asn Ala Lys Glu Ile Gly Asn Gly Cys
 465 470 475 480
 Phe Glu Phe Tyr His Lys Cys Asp Asp Thr Cys Met Glu Ser Val Lys
 485 490 495
 Asn Gly Thr Tyr Asp Tyr Pro Lys Tyr Ser Glu Glu Ser Lys Leu Asn
 500 505 510

Arg Glu Glu Ile Asp Gly Val Lys Leu Glu Ser Thr Arg Ile Tyr Gln
 515 520 525

Ile Leu Ala Ile Tyr Ser Thr Val Ala Ser Ser Leu Val Leu Leu Val
 530 535 540

Ser Leu Gly Ala Ile Ser Phe Trp Met Cys Ser Asn Gly Ser Leu Gln
 545 550 555 560

Cys Arg Ile Cys Ile
 565

<210> 15

<211> 565

<212> PRT

<213> Artificial Sequence

<220>

<221> source

<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 15

Met Lys Ala Lys Leu Leu Val Leu Leu Cys Thr Phe Thr Ala Thr Tyr
 1 5 10 15

Ala Asp Thr Ile Cys Ile Gly Tyr His Ala Asn Asn Ser Thr Asp Thr
 20 25 30

Val Asp Thr Val Leu Glu Lys Asn Val Thr Val Thr His Ser Val Asn
 35 40 45

Leu Leu Glu Asp Ser His Asn Gly Lys Leu Cys Lys Leu Lys Gly Ile
 50 55 60

Ala Pro Leu Gln Leu Gly Lys Cys Ser Val Ala Gly Trp Ile Leu Gly
 65 70 75 80

Asn Pro Glu Cys Glu Ser Leu Ser Thr Ala Ser Ser Trp Ser Tyr Ile
 85 90 95

Val Glu Thr Ser Ser Pro Asp Asn Gly Thr Cys Tyr Pro Gly Tyr Phe
 100 105 110

Ala Asp Tyr Glu Glu Leu Arg Glu Gln Leu Ser Ser Val Ser Ser Phe
 115 120 125

Glu Arg Phe Glu Ile Phe Pro Lys Glu Ser Ser Trp Pro Asn His Thr
 130 135 140

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

Tyr Arg Asn Leu Leu Trp Leu Thr Gly Lys Asn Gly Leu Tyr Pro Asn

165

175

Leu Ser Lys Ser Tyr Ala Asn Asn Lys Glu Lys Glu Val Leu Val Leu
180 185 190

Trp Gly Val His His Pro Pro Asn Ile Gly Asp Gln Arg Ala Leu Tyr
195 200 205

His Thr Glu Asn Ala Tyr Val Ser Val Val Ser Ser His Tyr Ser Arg
210 215 220

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

Gly Arg Ile Asn Tyr Tyr Trp Thr Leu Leu Glu Pro Gly Asp Thr Ile
245 250 255

Ile Phe Glu Ala Asn Gly Asn Leu Ile Ala Pro Trp Tyr Ala Phe Ala
260 265 270

Leu Ser Arg Gly Phe Gly Ser Gly Ile Ile Thr Ser Asp Thr Pro Val
275 280 285

His Asp Cys Asn Thr Thr Cys Gln Thr Pro Gln Gly Ala Ile Asn Ser
290 295 300

Ser Leu Pro Phe Gln Asn Val His Pro Val Thr Ile Gly Glu Cys Pro
305 310 315 320

Lys Tyr Val Arg Ser Ala Lys Leu Arg Met Ala Thr Gly Leu Arg Asn
325 330 335

Ile Pro Ser Ile Gln Ser Arg Gly Leu Phe Gly Ala Ile Ala Gly Phe
340 345 350

Ile Glu Gly Gly Trp Thr Gly Met Val Asp Gly Trp Tyr Gly Tyr His
355 360 365

His Gln Asn Glu Gln Gly Ser Gly Tyr Ala Ala Asp Leu Lys Ser Thr
370 375 380

Gln Asn Ala Ile Asp Gly Ile Thr Asn Lys Val Asn Ser Val Ile Glu
385 390 395 400

Lys Met Asn Thr Gln Phe Thr Ala Val Gly Lys Glu Phe Asn Lys Leu
405 410 415

Glu Arg Arg Met Glu Asn Leu Asn Lys Lys Val Asp Asp Gly Phe Leu
420 425 430

Asp Ile Trp Thr Tyr Asn Ala Glu Leu Leu Val Leu Leu Glu Asn Glu
435 440 445

Arg Thr Leu Asp Phe His Asp Ser Asn Val Lys Asn Leu Tyr Glu Lys
 450 455 460

Val Lys Ser Gln Leu Lys Asn Asn Ala Lys Glu Ile Gly Asn Gly Cys
 465 470 475 480

Phe Glu Phe Tyr His Lys Cys Asn Asn Thr Cys Met Glu Ser Val Lys
 485 490 495

Asn Gly Thr Tyr Asp Tyr Pro Lys Tyr Ser Glu Glu Ser Lys Leu Asn
 500 505 510

Arg Glu Lys Ile Asp Gly Val Lys Leu Glu Ser Met Gly Val Tyr Gln
 515 520 525

Ile Leu Ala Ile Tyr Ser Thr Val Ala Ser Ser Leu Val Leu Leu Val
 530 535 540

Ser Leu Gly Ala Ile Ser Phe Trp Met Cys Ser Asn Gly Ser Leu Gln
 545 550 555 560

Cys Arg Ile Cys Ile
 565

<210> 16

<211> 565

<212> PRT

<213> Artificial sequence

<220>

<221> source

<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 16

Met Lys Ala Lys Leu Leu Val Leu Leu Cys Thr Phe Thr Ala Thr Tyr
 1 5 10 15

Ala Asp Thr Leu Cys Ile Gly Tyr His Ala Asn Asn Ser Thr Asp Thr
 20 25 30

Val Asp Thr Val Leu Glu Lys Asn Val Thr Val Thr His Ser Val Asn
 35 40 45

Leu Leu Glu Asp Lys His Asn Gly Lys Leu Cys Lys Leu Arg Gly Val
 50 55 60

Ala Pro Leu His Leu Gly Lys Cys Asn Ile Ala Gly Trp Ile Leu Gly
 65 70 75 80

Asn Pro Glu Cys Glu Ser Leu Ser Thr Ala Ser Ser Trp Ser Tyr Ile
 85 90 95

Val Glu Thr Pro Ser Ser Asp Asn Gly Thr Cys Tyr Pro Gly Asp Phe
