

P-78391-PC-SEQ-LISTING-18DEC15
SEQUENCE LISTING

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<110> THE TRUSTEES OF THE UNIVERSITY OF PENNSYLVANIA
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<120> COMBINATION THERAPIES WITH RECOMBINANT LISTERIA STRAINS

<130> P-78391-PC

<150> 62/094,349
<151> 2014-12-19

<150> 62/094,472
<151> 2014-12-19

<150> 62/147,463
<151> 2015-04-14

<150> 62/262,896
<151> 2015-12-03

<160> 120

<170> PatentIn version 3.5

<210> 1
<211> 32
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<213> Artificial Sequence

<220>
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<400> 1
Lys Glu Asn Ser Ile Ser Ser Met Ala Pro Pro Ala Ser Pro Pro Ala
1          5          10          15

Ser Pro Lys Thr Pro Ile Glu Lys Lys His Ala Asp Glu Ile Asp Lys
          20          25          30

<210> 2
<211> 529
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<400> 2
Met Lys Lys Ile Met Leu Val Phe Ile Thr Leu Ile Leu Val Ser Leu
1          5          10          15

Pro Ile Ala Gln Gln Thr Glu Ala Lys Asp Ala Ser Ala Phe Asn Lys
          20          25          30

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

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Pro Pro Ala Tyr Ile Ser Ser Val Ala Tyr Gly Arg Gln Val Tyr Leu
290 295 300

Lys Leu Ser Thr Asn Ser His Ser Thr Lys Val Lys Ala Ala Phe Asp
305 310 315 320

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

Ile Ile Lys Asn Ser Ser Phe Lys Ala Val Ile Tyr Gly Gly Ser Ala
340 345 350

Lys Asp Glu Val Gln Ile Ile Asp Gly Asn Leu Gly Asp Leu Arg Asp
355 360 365

Ile Leu Lys Lys Gly Ala Thr Phe Asn Arg Glu Thr Pro Gly Val Pro
370 375 380

Ile Ala Tyr Thr Thr Asn Phe Leu Lys Asp Asn Glu Leu Ala Val Ile
385 390 395 400

Lys Asn Asn Ser Glu Tyr Ile Glu Thr Thr Ser Lys Ala Tyr Thr Asp
405 410 415

Gly Lys Ile Asn Ile Asp His Ser Gly Gly Tyr Val Ala Gln Phe Asn
420 425 430

Ile Ser Trp Asp Glu Val Asn Tyr Asp Pro Glu Gly Asn Glu Ile Val
435 440 445

Gln His Lys Asn Trp Ser Glu Asn Asn Lys Ser Lys Leu Ala His Phe
450 455 460

Thr Ser Ser Ile Tyr Leu Pro Gly Asn Ala Arg Asn Ile Asn Val Tyr
465 470 475 480

Ala Lys Glu Cys Thr Gly Leu Ala Trp Glu Trp Trp Arg Thr Val Ile
485 490 495

Asp Asp Arg Asn Leu Pro Leu Val Lys Asn Arg Asn Ile Ser Ile Trp
500 505 510

Gly Thr Thr Leu Tyr Pro Lys Tyr Ser Asn Lys Val Asp Asn Pro Ile
515 520 525

Glu

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<210> 3
 <211> 441
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> N-terminal LLO protein fragment

<400> 3

Met Lys Lys Ile Met Leu Val Phe Ile Thr Leu Ile Leu Val Ser Leu
 1 5 10 15

Pro Ile Ala Gln Gln Thr Glu Ala Lys Asp Ala Ser Ala Phe Asn Lys
 20 25 30

Glu Asn Ser Ile Ser Ser Val Ala Pro Pro Ala Ser Pro Pro Ala Ser
 35 40 45

Pro Lys Thr Pro Ile Glu Lys Lys His Ala Asp Glu Ile Asp Lys Tyr
 50 55 60

Ile Gln Gly Leu Asp Tyr Asn Lys Asn Asn Val Leu Val Tyr His Gly
 65 70 75 80

Asp Ala Val Thr Asn Val Pro Pro Arg Lys Gly Tyr Lys Asp Gly Asn
 85 90 95

Glu Tyr Ile Val Val Glu Lys Lys Lys Lys Ser Ile Asn Gln Asn Asn
 100 105 110

Ala Asp Ile Gln Val Val Asn Ala Ile Ser Ser Leu Thr Tyr Pro Gly
 115 120 125

Ala Leu Val Lys Ala Asn Ser Glu Leu Val Glu Asn Gln Pro Asp Val
 130 135 140

Leu Pro Val Lys Arg Asp Ser Leu Thr Leu Ser Ile Asp Leu Pro Gly
 145 150 155 160

Met Thr Asn Gln Asp Asn Lys Ile Val Val Lys Asn Ala Thr Lys Ser
 165 170 175

Asn Val Asn Asn Ala Val Asn Thr Leu Val Glu Arg Trp Asn Glu Lys
 180 185 190

Tyr Ala Gln Ala Tyr Ser Asn Val Ser Ala Lys Ile Asp Tyr Asp Asp
 195 200 205

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

<210> 4

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<211> 416
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> LLO signal peptide

<400> 4

Met Lys Lys Ile Met Leu Val Phe Ile Thr Leu Ile Leu Val Ser Leu
 1 5 10 15

Pro Ile Ala Gln Gln Thr Glu Ala Lys Asp Ala Ser Ala Phe Asn Lys
 20 25 30

Glu Asn Ser Ile Ser Ser Val Ala Pro Pro Ala Ser Pro Pro Ala Ser
 35 40 45

Pro Lys Thr Pro Ile Glu Lys Lys His Ala Asp Glu Ile Asp Lys Tyr
 50 55 60

Ile Gln Gly Leu Asp Tyr Asn Lys Asn Asn Val Leu Val Tyr His Gly
 65 70 75 80

Asp Ala Val Thr Asn Val Pro Pro Arg Lys Gly Tyr Lys Asp Gly Asn
 85 90 95

Glu Tyr Ile Val Val Glu Lys Lys Lys Lys Ser Ile Asn Gln Asn Asn
 100 105 110

Ala Asp Ile Gln Val Val Asn Ala Ile Ser Ser Leu Thr Tyr Pro Gly
 115 120 125

Ala Leu Val Lys Ala Asn Ser Glu Leu Val Glu Asn Gln Pro Asp Val
 130 135 140

Leu Pro Val Lys Arg Asp Ser Leu Thr Leu Ser Ile Asp Leu Pro Gly
 145 150 155 160

Met Thr Asn Gln Asp Asn Lys Ile Val Val Lys Asn Ala Thr Lys Ser
 165 170 175

Asn Val Asn Asn Ala Val Asn Thr Leu Val Glu Arg Trp Asn Glu Lys
 180 185 190

Tyr Ala Gln Ala Tyr Ser Asn Val Ser Ala Lys Ile Asp Tyr Asp Asp
 195 200 205

Glu Met Ala Tyr Ser Glu Ser Gln Leu Ile Ala Lys Phe Gly Thr Ala
 210 215 220

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Phe Lys Ala Val Asn Asn Ser Leu Asn Val Asn Phe Gly Ala Ile Ser
225 230 235 240

Glu Gly Lys Met Gln Glu Glu Val Ile Ser Phe Lys Gln Ile Tyr Tyr
245 250 255

Asn Val Asn Val Asn Glu Pro Thr Arg Pro Ser Arg Phe Phe Gly Lys
260 265 270

Ala Val Thr Lys Glu Gln Leu Gln Ala Leu Gly Val Asn Ala Glu Asn
275 280 285

Pro Pro Ala Tyr Ile Ser Ser Val Ala Tyr Gly Arg Gln Val Tyr Leu
290 295 300

Lys Leu Ser Thr Asn Ser His Ser Thr Lys Val Lys Ala Ala Phe Asp
305 310 315 320

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

Ile Ile Lys Asn Ser Ser Phe Lys Ala Val Ile Tyr Gly Gly Ser Ala
340 345 350

Lys Asp Glu Val Gln Ile Ile Asp Gly Asn Leu Gly Asp Leu Arg Asp
355 360 365

Ile Leu Lys Lys Gly Ala Thr Phe Asn Arg Glu Thr Pro Gly Val Pro
370 375 380

Ile Ala Tyr Thr Thr Asn Phe Leu Lys Asp Asn Glu Leu Ala Val Ile
385 390 395 400

Lys Asn Asn Ser Glu Tyr Ile Glu Thr Thr Ser Lys Ala Tyr Thr Asp
405 410 415

<210> 5
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> PEST sequence

<400> 5

Lys Thr Glu Glu Gln Pro Ser Glu Val Asn Thr Gly Pro Arg
1 5 10

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

<220>
 <223> PEST sequence

<400> 6

Lys Ala Ser Val Thr Asp Thr Ser Glu Gly Asp Leu Asp Ser Ser Met
 1 5 10 15

Gln Ser Ala Asp Glu Ser Thr Pro Gln Pro Leu Lys
 20 25

<210> 7
 <211> 20
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> PEST sequence

<400> 7

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

Glu Glu Leu Arg
 20

<210> 8
 <211> 33
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> PEST sequence

<400> 8

Arg Gly Gly Ile Pro Thr Ser Glu Glu Phe Ser Ser Leu Asn Ser Gly
 1 5 10 15

Asp Phe Thr Asp Asp Glu Asn Ser Glu Thr Thr Glu Glu Glu Ile Asp
 20 25 30

Arg

<210> 9
 <211> 17
 <212> PRT
 <213> Artificial Sequence

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<220>

<223> PEST sequence

<400> 9

Lys Gln Asn Thr Ala Ser Thr Glu Thr Thr Thr Thr Asn Glu Gln Pro
1 5 10 15

Lys

<210> 10

<211> 17

<212> PRT

<213> Artificial Sequence

<220>

<223> PEST-like sequence

<400> 10

Lys Gln Asn Thr Ala Asn Thr Glu Thr Thr Thr Thr Asn Glu Gln Pro
1 5 10 15

Lys

<210> 11

<211> 639

<212> PRT

<213> Artificial Sequence

<220>

<223> ActA protein

<400> 11

Met Gly Leu Asn Arg Phe Met Arg Ala Met Met Val Val Phe Ile Thr
1 5 10 15

Ala Asn Cys Ile Thr Ile Asn Pro Asp Ile Ile Phe Ala Ala Thr Asp
20 25 30

Ser Glu Asp Ser Ser Leu Asn Thr Asp Glu Trp Glu Glu Glu Lys Thr
35 40 45

Glu Glu Gln Pro Ser Glu Val Asn Thr Gly Pro Arg Tyr Glu Thr Ala
50 55 60

Arg Glu Val Ser Ser Arg Asp Ile Lys Glu Leu Glu Lys Ser Asn Lys
65 70 75 80

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

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Pro Pro Pro Thr Glu Asp Glu Leu Glu Ile Ile Arg Glu Thr Ala Ser
340 345 350

Ser Leu Asp Ser Ser Phe Thr Arg Gly Asp Leu Ala Ser Leu Arg Asn
355 360 365

Ala Ile Asn Arg His Ser Gln Asn Phe Ser Asp Phe Pro Pro Ile Pro
370 375 380

Thr Glu Glu Glu Leu Asn Gly Arg Gly Gly Arg Pro Thr Ser Glu Glu
385 390 395 400

Phe Ser Ser Leu Asn Ser Gly Asp Phe Thr Asp Asp Glu Asn Ser Glu
405 410 415

Thr Thr Glu Glu Glu Ile Asp Arg Leu Ala Asp Leu Arg Asp Arg Gly
420 425 430

Thr Gly Lys His Ser Arg Asn Ala Gly Phe Leu Pro Leu Asn Pro Phe
435 440 445

Ala Ser Ser Pro Val Pro Ser Leu Ser Pro Lys Val Ser Lys Ile Ser
450 455 460

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

Pro Ser Gln Pro Leu Asn Val Phe Asn Lys Lys Thr Thr Thr Lys Thr
485 490 495

Val Thr Lys Lys Pro Thr Pro Val Lys Thr Ala Pro Lys Leu Ala Glu
500 505 510

Leu Pro Ala Thr Lys Pro Gln Glu Thr Val Leu Arg Glu Asn Lys Thr
515 520 525

Pro Phe Ile Glu Lys Gln Ala Glu Thr Asn Lys Gln Ser Ile Asn Met
530 535 540

Pro Ser Leu Pro Val Ile Gln Lys Glu Ala Thr Glu Ser Asp Lys Glu
545 550 555 560

Glu Met Lys Pro Gln Thr Glu Glu Lys Met Val Glu Glu Ser Glu Ser
565 570 575

Ala Asn Asn Ala Asn Gly Lys Asn Arg Ser Ala Gly Ile Glu Glu Gly
580 585 590

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Lys Leu Ile Ala Lys Ser Ala Glu Asp Glu Lys Ala Lys Glu Glu Pro
595 600 605

Gly Asn His Thr Thr Leu Ile Leu Ala Met Leu Ala Ile Gly Val Phe
610 615 620

Ser Leu Gly Ala Phe Ile Lys Ile Ile Gln Leu Arg Lys Asn Asn
625 630 635

<210> 12
<211> 390
<212> PRT
<213> Artificial Sequence

<220>
<223> Truncated ActA protein

<400> 12

Met Arg Ala Met Met Val Val Phe Ile Thr Ala Asn Cys Ile Thr Ile
1 5 10 15

Asn Pro Asp Ile Ile Phe Ala Ala Thr Asp Ser Glu Asp Ser Ser Leu
20 25 30

Asn Thr Asp Glu Trp Glu Glu Glu Lys Thr Glu Glu Gln Pro Ser Glu
35 40 45

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

Asp Ile Lys Glu Leu Glu Lys Ser Asn Lys Val Arg Asn Thr Asn Lys
65 70 75 80

Ala Asp Leu Ile Ala Met Leu Lys Glu Lys Ala Glu Lys Gly Pro Asn
85 90 95

Ile Asn Asn Asn Asn Ser Glu Gln Thr Glu Asn Ala Ala Ile Asn Glu
100 105 110

Glu Ala Ser Gly Ala Asp Arg Pro Ala Ile Gln Val Glu Arg Arg His
115 120 125

Pro Gly Leu Pro Ser Asp Ser Ala Ala Glu Ile Lys Lys Arg Arg Lys
130 135 140

Ala Ile Ala Ser Ser Asp Ser Glu Leu Glu Ser Leu Thr Tyr Pro Asp
145 150 155 160

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Lys Pro Thr Lys Val Asn Lys Lys Lys Val Ala Lys Glu Ser Val Ala
165 170 175

Asp Ala Ser Glu Ser Asp Leu Asp Ser Ser Met Gln Ser Ala Asp Glu
180 185 190

Ser Ser Pro Gln Pro Leu Lys Ala Asn Gln Gln Pro Phe Phe Pro Lys
195 200 205

Val Phe Lys Lys Ile Lys Asp Ala Gly Lys Trp Val Arg Asp Lys Ile
210 215 220

Asp Glu Asn Pro Glu Val Lys Lys Ala Ile Val Asp Lys Ser Ala Gly
225 230 235 240

Leu Ile Asp Gln Leu Leu Thr Lys Lys Lys Ser Glu Glu Val Asn Ala
245 250 255

Ser Asp Phe Pro Pro Pro Pro Thr Asp Glu Glu Leu Arg Leu Ala Leu
260 265 270

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

Pro Ser Ser Phe Glu Phe Pro Pro Pro Pro Thr Asp Glu Glu Leu Arg
290 295 300

Leu Ala Leu Pro Glu Thr Pro Met Leu Leu Gly Phe Asn Ala Pro Ala
305 310 315 320

Thr Ser Glu Pro Ser Ser Phe Glu Phe Pro Pro Pro Pro Thr Glu Asp
325 330 335

Glu Leu Glu Ile Ile Arg Glu Thr Ala Ser Ser Leu Asp Ser Ser Phe
340 345 350

Thr Arg Gly Asp Leu Ala Ser Leu Arg Asn Ala Ile Asn Arg His Ser
355 360 365

Gln Asn Phe Ser Asp Phe Pro Pro Ile Pro Thr Glu Glu Glu Leu Asn
370 375 380

Gly Arg Gly Gly Arg Pro
385 390

<210> 13
<211> 100
<212> PRT

<213> Artificial Sequence

<220>

<223> Truncated ActA protein

<400> 13

Met Gly Leu Asn Arg Phe Met Arg Ala Met Met Val Val Phe Ile Thr
1 5 10 15

Ala Asn Cys Ile Thr Ile Asn Pro Asp Ile Ile Phe Ala Ala Thr Asp
20 25 30

Ser Glu Asp Ser Ser Leu Asn Thr Asp Glu Trp Glu Glu Glu Lys Thr
35 40 45

Glu Glu Gln Pro Ser Glu Val Asn Thr Gly Pro Arg Tyr Glu Thr Ala
50 55 60

Arg Glu Val Ser Ser Arg Asp Ile Lys Glu Leu Glu Lys Ser Asn Lys
65 70 75 80

Val Arg Asn Thr Asn Lys Ala Asp Leu Ile Ala Met Leu Lys Glu Lys
85 90 95

Ala Glu Lys Gly
100

<210> 14

<211> 93

<212> PRT

<213> Artificial Sequence

<220>

<223> PEST sequence

<400> 14

Ala Thr Asp Ser Glu Asp Ser Ser Leu Asn Thr Asp Glu Trp Glu Glu
1 5 10 15

Glu Lys Thr Glu Glu Gln Pro Ser Glu Val Asn Thr Gly Pro Arg Tyr
20 25 30

Glu Thr Ala Arg Glu Val Ser Ser Arg Asp Ile Glu Glu Leu Glu Lys
35 40 45

Ser Asn Lys Val Lys Asn Thr Asn Lys Ala Asp Leu Ile Ala Met Leu
50 55 60

Lys Ala Lys Ala Glu Lys Gly Pro Asn Asn Asn Asn Asn Asn Gly Glu
65 70 75 80

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Gln Thr Gly Asn Val Ala Ile Asn Glu Glu Ala Ser Gly
85 90