 100 105 110
 Ile Asp Tyr Glu Glu Leu Arg Glu Gln Leu Ser Ser Val Ser Ser Phe
 115 120 125
 Glu Arg Phe Glu Ile Phe Pro Lys Glu Ser Ser Trp Pro Asn His Thr
 130 135 140
 Val Thr Gly Val Ser Ala Ser Cys Ser His Asn Gly Lys Ser Ser Phe
 145 150 155 160
 Tyr Arg Asn Leu Leu Trp Leu Thr Gly Lys Asn Gly Leu Tyr Pro Asn
 165 170 175
 Leu Ser Lys Ser Tyr Ala Asn Asn Lys Glu Lys Glu Val Leu Val Leu
 180 185 190
 Trp Gly Val His His Pro Pro Asn Ile Gly Asp Gln Arg Ala Leu Tyr
 195 200 205
 His Thr Glu Asn Ala Tyr Val Ser Val Val Ser Ser His Tyr Ser Arg
 210 215 220
 Arg Phe Thr Pro Glu Ile Ala Lys Arg Pro Lys Val Arg Asp Gln Glu
 225 230 235 240
 Gly Arg Ile Asn Tyr Tyr Trp Thr Leu Leu Glu Pro Gly Asp Thr Ile
 245 250 255
 Ile Phe Glu Ala Asn Gly Asn Leu Ile Ala Pro Arg Tyr Ala Phe Ala
 260 265 270
 Met Glu Arg Asn Ala Gly Ser Gly Ile Ile Ile Ser Asp Thr Pro Val
 275 280 285
 His Asp Cys Asn Thr Thr Cys Gln Thr Pro Lys Gly Ala Ile Asn Thr
 290 295 300
 Ser Leu Pro Phe Gln Asn Ile His Pro Ile Thr Ile Gly Lys Cys Pro
 305 310 315 320
 Lys Tyr Val Lys Ser Thr Lys Leu Arg Leu Ala Thr Gly Leu Arg Asn
 325 330 335
 Ile Pro Ser Ile Gln Ser Arg Gly Leu Phe Gly Ala Ile Ala Gly Phe
 340 345 350
 Ile Glu Gly Gly Trp Thr Gly Met Val Asp Gly Trp Tyr Gly Tyr His
 355 360 365
 His Gln Asn Glu Gln Gly Ser Gly Tyr Ala Ala Asp Leu Lys Ser Thr

370

375

Gln Asn Ala Ile Asp Gln Ile Thr Asn Lys Val Asn Ser Val Ile Glu
385 390 395 400

Lys Met Asn Thr Gln Phe Thr Ala Val Gly Lys Glu Phe Asn His Leu
405 410 415

Glu Lys Arg Ile Glu Asn Leu Asn Lys Lys Val Asp Asp Gly Phe Leu
420 425 430

Asp Ile Trp Thr Tyr Asn Ala Glu Leu Leu Val Leu Leu Glu Asn Glu
435 440 445

Arg Thr Leu Asp Tyr His Asp Ser Asn Val Lys Asn Leu Tyr Glu Lys
450 455 460

Val Arg Ser Gln Leu Lys Asn Asn Ala Lys Glu Ile Gly Asn Gly Cys
465 470 475 480

Phe Glu Phe Tyr His Lys Cys Asp Asn Thr Cys Met Glu Ser Val Lys
485 490 495

Asn Gly Thr Tyr Asp Tyr Pro Lys Tyr Ser Glu Glu Ala Lys Leu Asn
500 505 510

Arg Glu Glu Ile Asp Gly Val Lys Leu Glu Ser Thr Arg Ile Tyr Gln
515 520 525

Ile Leu Ala Ile Tyr Ser Thr Val Ala Ser Ser Leu Val Leu Val Val
530 535 540

Ser Leu Gly Ala Ile Ser Phe Trp Met Cys Ser Asn Gly Ser Leu Gln
545 550 555 560

Cys Arg Ile Cys Ile
565

<210> 17
<211> 565
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 17
Met Lys Ala Lys Leu Leu Val Leu Leu Cys Thr Phe Thr Ala Thr Tyr
1 5 10 15

Ala Asp Thr Ile Cys Ile Gly Tyr His Ala Asn Asn Ser Thr Asp Thr
20 25 30

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

Ser Leu Pro Phe Gln Asn Ile His Pro Val Thr Ile Gly Glu Cys Pro
 305 310 315 320

Lys Tyr Val Arg Ser Thr Lys Leu Arg Met Ala Thr Gly Leu Arg Asn
 325 330 335

Ile Pro Ser Ile Gln Ser Arg Gly Leu Phe Gly Ala Ile Ala Gly Phe
 340 345 350

Ile Glu Gly Gly Trp Thr Gly Met Ile Asp Gly Trp Tyr Gly Tyr His
 355 360 365

His Gln Asn Glu Gln Gly Ser Gly Tyr Ala Ala Asp Gln Lys Ser Thr
 370 375 380

Gln Asn Ala Ile Asp Gly Ile Thr Asn Lys Val Asn Ser Val Ile Glu
 385 390 395 400

Lys Met Asn Thr Gln Phe Thr Ala Val Gly Lys Glu Phe Asn Asn Leu
 405 410 415

Glu Arg Arg Ile Glu Asn Leu Asn Lys Lys Val Asp Asp Gly Phe Leu
 420 425 430

Asp Ile Trp Thr Tyr Asn Ala Glu Leu Leu Val Leu Leu Glu Asn Glu
 435 440 445

Arg Thr Leu Asp Phe His Asp Ser Asn Val Arg Asn Leu Tyr Glu Lys
 450 455 460

Val Lys Ser Gln Leu Lys Asn Asn Ala Lys Glu Ile Gly Asn Gly Cys
 465 470 475 480

Phe Glu Phe Tyr His Lys Cys Asp Asp Ala Cys Met Glu Ser Val Arg
 485 490 495

Asn Gly Thr Tyr Asp Tyr Pro Lys Tyr Ser Glu Glu Ser Lys Leu Asn
 500 505 510

Arg Glu Glu Ile Asp Gly Val Lys Leu Glu Ser Met Gly Val Tyr Gln
 515 520 525

Ile Leu Ala Ile Tyr Ser Thr Val Ala Ser Ser Leu Val Leu Leu Val
 530 535 540

Ser Leu Gly Ala Ile Ser Phe Trp Met Cys Ser Asn Gly Ser Leu Gln
 545 550 555 560

Cys Arg Ile Cys Ile
 565

<211> 565
 <212> PRT
 <213> Artificial Sequence

<220>
 <221> source
 <223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 18

Met Lys Ala Lys Leu Leu Val Leu Leu Cys Thr Phe Thr Ala Thr Tyr
 1 5 10 15

Ala Asp Thr Leu Cys Ile Gly Tyr His Ala Asn Asn Ser Thr Asp Thr
 20 25 30

Val Asp Thr Val Leu Glu Lys Asn Val Thr Val Thr His Ser Val Asn
 35 40 45

Leu Leu Glu Asp Arg His Asn Gly Lys Leu Cys Lys Leu Gly Gly Ile
 50 55 60

Ala Pro Leu His Leu Gly Lys Cys Asn Ile Ala Gly Trp Leu Leu Gly
 65 70 75 80

Asn Pro Glu Cys Glu Leu Leu Leu Thr Val Ser Ser Trp Ser Tyr Ile
 85 90 95

Val Glu Thr Ser Asn Ser Asp Asn Gly Thr Cys Tyr Pro Gly Asp Phe
 100 105 110

Ile Asn Tyr Glu Glu Leu Arg Glu Gln Leu Ser Ser Val Ser Ser Phe
 115 120 125

Glu Arg Phe Glu Ile Phe Pro Lys Glu Ser Ser Trp Pro Asn His Thr
 130 135 140

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

Tyr Arg Asn Leu Leu Trp Leu Thr Gly Lys Asn Gly Leu Tyr Pro Asn
 165 170 175

Leu Ser Lys Ser Tyr Ala Asn Asn Lys Glu Lys Glu Val Leu Val Leu
 180 185 190

Trp Gly Val His His Pro Pro Asn Ile Gly Asp Gln Arg Ala Leu Tyr
 195 200 205

His Thr Glu Asn Ala Tyr Val Ser Val Val Ser Ser His Tyr Ser Arg
 210 215 220

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

Gly Arg Ile Asn Tyr Tyr Trp Thr Leu Leu Glu Pro Gly Asp Thr Ile
 245 250 255
 Ile Phe Glu Ala Asn Gly Asn Leu Ile Ala Pro Arg Tyr Ala Phe Ala
 260 265 270
 Met Asn Arg Gly Ser Gly Ser Gly Ile Ile Ile Ser Asp Ala Pro Val
 275 280 285
 His Asp Cys Asn Thr Lys Cys Gln Thr Pro Lys Gly Ala Ile Asn Thr
 290 295 300
 Ser Leu Pro Phe Gln Asn Ile His Pro Val Thr Ile Gly Glu Cys Pro
 305 310 315 320
 Lys Tyr Val Lys Ser Thr Lys Leu Arg Met Ala Thr Gly Leu Arg Asn
 325 330 335
 Ile Pro Ser Ile Gln Ser Arg Gly Leu Phe Gly Ala Ile Ala Gly Phe
 340 345 350
 Ile Glu Gly Gly Trp Thr Gly Met Ile Asp Gly Trp Tyr Gly Tyr His
 355 360 365
 His Gln Asn Glu Gln Gly Ser Gly Tyr Ala Ala Asp Gln Arg Ser Thr
 370 375 380
 Gln Asn Ala Ile Asp Gly Ile Thr Asn Lys Val Asn Ser Val Ile Glu
 385 390 395 400
 Lys Met Asn Thr Gln Phe Thr Ala Val Gly Lys Glu Phe Asn His Leu
 405 410 415
 Glu Lys Arg Ile Glu Asn Leu Asn Lys Lys Val Asp Asp Gly Phe Leu
 420 425 430
 Asp Ile Trp Thr Tyr Asn Ala Glu Leu Leu Val Leu Leu Glu Asn Glu
 435 440 445
 Arg Thr Leu Asp Phe His Asp Ser Asn Val Lys Asn Leu Tyr Glu Lys
 450 455 460
 Val Arg Ser Gln Leu Arg Asn Asn Ala Lys Glu Ile Gly Asn Gly Cys
 465 470 475 480
 Phe Glu Phe Tyr His Lys Cys Asp Asp Thr Cys Met Glu Ser Val Lys
 485 490 495
 Asn Gly Thr Tyr Asp Tyr Pro Lys Tyr Ser Glu Glu Ser Lys Leu Asn
 500 505 510

Arg Glu Glu Ile Asp Gly Val Lys Leu Glu Ser Thr Arg Ile Tyr Gln
 515 520 525

Ile Leu Ala Ile Tyr Ser Thr Val Ala Ser Ser Leu Val Leu Leu Val
 530 535 540

Ser Leu Gly Ala Ile Ser Phe Trp Met Cys Ser Asn Gly Ser Leu Gln
 545 550 555 560

Cys Arg Ile Cys Ile
 565

<210> 19

<211> 565

<212> PRT

<213> Artificial Sequence

<220>

<221> source

<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 19

Met Lys Ala Lys Leu Leu Val Leu Leu Cys Thr Phe Thr Ala Thr Tyr
 1 5 10 15

Ala Asp Thr Ile Cys Ile Gly Tyr His Ala Asn Asn Ser Thr Asp Thr
 20 25 30

Val Asp Thr Val Leu Glu Lys Asn Val Thr Val Thr His Ser Val Asn
 35 40 45

Ile Leu Glu Asp Ser His Asn Gly Lys Leu Cys Leu Leu Lys Gly Ile
 50 55 60

Ala Pro Leu Gln Leu Gly Asn Cys Ser Val Ala Gly Trp Ile Leu Gly
 65 70 75 80

Asn Pro Glu Cys Glu Leu Leu Ile Ser Lys Glu Ser Trp Ser Tyr Ile
 85 90 95

Val Glu Lys Pro Asn Pro Glu Asn Gly Thr Cys Tyr Pro Gly Tyr Phe
 100 105 110

Ala Asp Tyr Glu Glu Leu Arg Glu Gln Leu Ser Ser Val Ser Ser Phe
 115 120 125

Glu Arg Phe Glu Ile Phe Pro Lys Glu Ser Ser Trp Pro Asn His Asp
 130 135 140

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

Tyr Arg Asn Leu Leu Trp Leu Thr Gly Lys Asn Gly Leu Tyr Pro Lys
 165 170 175

Leu Ser Lys Ser Tyr Ala Asn Asn Lys Glu Lys Glu Val Leu Val Leu
 180 185 190
 Trp Gly Val His His Pro Pro Asn Ile Gly Asp Gln Arg Ala Leu Tyr
 195 200 205
 His Thr Glu Asn Ala Tyr Val Ser Val Val Ser Ser His Tyr Ser Arg
 210 215 220
 Arg Phe Thr Pro Glu Ile Ala Lys Arg Pro Lys Val Arg Asp Gln Glu
 225 230 235 240
 Gly Arg Ile Asn Tyr Tyr Trp Thr Leu Leu Glu Pro Gly Asp Thr Ile
 245 250 255
 Ile Phe Glu Ala Asn Gly Asn Leu Ile Ala Pro Trp Tyr Ala Phe Ala
 260 265 270
 Leu Ser Arg Gly Phe Gly Ser Gly Ile Ile Thr Ser Asn Ala Pro Met
 275 280 285
 Asp Lys Cys Asp Ala Lys Cys Gln Thr Pro Gln Gly Ala Ile Asn Ser
 290 295 300
 Ser Leu Pro Phe Gln Asn Val His Pro Val Thr Ile Gly Glu Cys Pro
 305 310 315 320
 Lys Tyr Val Arg Ser Ala Lys Leu Arg Met Val Thr Gly Leu Arg Asn
 325 330 335
 Ile Pro Phe Ile Gln Ser Arg Gly Leu Phe Gly Ala Ile Ala Gly Phe
 340 345 350
 Ile Glu Gly Gly Trp Thr Gly Met Val Asp Gly Trp Tyr Gly Tyr His
 355 360 365
 His Gln Asn Glu Gln Gly Ser Gly Tyr Ala Ala Asp Gln Lys Ser Thr
 370 375 380
 Gln Asn Ala Ile Asn Gly Ile Thr Asn Lys Val Asn Ser Val Ile Glu
 385 390 395 400
 Lys Met Asn Thr Gln Phe Thr Ala Val Gly Lys Glu Phe Asn Lys Leu
 405 410 415
 Glu Arg Arg Met Glu Asn Leu Asn Lys Lys Val Asp Asp Gly Phe Leu
 420 425 430
 Asp Ile Trp Thr Tyr Asn Ala Glu Leu Leu Val Leu Leu Glu Asn Glu
 435 440 445

Arg Thr Leu Asp Phe His Asp Ser Asn Val Lys Asn Leu Tyr Glu Lys
 450 455 460

Val Lys Ser Gln Leu Lys Asn Asn Ala Lys Glu Ile Gly Asn Gly Cys
 465 470 475 480

Phe Glu Phe Tyr His Lys Cys Asn Asp Glu Cys Met Glu Ser Val Lys
 485 490 495

Asn Gly Thr Tyr Asp Tyr Pro Lys Tyr Ser Glu Glu Ser Lys Leu Asn
 500 505 510

Arg Glu Lys Ile Asp Gly Val Lys Leu Glu Ser Met Gly Val Tyr Gln
 515 520 525

Ile Leu Ala Ile Tyr Ser Thr Val Ala Ser Ser Leu Val Leu Leu Val
 530 535 540

Ser Leu Gly Ala Ile Ser Phe Trp Met Cys Ser Asn Gly Ser Leu Gln
 545 550 555 560

Cys Arg Ile Cys Ile
 565

<210> 20
 <211> 566
 <212> PRT
 <213> Artificial Sequence

<220>
 <221> source
 <223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 20
 Met Lys Ala Lys Leu Leu Val Leu Leu Cys Thr Phe Thr Ala Thr Tyr
 1 5 10 15