<210> 15
<211> 200
<212> PRT
<213> Artificial Sequence

<220>
<223> PEST sequence

<400> 15

Ala Thr Asp Ser Glu Asp Ser Ser Leu Asn Thr Asp Glu Trp Glu Glu
1 5 10 15

Glu Lys Thr Glu Glu Gln Pro Ser Glu Val Asn Thr Gly Pro Arg Tyr
20 25 30

Glu Thr Ala Arg Glu Val Ser Ser Arg Asp Ile Glu Glu Leu Glu Lys
35 40 45

Ser Asn Lys Val Lys Asn Thr Asn Lys Ala Asp Leu Ile Ala Met Leu
50 55 60

Lys Ala Lys Ala Glu Lys Gly Pro Asn Asn Asn Asn Asn Gly Glu
65 70 75 80

Gln Thr Gly Asn Val Ala Ile Asn Glu Glu Ala Ser Gly Val Asp Arg
85 90 95

Pro Thr Leu Gln Val Glu Arg Arg His Pro Gly Leu Ser Ser Asp Ser
100 105 110

Ala Ala Glu Ile Lys Lys Arg Arg Lys Ala Ile Ala Ser Ser Asp Ser
115 120 125

Glu Leu Glu Ser Leu Thr Tyr Pro Asp Lys Pro Thr Lys Ala Asn Lys
130 135 140

Arg Lys Val Ala Lys Glu Ser Val Val Asp Ala Ser Glu Ser Asp Leu
145 150 155 160

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

Ala Asn Gln Lys Pro Phe Phe Pro Lys Val Phe Lys Lys Ile Lys Asp
180 185 190

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Ala Gly Lys Trp Val Arg Asp Lys
195 200

<210> 16
<211> 303
<212> PRT
<213> Artificial Sequence

<220>
<223> PEST sequence

<400> 16

Ala Thr Asp Ser Glu Asp Ser Ser Leu Asn Thr Asp Glu Trp Glu Glu
1 5 10 15

Glu Lys Thr Glu Glu Gln Pro Ser Glu Val Asn Thr Gly Pro Arg Tyr
20 25 30

Glu Thr Ala Arg Glu Val Ser Ser Arg Asp Ile Glu Glu Leu Glu Lys
35 40 45

Ser Asn Lys Val Lys Asn Thr Asn Lys Ala Asp Leu Ile Ala Met Leu
50 55 60

Lys Ala Lys Ala Glu Lys Gly Pro Asn Asn Asn Asn Asn Gly Glu
65 70 75 80

Gln Thr Gly Asn Val Ala Ile Asn Glu Glu Ala Ser Gly Val Asp Arg
85 90 95

Pro Thr Leu Gln Val Glu Arg Arg His Pro Gly Leu Ser Ser Asp Ser
100 105 110

Ala Ala Glu Ile Lys Lys Arg Arg Lys Ala Ile Ala Ser Ser Asp Ser
115 120 125

Glu Leu Glu Ser Leu Thr Tyr Pro Asp Lys Pro Thr Lys Ala Asn Lys
130 135 140

Arg Lys Val Ala Lys Glu Ser Val Val Asp Ala Ser Glu Ser Asp Leu
145 150 155 160

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

Ala Asn Gln Lys Pro Phe Phe Pro Lys Val Phe Lys Lys Ile Lys Asp
180 185 190

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Ala Gly Lys Trp Val Arg Asp Lys Ile Asp Glu Asn Pro Glu Val Lys
195 200 205

Lys Ala Ile Val Asp Lys Ser Ala Gly Leu Ile Asp Gln Leu Leu Thr
210 215 220

Lys Lys Lys Ser Glu Glu Val Asn Ala Ser Asp Phe Pro Pro Pro Pro
225 230 235 240

Thr Asp Glu Glu Leu Arg Leu Ala Leu Pro Glu Thr Pro Met Leu Leu
245 250 255

Gly Phe Asn Ala Pro Thr Pro Ser Glu Pro Ser Ser Phe Glu Phe Pro
260 265 270

Pro Pro Pro Thr Asp Glu Glu Leu Arg Leu Ala Leu Pro Glu Thr Pro
275 280 285

Met Leu Leu Gly Phe Asn Ala Pro Ala Thr Ser Glu Pro Ser Ser
290 295 300

<210> 17
<211> 370
<212> PRT
<213> Artificial sequence

<220>
<223> PEST sequence

<400> 17

Ala Thr Asp Ser Glu Asp Ser Ser Leu Asn Thr Asp Glu Trp Glu Glu
1 5 10 15

Glu Lys Thr Glu Glu Gln Pro Ser Glu Val Asn Thr Gly Pro Arg Tyr
20 25 30

Glu Thr Ala Arg Glu Val Ser Ser Arg Asp Ile Glu Glu Leu Glu Lys
35 40 45

Ser Asn Lys Val Lys Asn Thr Asn Lys Ala Asp Leu Ile Ala Met Leu
50 55 60

Lys Ala Lys Ala Glu Lys Gly Pro Asn Asn Asn Asn Asn Asn Gly Glu
65 70 75 80

Gln Thr Gly Asn Val Ala Ile Asn Glu Glu Ala Ser Gly Val Asp Arg
85 90 95

Pro Thr Leu Gln Val Glu Arg Arg His Pro Gly Leu Ser Ser Asp Ser
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100

105

110

Ala Ala Glu Ile Lys Lys Arg Arg Lys Ala Ile Ala Ser Ser Asp Ser
115 120 125

Glu Leu Glu Ser Leu Thr Tyr Pro Asp Lys Pro Thr Lys Ala Asn Lys
130 135 140

Arg Lys Val Ala Lys Glu Ser Val Val Asp Ala Ser Glu Ser Asp Leu
145 150 155 160

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

Ala Asn Gln Lys Pro Phe Phe Pro Lys Val Phe Lys Lys Ile Lys Asp
180 185 190

Ala Gly Lys Trp Val Arg Asp Lys Ile Asp Glu Asn Pro Glu Val Lys
195 200 205

Lys Ala Ile Val Asp Lys Ser Ala Gly Leu Ile Asp Gln Leu Leu Thr
210 215 220

Lys Lys Lys Ser Glu Glu Val Asn Ala Ser Asp Phe Pro Pro Pro Pro
225 230 235 240

Thr Asp Glu Glu Leu Arg Leu Ala Leu Pro Glu Thr Pro Met Leu Leu
245 250 255

Gly Phe Asn Ala Pro Thr Pro Ser Glu Pro Ser Ser Phe Glu Phe Pro
260 265 270

Pro Pro Pro Thr Asp Glu Glu Leu Arg Leu Ala Leu Pro Glu Thr Pro
275 280 285

Met Leu Leu Gly Phe Asn Ala Pro Ala Thr Ser Glu Pro Ser Ser Phe
290 295 300

Glu Phe Pro Pro Pro Thr Glu Asp Glu Leu Glu Ile Met Arg Glu
305 310 315 320

Thr Ala Pro Ser Leu Asp Ser Ser Phe Thr Ser Gly Asp Leu Ala Ser
325 330 335

Leu Arg Ser Ala Ile Asn Arg His Ser Glu Asn Phe Ser Asp Phe Pro
340 345 350

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Leu Ile Pro Thr Glu Glu Glu Leu Asn Gly Arg Gly Gly Arg Pro Thr
355 360 365

Ser Glu
370

<210> 18
<211> 1170
<212> DNA
<213> Artificial Sequence

<220>
<223> Recombinant nucleotide encoding anActA protein

<400> 18
atgctgtgca tgatggtggt ttctattact gccaatgca ttacgattaa ccccgacata 60
atatttgcag cgacagatag cgaagattct agtctaaaca cagatgaatg ggaagaagaa 120
aaaacagaag agcaaccaag cgaggtaaata acgggaccaa gatacgaaac tgcacgtgaa 180
gtaagttcac gtgatattaa agaactagaa aaatcgaata aagtgagaaa tacgaacaaa 240
gcagacctaa tagcaatggt gaaagaaaaa gcagaaaaag gtccaaatat caataataac 300
aacagtgaac aaactgagaa tgcggctata aatgaagagg cttcaggagc cgaccgacca 360
gctatacaag tggagcgtcg tcatccagga ttgccatcgg atagcgcagc ggaaattaaa 420
aaaagaagga aagccatagc atcatcggat agtgagcttg aaagccttac ttatccggat 480
aaaccaacaa agtaaataa gaaaaaagtg gcgaaagagt cagttgcgga tgcttctgaa 540
agtgacttag attctagcat gcagtcagca gatgagtctt caccacaacc tttaaaagca 600
aaccaacaac cttttttccc taaagtattt aaaaaataa aagatgcggg gaaatgggta 660
cgtgataaaa tcgacgaaaa tcctgaagta aagaaagcga ttgttgataa aagtgcaggg 720
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<211> 28

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Gln Ser Ala Asp Glu Ser Thr Pro Gln Pro Leu Lys
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Glu Glu Leu Arg
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<223> PEST sequence

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Arg

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Lys

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<400> 24

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Lys

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 <212> PRT
 <213> Artificial Sequence

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<400> 25

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Ala Ala Pro Leu Ile Leu Ser Arg Ile Val Gly Gly Trp Glu Cys Glu
 20 25 30