Ala Asp Thr Ile Cys Ile Gly Tyr His Ala Asn Asn Ser Thr Asp Thr
 20 25 30

Val Asp Thr Val Leu Glu Lys Asn Val Thr Val Thr His Ser Val Asn
 35 40 45

Ile Leu Glu Asp Ser His Asn Gly Lys Leu Cys Leu Leu Lys Gly Ile
 50 55 60

Ala Pro Leu Gln Leu Gly Asn Cys Ser Val Ala Gly Trp Ile Leu Gly
 65 70 75 80

Asn Pro Glu Cys Glu Leu Leu Ile Ser Lys Glu Ser Trp Ser Tyr Ile
 85 90 95

Val Glu Lys Pro Asn Pro Glu Asn Gly Thr Cys Tyr Pro Gly Tyr Phe

100 105 110
 Ala Asp Tyr Glu Glu Leu Arg Glu Gln Leu Ser Ser Val Ser Ser Phe
 115 120 125
 Glu Arg Phe Glu Ile Phe Pro Lys Glu Ser Ser Trp Pro Asn His Asp
 130 135 140
 Ser Asn Lys Gly Val Ser Ala Ser Cys Ser His Asn Gly Lys Ser Ser
 145 150 155 160
 Phe Tyr Arg Asn Leu Leu Trp Leu Thr Gly Lys Asn Gly Leu Tyr Pro
 165 170 175
 Lys Leu Ser Lys Ser Tyr Ala Asn Asn Lys Glu Lys Glu Val Leu Val
 180 185 190
 Leu Trp Gly Val His His Pro Pro Asn Ile Gly Asp Gln Arg Ala Leu
 195 200 205
 Tyr His Thr Glu Asn Ala Tyr Val Ser Val Val Ser Ser His Tyr Ser
 210 215 220
 Arg Arg Phe Thr Pro Glu Ile Ala Lys Arg Pro Lys Val Arg Asp Gln
 225 230 235 240
 Glu Gly Arg Ile Asn Tyr Tyr Trp Thr Leu Leu Glu Pro Gly Asp Thr
 245 250 255
 Ile Ile Phe Glu Ala Asn Gly Asn Leu Ile Ala Pro Trp Tyr Ala Phe
 260 265 270
 Ala Leu Ser Arg Gly Phe Gly Ser Gly Ile Ile Thr Ser Asn Ala Pro
 275 280 285
 Met Asp Lys Cys Asp Ala Lys Cys Gln Thr Pro Gln Gly Ala Ile Asn
 290 295 300
 Ser Ser Leu Pro Phe Gln Asn Val His Pro Val Thr Ile Gly Glu Cys
 305 310 315 320
 Pro Lys Tyr Val Arg Ser Ala Lys Leu Arg Met Val Thr Gly Leu Arg
 325 330 335
 Asn Ile Pro Phe Ile Gln Ser Arg Gly Leu Phe Gly Ala Ile Ala Gly
 340 345 350
 Phe Ile Glu Gly Gly Trp Thr Gly Met Val Asp Gly Trp Tyr Gly Tyr
 355 360 365
 His His Gln Asn Glu Gln Gly Ser Gly Tyr Ala Ala Asp Gln Lys Ser
 370 375 380

Thr Gln Asn Ala Ile Asn Gly Ile Thr Asn Lys Val Asn Ser Val Ile
385 390 395 400

Glu Lys Met Asn Thr Gln Phe Thr Ala Val Gly Lys Glu Phe Asn Lys
405 410 415

Leu Glu Arg Arg Met Glu Asn Leu Asn Lys Lys Val Asp Asp Gly Phe
420 425 430

Leu Asp Ile Trp Thr Tyr Asn Ala Glu Leu Leu Val Leu Leu Glu Asn
435 440 445

Glu Arg Thr Leu Asp Phe His Asp Ser Asn Val Lys Asn Leu Tyr Glu
450 455 460

Lys Val Lys Ser Gln Leu Lys Asn Asn Ala Lys Glu Ile Gly Asn Gly
465 470 475 480

Cys Phe Glu Phe Tyr His Lys Cys Asn Asp Glu Cys Met Glu Ser Val
485 490 495

Lys Asn Gly Thr Tyr Asp Tyr Pro Lys Tyr Ser Glu Glu Ser Lys Leu
500 505 510

Asn Arg Glu Lys Ile Asp Gly Val Lys Leu Glu Ser Met Gly Val Tyr
515 520 525

Gln Ile Leu Ala Ile Tyr Ser Thr Val Ala Ser Ser Leu Val Leu Leu
530 535 540

Val Ser Leu Gly Ala Ile Ser Phe Trp Met Cys Ser Asn Gly Ser Leu
545 550 555 560

Gln Cys Arg Ile Cys Ile
565

<210> 21
<211> 566
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 21
Met Lys Ala Lys Leu Leu Val Leu Leu Cys Thr Phe Thr Ala Thr Tyr
1 5 10 15