Lys His Ser Gln Pro Trp Gln Val Leu Val Ala Ser Arg Gly Arg Ala
 35 40 45

Val Cys Gly Gly Val Leu Val His Pro Gln Trp Val Leu Thr Ala Ala
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55

60

His Cys Ile Arg Asn Lys Ser Val Ile Leu Leu Gly Arg His Ser Leu
65 70 75 80

Phe His Pro Glu Asp Thr Gly Gln Val Phe Gln Val Ser His Ser Phe
85 90 95

Pro His Pro Leu Tyr Asp Met Ser Leu Leu Lys Asn Arg Phe Leu Arg
100 105 110

Pro Gly Asp Asp Ser Ser His Asp Leu Met Leu Leu Arg Leu Ser Glu
115 120 125

Pro Ala Glu Leu Thr Asp Ala Val Lys Val Met Asp Leu Pro Thr Gln
130 135 140

Glu Pro Ala Leu Gly Thr Thr Cys Tyr Ala Ser Gly Trp Gly Ser Ile
145 150 155 160

Glu Pro Glu Glu Phe Leu Thr Pro Lys Lys Leu Gln Cys Val Asp Leu
165 170 175

His Val Ile Ser Asn Asp Val Cys Ala Gln Val His Pro Gln Lys Val
180 185 190

Thr Lys Phe Met Leu Cys Ala Gly Arg Trp Thr Gly Gly Lys Ser Thr
195 200 205

Cys Ser Gly Asp Ser Gly Gly Pro Leu Val Cys Asn Gly Val Leu Gln
210 215 220

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

Ile Leu Leu Gly Arg His Ser Leu Phe His Pro Glu Asp Thr Gly Gln
50 55 60

Val Phe Gln Val Ser His Ser Phe Pro His Pro Leu Tyr Asp Met Ser
65 70 75 80

Leu Leu Lys Asn Arg Phe Leu Arg Pro Gly Asp Asp Ser Ser His Asp
85 90 95

Leu Met Leu Leu Arg Leu Ser Glu Pro Ala Glu Leu Thr Asp Ala Val
100 105 110

Lys Val Met Asp Leu Pro Thr Gln Glu Pro Ala Leu Gly Thr Thr Cys
115 120 125

Tyr Ala Ser Gly Trp Gly Ser Ile Glu Pro Glu Glu Phe Leu Thr Pro
130 135 140

Lys Lys Leu Gln Cys Val Asp Leu His Val Ile Ser Asn Asp Val Cys
145 150 155 160

Ala Gln Val His Pro Gln Lys Val Thr Lys Phe Met Leu Cys Ala Gly
165 170 175

Arg Trp Thr Gly Gly Lys Ser Thr Cys Ser Gly Asp Ser Gly Gly Pro
180 185 190

Leu Val Cys Tyr Gly Val Leu Gln Gly Ile Thr Ser Trp Gly Ser Glu
195 200 205

Pro Cys Ala Leu Pro Glu Arg Pro Ser Leu Tyr Thr Lys Val Val His
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Tyr Arg Lys Trp Ile Lys Asp Thr Ile Val Ala Asn Pro
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<210> 27

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<211> 237
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 <213> Artificial Sequence

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 <223> KLK3 protein

<400> 27

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Leu Val Ala Ser Arg Gly Arg Ala Val Cys Gly Gly Val Leu Val His
 20 25 30

Pro Gln Trp Val Leu Thr Ala Ala His Cys Ile Arg Asn Lys Ser Val
 35 40 45

Ile Leu Leu Gly Arg His Ser Leu Phe His Pro Glu Asp Thr Gly Gln
 50 55 60

Val Phe Gln Val Ser His Ser Phe Pro His Pro Leu Tyr Asp Met Ser
 65 70 75 80

Leu Leu Lys Asn Arg Phe Leu Arg Pro Gly Asp Asp Ser Ser His Asp
 85 90 95

Leu Met Leu Leu Arg Leu Ser Glu Pro Ala Glu Leu Thr Asp Ala Val
 100 105 110

Lys Val Met Asp Leu Pro Thr Gln Glu Pro Ala Leu Gly Thr Thr Cys
 115 120 125

Tyr Ala Ser Gly Trp Gly Ser Ile Glu Pro Glu Glu Phe Leu Thr Pro
 130 135 140

Lys Lys Leu Gln Cys Val Asp Leu His Val Ile Ser Asn Asp Val Cys
 145 150 155 160

Ala Gln Val His Pro Gln Lys Val Thr Lys Phe Met Leu Cys Ala Gly
 165 170 175

Arg Trp Thr Gly Gly Lys Ser Thr Cys Ser Gly Asp Ser Gly Gly Pro
 180 185 190

Leu Val Cys Asn Gly Val Leu Gln Gly Ile Thr Ser Trp Gly Ser Glu
 195 200 205

Pro Cys Ala Leu Pro Glu Arg Pro Ser Leu Tyr Thr Lys Val Val His
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Tyr Arg Lys Trp Ile Lys Asp Thr Ile Val Ala Asn Pro
225 230 235

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<223> Nucleotide molecule encoding the KLK3 protein

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Lys His Ser Gln Pro Trp Gln Val Leu Val Ala Ser Arg Gly Arg Ala
 35 40 45

Val Cys Gly Gly Val Leu Val His Pro Gln Trp Val Leu Thr Ala Ala
 50 55 60

His Cys Ile Arg Asn Lys Ser Val Ile Leu Leu Gly Arg His Ser Leu
 65 70 75 80

Phe His Pro Glu Asp Thr Gly Gln Val Phe Gln Val Ser His Ser Phe
 85 90 95

Pro His Pro Leu Tyr Asp Met Ser Leu Leu Lys Asn Arg Phe Leu Arg
 100 105 110

Pro Gly Asp Asp Ser Ser His Asp Leu Met Leu Leu Arg Leu Ser Glu
 115 120 125

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

Glu Pro Glu Glu Phe Leu Thr Pro Lys Lys Leu Gln Cys Val Asp Leu
165 170 175

His Val Ile Ser Asn Asp Val Cys Ala Gln Val His Pro Gln Lys Val
180 185 190

Thr Lys Phe Met Leu Cys Ala Gly Arg Trp Thr Gly Gly Lys Ser Thr
195 200 205

Cys Ser Trp Val Ile Leu Ile Thr Glu Leu Thr Met Pro Ala Leu Pro
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<210> 30
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His Cys Ile Arg Lys
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<223> Nucleotide molecule encoding the KLK3 protein

<400> 32
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tcctcacct tccgtgacgt ggattggtgc tgcaccctc atcctgtctc ggattgtggg 120
aggctgggag tgcgagaagc attcccaacc ctggcaggtg cttgtggcct ctctgtggcag 180
ggcagtctgc ggcggtgttc tgggtgcacc ccagtgggtc ctcacagctg cccactgcat 240
caggaagtga gtaggggcct ggggtctggg gagcaggtgt ctgtgtccca gaggaataac 300
agctgggcat tttcccagc ataacctcta aggccagcct tgggactggg ggagagaggg 360
aaagtctctg ttcaggtcac atggggaggg aggggtgggg ctggaccacc ctccccatgg 420
ctgcctgggt ctccatctgt gttcctctat gtctctttgt gtcgctttca ttatgtctct 480
tggtaactgg cttcggttgt gtctctccgt gtgactatct tgttctctct ctccctctct 540
tctctgtctt cagt 554

<210> 33
<211> 220
<212> PRT
<213> Artificial Sequence

<220>
<223> KLK3 protein that is the source of the KLK3 peptide

<400> 33

Met Trp Val Pro Val Val Phe Leu Thr Leu Ser Val Thr Trp Ile Gly
1 5 10 15

Ala Ala Pro Leu Ile Leu Ser Arg Ile Val Gly Gly Trp Glu Cys Glu
20 25 30

Lys His Ser Gln Pro Trp Gln Val Leu Val Ala Ser Arg Gly Arg Ala
35 40 45

Val Cys Gly Gly Val Leu Val His Pro Gln Trp Val Leu Thr Ala Ala
50 55 60

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His Cys Ile Arg Asn Lys Ser Val Ile Leu Leu Gly Arg His Ser Leu
65 70 75 80

Phe His Pro Glu Asp Thr Gly Gln Val Phe Gln Val Ser His Ser Phe
85 90 95

Pro His Pro Leu Tyr Asp Met Ser Leu Leu Lys Asn Arg Phe Leu Arg
100 105 110

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

Lys Leu Gln Cys Val Asp Leu His Val Ile Ser Asn Asp Val Cys Ala
130 135 140

Gln Val His Pro Gln Lys Val Thr Lys Phe Met Leu Cys Ala Gly Arg
145 150 155 160

Trp Thr Gly Gly Lys Ser Thr Cys Ser Gly Asp Ser Gly Gly Pro Leu
165 170 175

Val Cys Asn Gly Val Leu Gln Gly Ile Thr Ser Trp Gly Ser Glu Pro
180 185 190

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

Arg Lys Trp Ile Lys Asp Thr Ile Val Ala Asn Pro
210 215 220

<210> 34
<211> 1341
<212> DNA
<213> Artificial Sequence

<220>
<223> Nucleotide molecule encoding the KLK3 protein

<400> 34
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tcctcaccct gtccgtgacg tggattggtg ctgcaccct catcctgtct cggattgtgg 120
gaggctggga gtgcgagaag cattccaac cctggcaggt gcttgtggcc tctcgtggca 180
gggcagtctg cggcgggtgtt ctggtgcacc cccagtgggt cctcacagct gccactgca 240
tcaggaacaa aagcgtgatc ttgctgggtc ggcacagcct gtttcacatcct gaagacacag 300
gccaggtatt tcaggtcagc cacagcttcc cacaccgct ctacgatatg agcctcctga 360
agaatcgatt cctcaggcca ggtgatgact ccagcattga accagaggag ttcttgacct 420