Ala Asp Thr Ile Cys Ile Gly Tyr His Ala Asn Asn Ser Thr Asp Thr
20 25 30

Val Asp Thr Val Leu Glu Lys Asn Val Thr Val Thr His Ser Val Asn
35 40 45

Ile Leu Glu Asp Ser His Asn Gly Lys Leu Cys Leu Leu Lys Gly Ile
50 55 60

Ala Pro Leu Gln Leu Gly Asn Cys Ser Val Ala Gly Trp Ile Leu Gly
65 70 75 80

Asn Pro Glu Cys Glu Leu Leu Ile Ser Lys Glu Ser Trp Ser Tyr Ile
85 90 95

Val Glu Lys Pro Asn Pro Glu Asn Gly Thr Cys Tyr Pro Gly Tyr Phe
100 105 110

Ala Asp Tyr Glu Glu Leu Arg Glu Gln Leu Ser Ser Val Ser Ser Phe
115 120 125

Glu Arg Phe Glu Ile Phe Pro Lys Glu Ser Ser Trp Pro Asn His Glu
130 135 140

Thr Thr Lys Gly Val Ser Ala Ser Cys Ser His Asn Gly Lys Ser Ser
145 150 155 160

Phe Tyr Arg Asn Leu Leu Trp Leu Thr Gly Lys Asn Gly Leu Tyr Pro
165 170 175

Lys Leu Ser Lys Ser Tyr Ala Asn Asn Lys Glu Lys Glu Val Leu Val
180 185 190

Leu Trp Gly Val His His Pro Pro Asn Ile Gly Asp Gln Arg Ala Leu
195 200 205

Tyr His Thr Glu Asn Ala Tyr Val Ser Val Val Ser Ser His Tyr Ser
210 215 220

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

Glu Gly Arg Ile Asn Tyr Tyr Trp Thr Leu Leu Glu Pro Gly Asp Thr
245 250 255

Ile Ile Phe Glu Ala Asn Gly Asn Leu Ile Ala Pro Trp Tyr Ala Phe
260 265 270

Ala Leu Ser Arg Gly Phe Gly Ser Gly Ile Ile Thr Ser Asn Ala Pro
275 280 285

Met Asp Lys Cys Asp Ala Lys Cys Gln Thr Pro Gln Gly Ala Ile Asn
290 295 300

Ser Ser Leu Pro Phe Gln Asn Val His Pro Val Thr Ile Gly Glu Cys

305

310

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315

320

Pro Lys Tyr Val Arg Ser Ala Lys Leu Arg Met Val Thr Gly Leu Arg
325 330 335

Asn Ile Pro Phe Ile Gln Ser Arg Gly Leu Phe Gly Ala Ile Ala Gly
340 345 350

Phe Ile Glu Gly Gly Trp Thr Gly Met Val Asp Gly Trp Tyr Gly Tyr
355 360 365

His His Gln Asn Glu Gln Gly Ser Gly Tyr Ala Ala Asp Gln Lys Ser
370 375 380

Thr Gln Asn Ala Ile Asn Gly Ile Thr Asn Lys Val Asn Ser Val Ile
385 390 395 400

Glu Lys Met Asn Thr Gln Phe Thr Ala Val Gly Lys Glu Phe Asn Lys
405 410 415

Leu Glu Arg Arg Met Glu Asn Leu Asn Lys Lys Val Asp Asp Gly Phe
420 425 430

Leu Asp Ile Trp Thr Tyr Asn Ala Glu Leu Leu Val Leu Leu Glu Asn
435 440 445

Glu Arg Thr Leu Asp Phe His Asp Ser Asn Val Lys Asn Leu Tyr Glu
450 455 460

Lys Val Lys Ser Gln Leu Lys Asn Asn Ala Lys Glu Ile Gly Asn Gly
465 470 475 480

Cys Phe Glu Phe Tyr His Lys Cys Asn Asp Glu Cys Met Glu Ser Val
485 490 495

Lys Asn Gly Thr Tyr Asp Tyr Pro Lys Tyr Ser Glu Glu Ser Lys Leu
500 505 510

Asn Arg Glu Lys Ile Asp Gly Val Lys Leu Glu Ser Met Gly Val Tyr
515 520 525

Gln Ile Leu Ala Ile Tyr Ser Thr Val Ala Ser Ser Leu Val Leu Leu
530 535 540

Val Ser Leu Gly Ala Ile Ser Phe Trp Met Cys Ser Asn Gly Ser Leu
545 550 555 560

Gln Cys Arg Ile Cys Ile
565

<210> 22
<211> 565

<212> PRT

<213> Artificial Sequence

<220>

<221> source

<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 22

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Met Lys Ala Lys Leu Leu Val Leu Leu Cys Thr Phe Thr Ala Thr Tyr
1      5      10      15

Ala Asp Thr Ile Cys Ile Gly Tyr His Ala Asn Asn Ser Thr Asp Thr
      20      25      30

Val Asp Thr Val Leu Glu Lys Asn Val Thr Val Thr His Ser Val Asn
      35      40      45

Ile Leu Glu Asp Ser His Asn Gly Lys Leu Cys Leu Leu Lys Gly Ile
      50      55      60

Ala Pro Leu Gln Leu Gly Asn Cys Ser Val Ala Gly Trp Ile Leu Gly
      65      70      75      80

Asn Pro Glu Cys Glu Leu Leu Ile Ser Lys Glu Ser Trp Ser Tyr Ile
      85      90      95

Val Glu Lys Pro Asn Pro Glu Asn Gly Thr Cys Tyr Pro Gly Tyr Phe
      100      105      110

Ala Asp Tyr Glu Glu Leu Arg Glu Gln Leu Ser Ser Val Ser Ser Phe
      115      120      125

Glu Arg Phe Glu Ile Phe Pro Lys Thr Ser Ser Trp Pro Asn His Thr
      130      135      140

Val Thr Gly Val Ser Ala Ser Cys Pro His Ala Gly Ala Lys Ser Phe
      145      150      155      160

Tyr Arg Asn Leu Leu Trp Leu Thr Gly Lys Asn Gly Leu Tyr Pro Asn
      165      170      175

Leu Ser Lys Ser Tyr Ala Asn Asn Lys Glu Lys Glu Val Leu Val Leu
      180      185      190

Trp Gly Val His His Pro Pro Asn Ile Gly Asp Gln Arg Ala Leu Tyr
      195      200      205

Gln Asn Ala Asp Ala Tyr Val Ser Val Val Ser Ser His Tyr Ser Arg
      210      215      220

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

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Gly Arg Ile Asn Tyr Trp Thr Leu Leu Glu Pro Gly Asp Thr Ile
 245 250 255
 Ile Phe Glu Ala Thr Gly Asn Leu Ile Ala Pro Trp Tyr Ala Phe Ala
 260 265 270
 Leu Ser Arg Gly Phe Gly Ser Gly Ile Ile Thr Ser Asn Ala Pro Met
 275 280 285
 Asp Lys Cys Asp Ala Lys Cys Gln Thr Pro Gln Gly Ala Ile Asn Ser
 290 295 300
 Ser Leu Pro Phe Gln Asn Val His Pro Val Thr Ile Gly Glu Cys Pro
 305 310 315 320
 Lys Tyr Val Arg Ser Ala Lys Leu Arg Met Val Thr Gly Leu Arg Asn
 325 330 335
 Ile Pro Phe Ile Gln Ser Arg Gly Leu Phe Gly Ala Ile Ala Gly Phe
 340 345 350
 Ile Glu Gly Gly Trp Thr Gly Met Val Asp Gly Trp Tyr Gly Tyr His
 355 360 365
 His Gln Asn Glu Gln Gly Ser Gly Tyr Ala Ala Asp Gln Lys Ser Thr
 370 375 380
 Gln Asn Ala Ile Asn Gly Ile Thr Asn Lys Val Asn Ser Val Ile Glu
 385 390 395 400
 Lys Met Asn Thr Gln Phe Thr Ala Val Gly Lys Glu Phe Asn Lys Leu
 405 410 415
 Glu Arg Arg Met Glu Asn Leu Asn Lys Lys Val Asp Asp Gly Phe Leu
 420 425 430
 Asp Ile Trp Thr Tyr Asn Ala Glu Leu Leu Val Leu Glu Asn Glu
 435 440 445
 Arg Thr Leu Asp Phe His Asp Ser Asn Val Lys Asn Leu Tyr Glu Lys
 450 455 460
 Val Lys Ser Gln Leu Lys Asn Asn Ala Lys Glu Ile Gly Asn Gly Cys
 465 470 475 480
 Phe Glu Phe Tyr His Lys Cys Asn Asp Glu Cys Met Glu Ser Val Lys
 485 490 495
 Asn Gly Thr Tyr Asp Tyr Pro Lys Tyr Ser Glu Glu Ser Lys Leu Asn
 500 505 510
 Arg Glu Lys Ile Asp Gly Val Lys Leu Glu Ser Met Gly Val Tyr Gln

515 520 525
 Ile Leu Ala Ile Tyr Ser Thr Val Ala Ser Ser Leu Val Leu Leu Val
 530 535 540
 Ser Leu Gly Ala Ile Ser Phe Trp Met Cys Ser Asn Gly Ser Leu Gln
 545 550 555 560
 Cys Arg Ile Cys Ile
 565

 <210> 23
 <211> 565
 <212> PRT
 <213> Artificial sequence

 <220>
 <221> source
 <223> /note="Description of Artificial Sequence: Synthetic
 polypeptide"

 <400> 23
 Met Lys Ala Lys Leu Leu Val Leu Leu Cys Thr Phe Thr Ala Thr Tyr
 1 5 10 15

 Ala Asp Thr Ile Cys Ile Gly Tyr His Ala Asn Asn Ser Thr Asp Thr
 20 25 30

 Val Asp Thr Val Leu Glu Lys Asn Val Thr Val Thr His Ser Val Asn
 35 40 45

 Ile Leu Glu Asp Ser His Asn Gly Lys Leu Cys Leu Leu Lys Gly Ile
 50 55 60

 Ala Pro Leu Gln Leu Gly Asn Cys Ser Val Ala Gly Trp Ile Leu Gly
 65 70 75 80

 Asn Pro Glu Cys Glu Leu Leu Ile Ser Lys Glu Ser Trp Ser Tyr Ile
 85 90 95

 Val Glu Lys Pro Asn Pro Glu Asn Gly Thr Cys Tyr Pro Gly Tyr Phe
 100 105 110

 Ala Asp Tyr Glu Glu Leu Arg Glu Gln Leu Ser Ser Val Ser Ser Phe
 115 120 125

 Glu Arg Phe Glu Ile Phe Pro Lys Glu Ser Ser Trp Pro Asn His Thr
 130 135 140

 Val Thr Gly Val Ser Ala Ser Cys Pro His Ala Gly Ala Lys Ser Phe
 145 150 155 160

 Tyr Arg Asn Leu Leu Trp Leu Thr Gly Lys Asn Gly Leu Tyr Pro Asn
 165 170 175

Leu Ser Lys Ser Tyr Ala Asn Asn Lys Glu Lys Glu Val Leu Val Leu
 180 185 190
 Trp Gly Val His His Pro Pro Asn Ile Gly Asp Gln Arg Ala Leu Tyr
 195 200 205
 His Thr Glu Asn Ala Tyr Val Ser Val Val Ser Ser His Tyr Ser Arg
 210 215 220
 Arg Phe Thr Pro Glu Ile Ala Lys Arg Pro Lys Val Arg Asp Gln Glu
 225 230 235 240
 Gly Arg Ile Asn Tyr Tyr Trp Thr Leu Leu Glu Pro Gly Asp Thr Ile
 245 250 255
 Ile Phe Glu Ala Asn Gly Asn Leu Ile Ala Pro Trp Tyr Ala Phe Ala
 260 265 270
 Leu Ser Arg Gly Phe Gly Ser Gly Ile Ile Thr Ser Asn Ala Pro Met
 275 280 285
 Asp Lys Cys Asp Ala Lys Cys Gln Thr Pro Gln Gly Ala Ile Asn Ser
 290 295 300
 Ser Leu Pro Phe Gln Asn Val His Pro Val Thr Ile Gly Glu Cys Pro
 305 310 315 320
 Lys Tyr Val Arg Ser Ala Lys Leu Arg Met Val Thr Gly Leu Arg Asn
 325 330 335
 Ile Pro Phe Ile Gln Ser Arg Gly Leu Phe Gly Ala Ile Ala Gly Phe
 340 345 350
 Ile Glu Gly Gly Trp Thr Gly Met Val Asp Gly Trp Tyr Gly Tyr His
 355 360 365
 His Gln Asn Glu Gln Gly Ser Gly Tyr Ala Ala Asp Gln Lys Ser Thr
 370 375 380
 Gln Asn Ala Ile Asn Gly Ile Thr Asn Lys Val Asn Ser Val Ile Glu
 385 390 395 400
 Lys Met Asn Thr Gln Phe Thr Ala Val Gly Lys Glu Phe Asn Lys Leu
 405 410 415
 Glu Arg Arg Met Glu Asn Leu Asn Lys Lys Val Asp Asp Gly Phe Leu
 420 425 430
 Asp Ile Trp Thr Tyr Asn Ala Glu Leu Leu Val Leu Leu Glu Asn Glu
 435 440 445