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caaagaaact tcagtgtgtg gacctccatg ttattttccaa tgacgtgtgt gcgcaagttc      480
accctcagaa ggtgaccaag ttcatgtctgt gtgctggacg ctggacaggg ggcaaaagca      540
cctgctcggg tgattctggg ggcccacttg tctgtaatgg tgtgcttcaa ggtatcacgt      600
catggggcag tgaacatgtt gccctgcccg aaaggccttc cctgtacacc aagggtggtgc      660
attaccggaa gtggatcaag gacaccatcg tggccaaccc ctgagcacc cttatcaaccc      720
cctattgtag taaacttgga accttggaat tgaccaggcc aagactcaag cctccccagt      780
tctactgacc tttgtcctta ggtgtgaggt ccagggttgc taggaaaaga aatcagcaga      840
cacaggtgta gaccagagtg tttcttaaatt ggtgtaattt tgtcctctct gtgtcctggg      900
gaatactggc catgcctgga gacatatcac tcaattttct tgaggacaca gataggatgg      960
ggtgtctgtg ttattttgtg ggtacagaga tgaaagaggg gtgggatcca cactgagaga     1020
gtggagagtg acatgtgctg gacactgtcc atgaagcact gagcagaagc tggaggcaca     1080
acgcaccaga cactcacagc aaggatggag ctgaaaacat aaccactctt gtcctggagg     1140
cactgggaag cctagagaag gctgtgagcc aaggagggag ggtcttcctt tggcatggga     1200
tggggatgaa gtaaggagag ggactggacc ccctggaagc tgattcacta tggggggagg     1260
tgtattgaag tcctccagac aaccctcaga tttgatgatt tcctagtaga actcacagaa     1320
ataaagagct gttatactgt g                                     1341

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<210> 35
 <211> 218
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> KLK3 protein

<400> 35

Met Trp Val Pro Val Val Phe Leu Thr Leu Ser Val Thr Trp Ile Gly
 1 5 10 15

Ala Ala Pro Leu Ile Leu Ser Arg Ile Val Gly Gly Trp Glu Cys Glu
 20 25 30

Lys His Ser Gln Pro Trp Gln Val Leu Val Ala Ser Arg Gly Arg Ala
 35 40 45

Val Cys Gly Gly Val Leu Val His Pro Gln Trp Val Leu Thr Ala Ala
 50 55 60

His Cys Ile Arg Lys Pro Gly Asp Asp Ser Ser His Asp Leu Met Leu
 65 70 75 80

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Leu Arg Leu Ser Glu Pro Ala Glu Leu Thr Asp Ala Val Lys Val Met
85 90 95

Asp Leu Pro Thr Gln Glu Pro Ala Leu Gly Thr Thr Cys Tyr Ala Ser
100 105 110

Gly Trp Gly Ser Ile Glu Pro Glu Glu Phe Leu Thr Pro Lys Lys Leu
115 120 125

Gln Cys Val Asp Leu His Val Ile Ser Asn Asp Val Cys Ala Gln Val
130 135 140

His Pro Gln Lys Val Thr Lys Phe Met Leu Cys Ala Gly Arg Trp Thr
145 150 155 160

Gly Gly Lys Ser Thr Cys Ser Gly Asp Ser Gly Gly Pro Leu Val Cys
165 170 175

Asn Gly Val Leu Gln Gly Ile Thr Ser Trp Gly Ser Glu Pro Cys Ala
180 185 190

Leu Pro Glu Arg Pro Ser Leu Tyr Thr Lys Val Val His Tyr Arg Lys
195 200 205

Trp Ile Lys Asp Thr Ile Val Ala Asn Pro
210 215

<210> 36
<211> 1325
<212> DNA
<213> Artificial Sequence

<220>
<223> Nucleotide molecule encoding the KLK3 protein

<400> 36
agccccaagc ttaccacctg caccgagaga gctgtgtcac catgtgggtc ccggttgtct 60
tcctcacct gtccgtgacg tggattggtg ctgcaccct catcctgtct cggattgtgg 120
gaggctggga gtgcgagaag cattcccaac cctggcaggt gcttgtggcc tctcgtggca 180
gggcagtctg cggcgggtgtt ctggtgcacc ccagtggtt cctcacagct gccactgca 240
tcaggaagcc aggtgatgac tccagccacg acctcatgct gctccgcctg tcagagcctg 300
ccgagctcac ggatgctgtg aaggatcatg acctgcccac ccaggagcca gcaactggga 360
ccacctgcta cgcctcaggc tggggcagca ttgaaccaga ggagttcttg accccaaaga 420
aacttcagtg tgtggacctc catgttattt ccaatgacgt gtgtgcgcaa gttcacctc 480
agaaggtgac caagttcatg ctgtgtgctg gacgctggac agggggcaaa agcacctgct 540

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cgggtgattc tgggggccc cttgtctgta atggtgtgct tcaaggtatc acgtcatggg      600
gcagtgaacc atgtgccctg cccgaaaggc cttccctgta caccaaggtg gtgcattacc      660
caaggacacc atcgtggcca acccctgagc acccctatca accccctatt gtagtaaact      720
tggaaccttg gaaatgacca ggccaagact caagcctccc cagttctact gacctttgtc      780
cttaggtgtg aggtccaggg ttgctaggaa aagaaatcag cagacacagg tgtagaccag      840
agtgtttctt aaatggtgta attttgtcct ctctgtgtcc tggggaatac tggccatgcc      900
tggagacata tcaactcaatt tctctgagga cacagatagg atgggggtgtc tgtgttattt      960
gtgggggtaca gagatgaaag aggggtggga tccacactga gagagtggag agtgacatgt    1020
gctggacact gtccatgaag cactgagcag aagctggagg cacaacgcac cagacactca    1080
cagcaaggat ggagctgaaa acataacca ctctgtcctg gaggcactgg gaagcctaga    1140
gaaggctgtg agccaaggag ggaggggtctt cttttggcat gggatgggga tgaagtaagg    1200
agagggactg gaccccctgg aagctgattc actatggggg gaggtgtatt gaagtcctcc    1260
agacaaccct cagatttgat gatttcctag tagaactcac agaaataaag agctgtttata    1320
ctgtg                                           1325

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<210> 37
 <211> 261
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> KLK3 protein

<400> 37

Met Trp Val Pro Val Val Phe Leu Thr Leu Ser Val Thr Trp Ile Gly
1 5 10 15

Ala Ala Pro Leu Ile Leu Ser Arg Ile Val Gly Gly Trp Glu Cys Glu
20 25 30

Lys His Ser Gln Pro Trp Gln Val Leu Val Ala Ser Arg Gly Arg Ala
35 40 45

Val Cys Gly Gly Val Leu Val His Pro Gln Trp Val Leu Thr Ala Ala
50 55 60

His Cys Ile Arg Asn Lys Ser Val Ile Leu Leu Gly Arg His Ser Leu
65 70 75 80

Phe His Pro Glu Asp Thr Gly Gln Val Phe Gln Val Ser His Ser Phe
85 90 95

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Pro His Pro Leu Tyr Asp Met Ser Leu Leu Lys Asn Arg Phe Leu Arg
100 105 110

Pro Gly Asp Asp Ser Ser His Asp Leu Met Leu Leu Arg Leu Ser Glu
115 120 125

Pro Ala Glu Leu Thr Asp Ala Val Lys Val Met Asp Leu Pro Thr Gln
130 135 140

Glu Pro Ala Leu Gly Thr Thr Cys Tyr Ala Ser Gly Trp Gly Ser Ile
145 150 155 160

Glu Pro Glu Glu Phe Leu Thr Pro Lys Lys Leu Gln Cys Val Asp Leu
165 170 175

His Val Ile Ser Asn Asp Val Cys Ala Gln Val His Pro Gln Lys Val
180 185 190

Thr Lys Phe Met Leu Cys Ala Gly Arg Trp Thr Gly Gly Lys Ser Thr
195 200 205

Cys Ser Gly Asp Ser Gly Gly Pro Leu Val Cys Asn Gly Val Leu Gln
210 215 220

Gly Ile Thr Ser Trp Gly Ser Glu Pro Cys Ala Leu Pro Glu Arg Pro
225 230 235 240

Ser Leu Tyr Thr Lys Val Val His Tyr Arg Lys Trp Ile Lys Asp Thr
245 250 255

Ile Val Ala Asn Pro
260

<210> 38
<211> 1464
<212> DNA
<213> Artificial Sequence

<220>
<223> Nucleotide molecule encoding the KLK3 protein

<400> 38
agccccaagc ttaccacctg caccgaggaga gctgtgtcac catgtgggtc ccggttgtct 60
tcctcacct gtccgtgacg tggattggtg ctgcaccct catcctgtct cggattgtgg 120
gaggctggga gtgcgagaag cattccaac cctggcaggt gcttgtggcc tctcgtggca 180
gggcagtctg cggcgggtgtt ctggtgcacc cccagtgggt cctcacagct gccactgca 240
tcaggaacaa aagcgtgatc ttgctgggtc ggcacagcct gtttcacatcct gaagacacag 300