Arg Thr Leu Asp Phe His Asp Ser Asn Val Lys Asn Leu Tyr Glu Lys
450 455 460

Val Lys Ser Gln Leu Lys Asn Asn Ala Lys Glu Ile Gly Asn Gly Cys
465 470 475 480

Phe Glu Phe Tyr His Lys Cys Asn Asp Glu Cys Met Glu Ser Val Lys
485 490 495

Asn Gly Thr Tyr Asp Tyr Pro Lys Tyr Ser Glu Glu Ser Lys Leu Asn
500 505 510

Arg Glu Lys Ile Asp Gly Val Lys Leu Glu Ser Met Gly Val Tyr Gln
515 520 525

Ile Leu Ala Ile Tyr Ser Thr Val Ala Ser Ser Leu Val Leu Leu Val
530 535 540

Ser Leu Gly Ala Ile Ser Phe Trp Met Cys Ser Asn Gly Ser Leu Gln
545 550 555 560

Cys Arg Ile Cys Ile
565

<210> 24

<211> 565

<212> PRT

<213> Artificial Sequence

<220>

<221> source

<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 24

Met Lys Ala Lys Leu Leu Val Leu Leu Cys Thr Phe Thr Ala Thr Tyr
1 5 10 15

Ala Asp Thr Ile Cys Ile Gly Tyr His Ala Asn Asn Ser Thr Asp Thr
20 25 30

Val Asp Thr Val Leu Glu Lys Asn Val Thr Val Thr His Ser Val Asn
35 40 45

Ile Leu Glu Asp Ser His Asn Gly Lys Leu Cys Leu Leu Lys Gly Ile
50 55 60

Ala Pro Leu Gln Leu Gly Asn Cys Ser Val Ala Gly Trp Ile Leu Gly
65 70 75 80

Asn Pro Glu Cys Glu Leu Leu Ile Ser Lys Glu Ser Trp Ser Tyr Ile
85 90 95

Val Glu Lys Pro Asn Pro Glu Asn Gly Thr Cys Tyr Pro Gly Tyr Phe
100 105 110

Ala Asp Tyr Glu Glu Leu Arg Glu Gln Leu Ser Ser Val Ser Ser Phe
 115 120 125

Glu Arg Phe Glu Ile Phe Pro Lys Glu Ser Ser Trp Pro Asn His Thr
 130 135 140

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

Tyr Arg Asn Leu Leu Trp Leu Thr Gly Lys Asn Gly Leu Tyr Pro Asn
 165 170 175

Leu Ser Lys Ser Tyr Ala Asn Asn Lys Glu Lys Glu Val Leu Val Leu
 180 185 190

Trp Gly Val His His Pro Pro Asn Ile Gly Asp Gln Arg Ala Leu Tyr
 195 200 205

Gln Asn Ala Asp Ala Tyr Val Ser Val Val Ser Ser His Tyr Ser Arg
 210 215 220

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

Gly Arg Ile Asn Tyr Tyr Trp Thr Leu Leu Glu Pro Gly Asp Thr Ile
 245 250 255

Ile Phe Glu Ala Asn Gly Asn Leu Ile Ala Pro Trp Tyr Ala Phe Ala
 260 265 270

Leu Ser Arg Gly Phe Gly Ser Gly Ile Ile Thr Ser Asn Ala Pro Met
 275 280 285

Asp Lys Cys Asp Ala Lys Cys Gln Thr Pro Gln Gly Ala Ile Asn Ser
 290 295 300

Ser Leu Pro Phe Gln Asn Val His Pro Val Thr Ile Gly Glu Cys Pro
 305 310 315 320

Lys Tyr Val Arg Ser Ala Lys Leu Arg Met Val Thr Gly Leu Arg Asn
 325 330 335

Ile Pro Phe Ile Gln Ser Arg Gly Leu Phe Gly Ala Ile Ala Gly Phe
 340 345 350

Ile Glu Gly Gly Trp Thr Gly Met Val Asp Gly Trp Tyr Gly Tyr His
 355 360 365

His Gln Asn Glu Gln Gly Ser Gly Tyr Ala Ala Asp Gln Lys Ser Thr
 370 375 380

Gln Asn Ala Ile Asn Gly Ile Thr Asn Lys Val Asn Ser Val Ile Glu
385 390 395 400

Lys Met Asn Thr Gln Phe Thr Ala Val Gly Lys Glu Phe Asn Lys Leu
405 410 415

Glu Arg Arg Met Glu Asn Leu Asn Lys Lys Val Asp Asp Gly Phe Leu
420 425 430

Asp Ile Trp Thr Tyr Asn Ala Glu Leu Leu Val Leu Leu Glu Asn Glu
435 440 445

Arg Thr Leu Asp Phe His Asp Ser Asn Val Lys Asn Leu Tyr Glu Lys
450 455 460

Val Lys Ser Gln Leu Lys Asn Asn Ala Lys Glu Ile Gly Asn Gly Cys
465 470 475 480

Phe Glu Phe Tyr His Lys Cys Asn Asp Glu Cys Met Glu Ser Val Lys
485 490 495

Asn Gly Thr Tyr Asp Tyr Pro Lys Tyr Ser Glu Glu Ser Lys Leu Asn
500 505 510

Arg Glu Lys Ile Asp Gly Val Lys Leu Glu Ser Met Gly Val Tyr Gln
515 520 525

Ile Leu Ala Ile Tyr Ser Thr Val Ala Ser Ser Leu Val Leu Leu Val
530 535 540

Ser Leu Gly Ala Ile Ser Phe Trp Met Cys Ser Asn Gly Ser Leu Gln
545 550 555 560

Cys Arg Ile Cys Ile
565

<210> 25

<211> 565

<212> PRT

<213> Artificial Sequence

<220>

<221> source

<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 25

Met Lys Ala Lys Leu Leu Val Leu Leu Cys Thr Phe Thr Ala Thr Tyr
1 5 10 15

Ala Asp Thr Ile Cys Ile Gly Tyr His Ala Asn Asn Ser Thr Asp Thr
20 25 30

Val Asp Thr Val Leu Glu Lys Asn Val Thr Val Thr His Ser Val Asn

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

Lys Tyr Val Arg Ser Ala Lys Leu Arg Met Val Thr Gly Leu Arg Asn
 325 330 335
 Ile Pro Phe Ile Gln Ser Arg Gly Leu Phe Gly Ala Ile Ala Gly Phe
 340 345 350
 Ile Glu Gly Gly Trp Thr Gly Met Val Asp Gly Trp Tyr Gly Tyr His
 355 360 365
 His Gln Asn Glu Gln Gly Ser Gly Tyr Ala Ala Asp Gln Lys Ser Thr
 370 375 380
 Gln Asn Ala Ile Asn Gly Ile Thr Asn Lys Val Asn Ser Val Ile Glu
 385 390 395 400
 Lys Met Asn Thr Gln Phe Thr Ala Val Gly Lys Glu Phe Asn Lys Leu
 405 410 415
 Glu Arg Arg Met Glu Asn Leu Asn Lys Lys Val Asp Asp Gly Phe Leu
 420 425 430
 Asp Ile Trp Thr Tyr Asn Ala Glu Leu Leu Val Leu Leu Glu Asn Glu
 435 440 445
 Arg Thr Leu Asp Phe His Asp Ser Asn Val Lys Asn Leu Tyr Glu Lys
 450 455 460
 Val Lys Ser Gln Leu Lys Asn Asn Ala Lys Glu Ile Gly Asn Gly Cys
 465 470 475 480
 Phe Glu Phe Tyr His Lys Cys Asn Asp Glu Cys Met Glu Ser Val Lys
 485 490 495
 Asn Gly Thr Tyr Asp Tyr Pro Lys Tyr Ser Glu Glu Ser Lys Leu Asn
 500 505 510
 Arg Glu Lys Ile Asp Gly Val Lys Leu Glu Ser Met Gly Val Tyr Gln
 515 520 525
 Ile Leu Ala Ile Tyr Ser Thr Val Ala Ser Ser Leu Val Leu Leu Val
 530 535 540
 Ser Leu Gly Ala Ile Ser Phe Trp Met Cys Ser Asn Gly Ser Leu Gln
 545 550 555 560 565
 Cys Arg Ile Cys Ile
 565