P-78391-PC-SEQ-LISTING-18DEC15

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gccaggtatt tcaggtcagc cacagcttcc cacacccgct ctacgatatg agcctcctga      360
agaatcgatt cctcaggcca ggtgatgact ccagccacga cctcatgctg ctccgcctgt      420
cagagcctgc cgagctcacg gatgctgtga aggtcatgga cctgcccacc caggagccag      480
cactggggac cacctgctac gcctcaggct ggggcagcat tgaaccagag gagttcttga      540
ccccaagaa acttcagtgt gtggacctcc atgttatttc caatgacgtg tgtgcgcaag      600
ttcacctca gaaggtgacc aagttcatgc tgtgtgctgg acgctggaca gggggcaaaa      660
gcacctgctc ggggtgattct gggggcccac ttgtctgtaa tgggtgtgctt caaggtatca      720
cgtcatgggg cagtgaacca tgtgccctgc ccgaaaggcc ttccctgtac accaagggtgg      780
tgcattaccg gaagtggatc aaggacacca tcgtggccaa cccctgagca cccctatcaa      840
ccccctattg tagtaactt ggaaccttgg aaatgaccag gccaagactc aagcctcccc      900
agttctactg accttgttcc ttaggtgtga ggtccagggt tgctaggaaa agaaatcagc      960
agacacaggt gtagaccaga gtgtttctta aatggtgtaa ttttgtcctc tctgtgtcct    1020
ggggaatact ggccatgcct ggagacatat cactcaattt ctctgaggac acagatagga    1080
tgggggtgtct gtgttatttg tggggtacag agatgaaaga ggggtgggat ccacactgag    1140
agagtggaga gtgacatgtg ctggacactg tccatgaagc actgagcaga agctggaggc    1200
acaacgcacc agacactcac agcaaggatg gagctgaaaa cataaccac tctgtcctgg    1260
aggcactggg aagcctagag aaggctgtga gccaaaggagg gaggggtcttc ctttggcatg    1320
ggatggggat gaagtaagga gagggactgg accccctgga agctgattca ctatgggggg    1380
aggtgtattg aagtcctcca gacaaccctc agatttgatg atttcctagt agaactcaca    1440
gaaataaaga gctgttatac tgtg                                           1464

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<210> 39
 <211> 261
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> KLK3 protein

<400> 39

Met Trp Val Pro Val Val Phe Leu Thr Leu Ser Val Thr Trp Ile Gly
 1 5 10 15

Ala Ala Pro Leu Ile Leu Ser Arg Ile Val Gly Gly Trp Glu Cys Glu
 20 25 30

Lys His Ser Gln Pro Trp Gln Val Leu Val Ala Ser Arg Gly Arg Ala
 35 40 45

P-78391-PC-SEQ-LISTING-18DEC15

Val Cys Gly Gly Val Leu Val His Pro Gln Trp Val Leu Thr Ala Ala
50 55 60

His Cys Ile Arg Asn Lys Ser Val Ile Leu Leu Gly Arg His Ser Leu
65 70 75 80

Phe His Pro Glu Asp Thr Gly Gln Val Phe Gln Val Ser His Ser Phe
85 90 95

Pro His Pro Leu Tyr Asp Met Ser Leu Leu Lys Asn Arg Phe Leu Arg
100 105 110

Pro Gly Asp Asp Ser Ser His Asp Leu Met Leu Leu Arg Leu Ser Glu
115 120 125

Pro Ala Glu Leu Thr Asp Ala Val Lys Val Met Asp Leu Pro Thr Gln
130 135 140

Glu Pro Ala Leu Gly Thr Thr Cys Tyr Ala Ser Gly Trp Gly Ser Ile
145 150 155 160

Glu Pro Glu Glu Phe Leu Thr Pro Lys Lys Leu Gln Cys Val Asp Leu
165 170 175

His Val Ile Ser Asn Asp Val Cys Ala Gln Val His Pro Gln Lys Val
180 185 190

Thr Lys Phe Met Leu Cys Ala Gly Arg Trp Thr Gly Gly Lys Ser Thr
195 200 205

Cys Ser Gly Asp Ser Gly Gly Pro Leu Val Cys Asn Gly Val Leu Gln
210 215 220

Gly Ile Thr Ser Trp Gly Ser Glu Pro Cys Ala Leu Pro Glu Arg Pro
225 230 235 240

Ser Leu Tyr Thr Lys Val Val His Tyr Arg Lys Trp Ile Lys Asp Thr
245 250 255

Ile Val Ala Asn Pro
260

<210> 40
<211> 1495
<212> DNA
<213> Artificial sequence

<220>

P-78391-PC-SEQ-LISTING-18DEC15

<223> Nucleotide molecule encoding the KLK3 protein

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<400> 40
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tgtcttcctc accctgtccg tgacgtggat tgggtgctgca cccctcatcc tgtctcggat      120
tgtgggaggc tgggagtgcg agaagcattc ccaaccctgg caggtgcttg tggcctctcg      180
tggcagggca gtctgcggcg gtgttctggg gcacccccag tgggtcctca cagctgcccc      240
ctgcatcagg aacaaaagcg tgatcttgct gggctggcac agcctgtttc atcctgaaga      300
cacaggccag gtatttcagg tcagccacag cttcccacac ccgctctacg atatgagcct      360
cctgaagaat cgattcctca ggccagggtga tgactccagc cacgacctca tgctgctccg      420
cctgtcagag cctgccgagc tcacggatgc tgtgaaggtc atggacctgc ccaccagga      480
gccagcactg gggaccacct gctacgcctc aggctggggc agcattgaac cagaggagtt      540
cttgaccca aagaaacttc agtgtgtgga cctccatggt atttccaatg acgtgtgtgc      600
gcaagttcac ctcagaagg tgaccaagtt catgctgtgt gctggacgct ggacaggggg      660
caaaagcacc tgctcgggtg attctggggg cccacttgct tgtaatggtg tgcttcaagg      720
tatcacgtca tggggcagtg aaccatgtgc cctgcccgaaggccttccc tgtacaccaa      780
ggtggtgcat taccggaagt ggatcaagga caccatcgtg gccaaccct gagcaccct      840
atcaactccc tattgtagta aacttggaac cttggaaatg accaggccaa gactcaggcc      900
tccccagttc tactgacctt tgtccttagg tgtgaggtcc agggttgcta ggaaaagaaa      960
tcagcagaca caggtgtaga ccagagtgtt tcttaaattg tgtaattttg tcctctctgt      1020
gtcctgggga atactggcca tgcttgaga catatcactc aatttctctg aggacacaga      1080
taggatgggg tgtctgtgtt atttgtgggg tacagagatg aaagaggggt gggatccaca      1140
ctgagagagt ggagagtgc atgtgctgga cactgtccat gaagcactga gcagaagctg      1200
gaggcacaac gcaccagaca ctcacagcaa ggatggagct gaaaacataa cccactctgt      1260
cctggaggca ctgggaagcc tagagaaggc tgtgagccaa ggagggaggg tcttcctttg      1320
gcatgggatg gggatgaagt agggagaggg actggacccc ctggaagctg attcactatg      1380
gggggaggtg tattgaagtc ctccagacaa ccctcagatt tgatgatttc ctagtagaac      1440
tcacagaaat aaagagctgt tatactgcga aaaaaaaaaa aaaaaaaaaa aaaaa      1495

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<210> 41

<211> 218

<212> PRT

<213> Artificial Sequence

<220>

<223> KLK3 protein

<400> 41

P-78391-PC-SEQ-LISTING-18DEC15

Met Trp Val Pro Val Val Phe Leu Thr Leu Ser Val Thr Trp Ile Gly
1 5 10 15

Ala Ala Pro Leu Ile Leu Ser Arg Ile Val Gly Gly Trp Glu Cys Glu
20 25 30

Lys His Ser Gln Pro Trp Gln Val Leu Val Ala Ser Arg Gly Arg Ala
35 40 45

Val Cys Gly Gly Val Leu Val His Pro Gln Trp Val Leu Thr Ala Ala
50 55 60

His Cys Ile Arg Asn Lys Ser Val Ile Leu Leu Gly Arg His Ser Leu
65 70 75 80

Phe His Pro Glu Asp Thr Gly Gln Val Phe Gln Val Ser His Ser Phe
85 90 95

Pro His Pro Leu Tyr Asp Met Ser Leu Leu Lys Asn Arg Phe Leu Arg
100 105 110

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

Lys Leu Gln Cys Val Asp Leu His Val Ile Ser Asn Asp Val Cys Ala
130 135 140

Gln Val His Pro Gln Lys Val Thr Lys Phe Met Leu Cys Ala Gly Arg
145 150 155 160

Trp Thr Gly Gly Lys Ser Thr Cys Ser Gly Asp Ser Gly Gly Pro Leu
165 170 175

Val Cys Asn Gly Val Leu Gln Gly Ile Thr Ser Trp Gly Ser Glu Pro
180 185 190

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

Arg Lys Trp Ile Lys Asp Thr Ile Val Ala
210 215

<210> 42

<211> 227

<212> PRT

<213> Artificial sequence

<220>

P-78391-PC-SEQ-LISTING-18DEC15

<223> KLK3 protein

<400> 42

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Met Trp Val Pro Val Val Phe Leu Thr Leu Ser Val Thr Trp Ile Gly
1      5      10     15

Ala Ala Pro Leu Ile Leu Ser Arg Ile Val Gly Gly Trp Glu Cys Glu
20     25     30

Lys His Ser Gln Pro Trp Gln Val Leu Val Ala Ser Arg Gly Arg Ala
35     40     45

Val Cys Gly Gly Val Leu Val His Pro Gln Trp Val Leu Thr Ala Ala
50     55     60

His Cys Ile Arg Asn Lys Ser Val Ile Leu Leu Gly Arg His Ser Leu
65     70     75     80

Phe His Pro Glu Asp Thr Gly Gln Val Phe Gln Val Ser His Ser Phe
85     90     95

Pro His Pro Leu Tyr Asp Met Ser Leu Leu Lys Asn Arg Phe Leu Arg
100    105    110

Pro Gly Asp Asp Ser Ser His Asp Leu Met Leu Leu Arg Leu Ser Glu
115    120    125

Pro Ala Glu Leu Thr Asp Ala Val Lys Val Met Asp Leu Pro Thr Gln
130    135    140

Glu Pro Ala Leu Gly Thr Thr Cys Tyr Ala Ser Gly Trp Gly Ser Ile
145    150    155    160

Glu Pro Glu Glu Phe Leu Thr Pro Lys Lys Leu Gln Cys Val Asp Leu
165    170    175

His Val Ile Ser Asn Asp Val Cys Ala Gln Val His Pro Gln Lys Val
180    185    190

Thr Lys Phe Met Leu Cys Ala Gly Arg Trp Thr Gly Gly Lys Ser Thr
195    200    205

Cys Ser Val Ser His Pro Tyr Ser Gln Asp Leu Glu Gly Lys Gly Glu
210    215    220

Trp Gly Pro
225

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P-78391-PC-SEQ-LISTING-18DEC15

<210> 43
 <211> 104
 <212> PRT
 <213> Artificial sequence

<220>
 <223> KLK3 protein
 <400> 43

Met Trp Val Pro Val Val Phe Leu Thr Leu Ser Val Thr Trp Ile Gly
 1 5 10 15

Glu Arg Gly His Gly Trp Gly Asp Ala Gly Glu Gly Ala Ser Pro Asp
 20 25 30

Cys Gln Ala Glu Ala Leu Ser Pro Pro Thr Gln His Pro Ser Pro Asp
 35 40 45

Arg Glu Leu Gly Ser Phe Leu Ser Leu Pro Ala Pro Leu Gln Ala His
 50 55 60

Thr Pro Ser Pro Ser Ile Leu Gln Gln Ser Ser Leu Pro His Gln Val
 65 70 75 80

Pro Ala Pro Ser His Leu Pro Gln Asn Phe Leu Pro Ile Ala Gln Pro
 85 90 95

Ala Pro Cys Ser Gln Leu Leu Tyr
 100

<210> 44
 <211> 261
 <212> PRT
 <213> Artificial sequence

<220>
 <223> KLK3 protein
 <400> 44

Met Trp Val Pro Val Val Phe Leu Thr Leu Ser Val Thr Trp Ile Gly
 1 5 10 15

Ala Ala Pro Leu Ile Leu Ser Arg Ile Val Gly Gly Trp Glu Cys Glu
 20 25 30

Lys His Ser Gln Pro Trp Gln Val Leu Val Ala Ser Arg Gly Arg Ala
 35 40 45

Val Cys Gly Gly Val Leu Val His Pro Gln Trp Val Leu Thr Ala Ala
 50 55 60

P-78391-PC-SEQ-LISTING-18DEC15

His Cys Ile Arg Asn Lys Ser Val Ile Leu Leu Gly Arg His Ser Leu
65 70 75 80

Phe His Pro Glu Asp Thr Gly Gln Val Phe Gln Val Ser His Ser Phe
85 90 95

Pro His Pro Leu Tyr Asp Met Ser Leu Leu Lys Asn Arg Phe Leu Arg
100 105 110

Pro Gly Asp Asp Ser Ser His Asp Leu Met Leu Leu Arg Leu Ser Glu
115 120 125

Pro Ala Glu Leu Thr Asp Ala Val Lys Val Met Asp Leu Pro Thr Gln
130 135 140

Glu Pro Ala Leu Gly Thr Thr Cys Tyr Ala Ser Gly Trp Gly Ser Ile
145 150 155 160

Glu Pro Glu Glu Phe Leu Thr Pro Lys Lys Leu Gln Cys Val Asp Leu
165 170 175

His Val Ile Ser Asn Asp Val Cys Ala Gln Val His Pro Gln Lys Val
180 185 190

Thr Lys Phe Met Leu Cys Ala Gly Arg Trp Thr Gly Gly Lys Ser Thr
195 200 205

Cys Ser Gly Asp Ser Gly Gly Pro Leu Val Cys Asn Gly Val Leu Gln
210 215 220

Gly Ile Thr Ser Trp Gly Ser Glu Pro Cys Ala Leu Pro Glu Arg Pro
225 230 235 240

Ser Leu Tyr Thr Lys Val Val His Tyr Arg Lys Trp Ile Lys Asp Thr
245 250 255

Ile Val Ala Asn Pro
260

<210> 45
<211> 1729
<212> DNA
<213> Artificial sequence

<220>
<223> Nucleotide molecule encoding the KLK3 protein

<400> 45

P-78391-PC-SEQ-LISTING-18DEC15

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caagatatgg tctgggcgct gtcttgtgtc tcctaccctg atccctgggt tcaactctgc	120
tcccagagca tgaagcctct ccaccagcac cagccaccaa cctgcaaacc tagggaagat	180
tgacagaatt cccagccttt cccagctccc cctgcccattg tcccaggact cccagccttg	240
gttctctgcc cccgtgtctt ttcaaaccca catcctaaat ccatctccta tccgagtccc	300
ccagttcctc ctgtcaaccc tgattcccct gatctagcac cccctctgca ggtgctgcac	360
ccctcatcct gtctcggatt gtgggaggct gggagtgca gaagcattcc caaccctggc	420
aggtgcttgt agcctctcgt ggcagggcag tctgcggcgg tgttctgggtg ccccccagt	480
gggtcctcac agtaccac tgcatcagga acaaaagcgt gatcttgctg ggtcggcaca	540
gcctgtttca tcctgaagac acaggccagg tatttcagggt cagccacagc ttcccacacc	600
cgctctacga tatgagcctc ctgaagaatc gattcctcag gccaggatgat gactccagcc	660
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ccaaccctg agcacccta tcaactcct attgtagtaa acttggaacc ttggaaatga	1140
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gtaattttgt cctctctgtg tcctggggaa tactggccat gcctggagac atatcactca	1320
atttctctga ggacacagat aggatgggggt gtctgtgtta tttgtgggggt acagagatga	1380
aagaggggtg ggatccacac tgagagagtg gagagtgaca tgtgctggac actgtccatg	1440
aagcactgag cagaagctgg aggcacaacg caccagacac tcacagcaag gatggagctg	1500
aaaacataac ccactctgtc ctggaggcac tgggaagcct agagaaggct gtgaaccaag	1560
gagggagggt cttcctttgg catgggatgg ggatgaagta aggagagggga ctgacccct	1620
ggaagctgat tcactatggg gggagggtga ttgaagtcct ccagacaacc ctcagatttg	1680
atgatttcct agtagaactc acagaaataa agagctgtta tactgtgaa	1729