<210> 26
 <211> 565
 <212> PRT

<213> Artificial Sequence

<220>

<221> source

<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 26

Met Lys Ala Lys Leu Leu Val Leu Leu Cys Thr Phe Thr Ala Thr Tyr
 1 5 10 15

Ala Asp Thr Ile Cys Ile Gly Tyr His Ala Asn Asn Ser Thr Asp Thr
 20 25 30

Val Asp Thr Val Leu Glu Lys Asn Val Thr Val Thr His Ser Val Asn
 35 40 45

Ile Leu Glu Asp Ser His Asn Gly Lys Leu Cys Leu Leu Lys Gly Ile
 50 55 60

Ala Pro Leu Gln Leu Gly Asn Cys Ser Val Ala Gly Trp Ile Leu Gly
 65 70 75 80

Asn Pro Glu Cys Glu Leu Leu Ile Ser Lys Glu Ser Trp Ser Tyr Ile
 85 90 95

Val Glu Lys Pro Asn Pro Glu Asn Gly Thr Cys Tyr Pro Gly Tyr Phe
 100 105 110

Ala Asp Tyr Glu Glu Leu Arg Glu Gln Leu Ser Ser Val Ser Ser Phe
 115 120 125

Glu Arg Phe Glu Ile Phe Pro Lys Glu Ser Ser Trp Pro Asn His Asn
 130 135 140

Thr Thr Gly Val Ser Ala Ser Cys Pro His Ala Gly Ala Lys Ser Phe
 145 150 155 160

Tyr Arg Asn Leu Leu Trp Leu Thr Gly Lys Asn Gly Leu Tyr Pro Lys
 165 170 175

Leu Ser Lys Ser Tyr Ala Asn Asn Lys Glu Lys Glu Val Leu Val Leu
 180 185 190

Trp Gly Val His His Pro Pro Asn Ile Gly Asp Gln Arg Ala Leu Tyr
 195 200 205

His Thr Glu Asn Ala Tyr Val Ser Val Val Ser Ser His Tyr Ser Arg
 210 215 220

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

Gly Arg Ile Asn Tyr Tyr Trp Thr Leu Leu Glu Pro Gly Asp Thr Ile

245

255

Ile Phe Glu Ala Asn Gly Asn Leu Ile Ala Pro Trp Tyr Ala Phe Ala
260 265 270

Leu Ser Arg Gly Phe Gly Ser Gly Ile Ile Thr Ser Asn Ala Pro Met
275 280 285

Asp Lys Cys Asp Ala Lys Cys Gln Thr Pro Gln Gly Ala Ile Asn Ser
290 295 300

Ser Leu Pro Phe Gln Asn Val His Pro Val Thr Ile Gly Glu Cys Pro
305 310 315 320

Lys Tyr Val Arg Ser Ala Lys Leu Arg Met Val Thr Gly Leu Arg Asn
325 330 335

Ile Pro Phe Ile Gln Ser Arg Gly Leu Phe Gly Ala Ile Ala Gly Phe
340 345 350

Ile Glu Gly Gly Trp Thr Gly Met Val Asp Gly Trp Tyr Gly Tyr His
355 360 365

His Gln Asn Glu Gln Gly Ser Gly Tyr Ala Ala Asp Gln Lys Ser Thr
370 375 380

Gln Asn Ala Ile Asn Gly Ile Thr Asn Lys Val Asn Ser Val Ile Glu
385 390 395 400

Lys Met Asn Thr Gln Phe Thr Ala Val Gly Lys Glu Phe Asn Lys Leu
405 410 415

Glu Arg Arg Met Glu Asn Leu Asn Lys Lys Val Asp Asp Gly Phe Leu
420 425 430

Asp Ile Trp Thr Tyr Asn Ala Glu Leu Leu Val Leu Leu Glu Asn Glu
435 440 445

Arg Thr Leu Asp Phe His Asp Ser Asn Val Lys Asn Leu Tyr Glu Lys
450 455 460

Val Lys Ser Gln Leu Lys Asn Asn Ala Lys Glu Ile Gly Asn Gly Cys
465 470 475 480

Phe Glu Phe Tyr His Lys Cys Asn Asp Glu Cys Met Glu Ser Val Lys
485 490 495

Asn Gly Thr Tyr Asp Tyr Pro Lys Tyr Ser Glu Glu Ser Lys Leu Asn
500 505 510

Arg Glu Lys Ile Asp Gly Val Lys Leu Glu Ser Met Gly Val Tyr Gln
515 520 525

Ile Leu Ala Ile Tyr Ser Thr Val Ala Ser Ser Leu Val Leu Leu Val
530 535 540

Ser Leu Gly Ala Ile Ser Phe Trp Met Cys Ser Asn Gly Ser Leu Gln
545 550 555 560

Cys Arg Ile Cys Ile
565

<210> 27
<211> 565
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 27
Met Lys Ala Lys Leu Leu Val Leu Leu Cys Thr Phe Thr Ala Thr Tyr
1 5 10 15

Ala Asp Thr Ile Cys Ile Gly Tyr His Ala Asn Asn Ser Thr Asp Thr
20 25 30

Val Asp Thr Val Leu Glu Lys Asn Val Thr Val Thr His Ser Val Asn
35 40 45

Ile Leu Glu Asp Ser His Asn Gly Lys Leu Cys Leu Leu Lys Gly Ile
50 55 60

Ala Pro Leu Gln Leu Gly Asn Cys Ser Val Ala Gly Trp Ile Leu Gly
65 70 75 80

Asn Pro Glu Cys Glu Leu Leu Ile Ser Lys Glu Ser Trp Ser Tyr Ile
85 90 95

Val Glu Lys Pro Asn Pro Glu Asn Gly Thr Cys Tyr Pro Gly Tyr Phe
100 105 110

Ala Asp Tyr Glu Glu Leu Arg Glu Gln Leu Ser Ser Val Ser Ser Phe
115 120 125

Glu Arg Phe Glu Ile Phe Pro Lys Glu Ser Ser Trp Pro Asn His Asn
130 135 140

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

Tyr Arg Asn Leu Leu Trp Leu Thr Gly Lys Asn Gly Leu Tyr Pro Lys
165 170 175

Leu Ser Lys Ser Tyr Ala Asn Asn Lys Glu Lys Glu Val Leu Val Leu
 180 185 190
 Trp Gly Val His His Pro Pro Asn Ile Gly Asp Gln Arg Ala Leu Tyr
 195 200 205
 Gln Asn Ala Asp Ala Tyr Val Ser Val Val Ser Ser His Tyr Ser Arg
 210 215 220
 Arg Phe Thr Pro Glu Ile Ala Lys Arg Pro Lys Val Arg Asp Gln Glu
 225 230 235 240
 Gly Arg Ile Asn Tyr Tyr Trp Thr Leu Leu Glu Pro Gly Asp Thr Ile
 245 250 255
 Ile Phe Glu Ala Asn Gly Asn Leu Ile Ala Pro Trp Tyr Ala Phe Ala
 260 265 270
 Leu Ser Arg Gly Phe Gly Ser Gly Ile Ile Thr Ser Asn Ala Pro Met
 275 280 285
 Asp Lys Cys Asp Ala Lys Cys Gln Thr Pro Gln Gly Ala Ile Asn Ser
 290 295 300
 Ser Leu Pro Phe Gln Asn Val His Pro Val Thr Ile Gly Glu Cys Pro
 305 310 315 320
 Lys Tyr Val Arg Ser Ala Lys Leu Arg Met Val Thr Gly Leu Arg Asn
 325 330 335
 Ile Pro Phe Ile Gln Ser Arg Gly Leu Phe Gly Ala Ile Ala Gly Phe
 340 345 350
 Ile Glu Gly Gly Trp Thr Gly Met Val Asp Gly Trp Tyr Gly Tyr His
 355 360 365
 His Gln Asn Glu Gln Gly Ser Gly Tyr Ala Ala Asp Gln Lys Ser Thr
 370 375 380
 Gln Asn Ala Ile Asn Gly Ile Thr Asn Lys Val Asn Ser Val Ile Glu
 385 390 395 400
 Lys Met Asn Thr Gln Phe Thr Ala Val Gly Lys Glu Phe Asn Lys Leu
 405 410 415
 Glu Arg Arg Met Glu Asn Leu Asn Lys Lys Val Asp Asp Gly Phe Leu
 420 425 430
 Asp Ile Trp Thr Tyr Asn Ala Glu Leu Leu Val Leu Leu Glu Asn Glu
 435 440 445
 Arg Thr Leu Asp Phe His Asp Ser Asn Val Lys Asn Leu Tyr Glu Lys

450

455

460

Val Lys Ser Gln Leu Lys Asn Asn Ala Lys Glu Ile Gly Asn Gly Cys
 465 470 475 480

Phe Glu Phe Tyr His Lys Cys Asn Asp Glu Cys Met Glu Ser Val Lys
 485 490 495

Asn Gly Thr Tyr Asp Tyr Pro Lys Tyr Ser Glu Glu Ser Lys Leu Asn
 500 505 510

Arg Glu Lys Ile Asp Gly Val Lys Leu Glu Ser Met Gly Val Tyr Gln
 515 520 525

Ile Leu Ala Ile Tyr Ser Thr Val Ala Ser Ser Leu Val Leu Leu Val
 530 535 540

Ser Leu Gly Ala Ile Ser Phe Trp Met Cys Ser Asn Gly Ser Leu Gln
 545 550 555 560

Cys Arg Ile Cys Ile
 565

<210> 28
 <211> 6
 <212> PRT
 <213> Artificial Sequence

<220>
 <221> source
 <223> /note="Description of Artificial Sequence: Synthetic peptide"

<400> 28
 Ser His Asn Gly Lys Ser
 1 5

<210> 29
 <211> 6
 <212> PRT
 <213> Artificial Sequence

<220>
 <221> source
 <223> /note="Description of Artificial Sequence: Synthetic peptide"

<400> 29
 Pro His Ala Gly Ala Lys
 1 5

<210> 30
 <211> 4
 <212> PRT
 <213> Artificial Sequence

<220>
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 <223> /note="Description of Artificial Sequence: Synthetic"

peptide"

<400> 30
His Thr Glu Asn
1

<210> 31
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
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<223> /note="Description of Artificial Sequence: Synthetic peptide"

<400> 31
Gln Asn Ala Asp
1

<210> 32
<211> 6
<212> PRT
<213> Influenza A virus

<400> 32
Ser Trp Pro Asn His Asp
1 5

<210> 33
<211> 7
<212> PRT
<213> Influenza A virus

<400> 33
Tyr Pro Lys Leu Ser Lys Ser
1 5

<210> 34
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic peptide"

<400> 34
Ser Trp Pro Asn His Thr
1 5

<210> 35
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic peptide"

<400> 35
Tyr Pro Asn Leu Ser Lys Ser

1

5

<210> 36
 <211> 6
 <212> PRT
 <213> Influenza A virus

<400> 36
 Asp Ser Asn Lys Gly Val
 1 5

<210> 37
 <211> 5
 <212> PRT
 <213> Artificial Sequence

<220>
 <221> source
 <223> /note="Description of Artificial Sequence: Synthetic peptide"

<400> 37
 Thr Val Thr Gly Val
 1 5