<210> 46
 <211> 69
 <212> PRT
 <213> Artificial Sequence

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<220>

<223> KLK3 protein

<400> 46

Met Trp Val Pro Val Val Phe Leu Thr Leu Ser Val Thr Trp Ile Gly
1 5 10 15

Ala Ala Pro Leu Ile Leu Ser Arg Ile Val Gly Gly Trp Glu Cys Glu
20 25 30

Lys His Ser Gln Pro Trp Gln Val Leu Val Ala Ser Arg Gly Arg Ala
35 40 45

Val Cys Gly Gly Val Leu Val His Pro Gln Trp Val Leu Thr Ala Ala
50 55 60

His Cys Ile Arg Lys
65

<210> 47

<211> 220

<212> PRT

<213> Artificial Sequence

<220>

<223> KLK3 protein that is the source of the KLK3 peptide

<400> 47

Met Trp Val Pro Val Val Phe Leu Thr Leu Ser Val Thr Trp Ile Gly
1 5 10 15

Ala Ala Pro Leu Ile Leu Ser Arg Ile Val Gly Gly Trp Glu Cys Glu
20 25 30

Lys His Ser Gln Pro Trp Gln Val Leu Val Ala Ser Arg Gly Arg Ala
35 40 45

Val Cys Gly Gly Val Leu Val His Pro Gln Trp Val Leu Thr Ala Ala
50 55 60

His Cys Ile Arg Asn Lys Ser Val Ile Leu Leu Gly Arg His Ser Leu
65 70 75 80

Phe His Pro Glu Asp Thr Gly Gln Val Phe Gln Val Ser His Ser Phe
85 90 95

Pro His Pro Leu Tyr Asp Met Ser Leu Leu Lys Asn Arg Phe Leu Arg
100 105 110

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

Lys Leu Gln Cys Val Asp Leu His Val Ile Ser Asn Asp Val Cys Ala
130 135 140

Gln Val His Pro Gln Lys Val Thr Lys Phe Met Leu Cys Ala Gly Arg
145 150 155 160

Trp Thr Gly Gly Lys Ser Thr Cys Ser Gly Asp Ser Gly Gly Pro Leu
165 170 175

Val Cys Asn Gly Val Leu Gln Gly Ile Thr Ser Trp Gly Ser Glu Pro
180 185 190

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

Arg Lys Trp Ile Lys Asp Thr Ile Val Ala Asn Pro
210 215 220

<210> 48
<211> 218
<212> PRT
<213> Artificial Sequence

<220>
<223> KLK3 protein

<400> 48

Met Trp Val Pro Val Val Phe Leu Thr Leu Ser Val Thr Trp Ile Gly
1 5 10 15

Ala Ala Pro Leu Ile Leu Ser Arg Ile Val Gly Gly Trp Glu Cys Glu
20 25 30

Lys His Ser Gln Pro Trp Gln Val Leu Val Ala Ser Arg Gly Arg Ala
35 40 45

Val Cys Gly Gly Val Leu Val His Pro Gln Trp Val Leu Thr Ala Ala
50 55 60

His Cys Ile Arg Lys Pro Gly Asp Asp Ser Ser His Asp Leu Met Leu
65 70 75 80

Leu Arg Leu Ser Glu Pro Ala Glu Leu Thr Asp Ala Val Lys Val Met
85 90 95

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Asp Leu Pro Thr Gln Glu Pro Ala Leu Gly Thr Thr Cys Tyr Ala Ser
100 105 110

Gly Trp Gly Ser Ile Glu Pro Glu Glu Phe Leu Thr Pro Lys Lys Leu
115 120 125

Gln Cys Val Asp Leu His Val Ile Ser Asn Asp Val Cys Ala Gln Val
130 135 140

His Pro Gln Lys Val Thr Lys Phe Met Leu Cys Ala Gly Arg Trp Thr
145 150 155 160

Gly Gly Lys Ser Thr Cys Ser Gly Asp Ser Gly Gly Pro Leu Val Cys
165 170 175

Asn Gly Val Leu Gln Gly Ile Thr Ser Trp Gly Ser Glu Pro Cys Ala
180 185 190

Leu Pro Glu Arg Pro Ser Leu Tyr Thr Lys Val Val His Tyr Arg Lys
195 200 205

Trp Ile Lys Asp Thr Ile Val Ala Asn Pro
210 215

<210> 49
<211> 24
<212> PRT
<213> Artificial Sequence

<220>
<223> Sequence lacking when KLK3 protein is encoded
<400> 49

Met Trp Val Pro Val Val Phe Leu Thr Leu Ser Val Thr Trp Ile Gly
1 5 10 15

Ala Ala Pro Leu Ile Leu Ser Arg
20

<210> 50
<211> 2040
<212> DNA
<213> Artificial Sequence

<220>
<223> Nucleotide molecule encoding a LLO fused to a PSA protein

<400> 50
atgaaaaaaa taatgctagt ttttattaca cttatattag ttagtctacc aattgcgcaa 60
caactgaag caaaggatgc atctgcattc aataaagaaa attcaatttc atccatggca 120

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ccaccagcat	ctccgcctgc	aagtcctaag	acgccaatcg	aaaagaaaca	cgcggatgaa	180
atcgataagt	atatacaagg	attggattac	aataaaaaaca	atgtattagt	ataccacgga	240
gatgcagtga	caaatgtgcc	gccaagaaaa	ggttacaaag	atggaaatga	atatattggt	300
gtggagaaaa	agaagaaatc	catcaatcaa	aataatgcag	acattcaagt	tgtgaatgca	360
atttcgagcc	taacctatcc	aggtgctctc	gtaaaagcga	attcggaatt	agtagaaaat	420
caaccagatg	ttctccctgt	aaaacgtgat	tcattaacac	tcagcattga	tttgccagggt	480
atgactaatc	aagacaataa	aatagttgta	aaaaatgcca	ctaaatcaaa	cgttaacaac	540
gcagtaaata	cattagtgga	aagatggaat	gaaaaatatg	ctcaagctta	tccaaatgta	600
agtgcacaaa	ttgattatga	tgacgaaatg	gcttacagtg	aatcacaatt	aattgcgaaa	660
tttggtacag	catttaaagc	tgtaaataat	agcttgaatg	taaacttcgg	cgcaatcagt	720
gaagggaaaa	tgcaagaaga	agtcattagt	tttaaacaaa	tttactataa	cgtgaatggt	780
aatgaaccta	caagaccttc	cagatTTTTc	ggcaaagctg	ttactaaaga	gcagttgcaa	840
gcgcttgag	tgaatgcaga	aaatcctcct	gcataatatct	caagtgtggc	gtatggccgt	900
caagtttatt	tgaaattatc	aactaattcc	catagtacta	aagtaaaagc	tgcttttgat	960
gctgccgtaa	gcggaaaatc	tgtctcaggt	gatgtagaac	taacaaatat	catcaaaaat	1020
tcttccttca	aagccgtaat	ttacggaggt	tccgcaaaag	atgaagttca	aatcatcgac	1080
ggcaacctcg	gagacttacg	cgatattttg	aaaaaaggcg	ctacttttaa	tcgagaaaca	1140
ccaggagttc	ccattgctta	tacaacaaac	ttcctaaaag	acaatgaatt	agctgttatt	1200
aaaaacaact	cagaatatat	tgaaacaact	tcaaaagctt	atacagatgg	aaaaattaac	1260
atcgatcact	ctggaggata	cgttgctcaa	ttcaacattt	cttgggatga	agtaaattat	1320
gatctcgaga	ttgtgggagg	ctgggagtg	gagaagcatt	cccaaccctg	gcagggtgctt	1380
gtggcctctc	gtggcagggc	agtctgcggc	ggtgttctgg	tgcaccccca	gtgggtcctc	1440
acagctgccc	actgcatcag	gaacaaaagc	gtgatcttgc	tgggtcggca	cagcctgttt	1500
catcctgaag	acacaggcca	ggtatttcag	gtcagccaca	gcttcccaca	cccgtcttac	1560
gatatgagcc	tcctgaagaa	tcgattcctc	aggccagggtg	atgactccag	ccacgacctc	1620
atgctgctcc	gcctgtcaga	gcctgccgag	ctcacggatg	ctgtgaagggt	catggacctg	1680
cccaccagg	agccagcact	ggggaccacc	tgctacgcct	caggctgggg	cagcattgaa	1740
ccagaggagt	tcttgacccc	aaagaaactt	cagtgtgtgg	acctccatgt	tatttccaat	1800
gacgtgtgtg	cgcaagttca	ccctcagaag	gtgaccaagt	tcattgctgtg	tgctggacgc	1860
tggacagggg	gcaaaagcac	ctgctcgggt	gattctgggg	gccacttgt	ctgttatggt	1920
gtgcttcaag	gtatcacgtc	atggggcagt	gaaccatgtg	ccctgcccga	aaggccttcc	1980
ctgtacacca	aggtggtgca	ttaccggaag	tggatcaagg	acaccatcgt	ggccaacccc	2040

P-78391-PC-SEQ-LISTING-18DEC15

<210> 51
 <211> 680
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> LLO fused to a PSA protein

<400> 51

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Met Lys Lys Ile Met Leu Val Phe Ile Thr Leu Ile Leu Val Ser Leu
 1           5           10           15

Pro Ile Ala Gln Gln Thr Glu Ala Lys Asp Ala Ser Ala Phe Asn Lys
          20           25           30

Glu Asn Ser Ile Ser Ser Met Ala Pro Pro Ala Ser Pro Pro Ala Ser
      35           40           45

Pro Lys Thr Pro Ile Glu Lys Lys His Ala Asp Glu Ile Asp Lys Tyr
 50           55           60

Ile Gln Gly Leu Asp Tyr Asn Lys Asn Asn Val Leu Val Tyr His Gly
65           70           75           80

Asp Ala Val Thr Asn Val Pro Pro Arg Lys Gly Tyr Lys Asp Gly Asn
      85           90           95

Glu Tyr Ile Val Val Glu Lys Lys Lys Lys Ser Ile Asn Gln Asn Asn
      100          105          110

Ala Asp Ile Gln Val Val Asn Ala Ile Ser Ser Leu Thr Tyr Pro Gly
      115          120          125

Ala Leu Val Lys Ala Asn Ser Glu Leu Val Glu Asn Gln Pro Asp Val
      130          135          140

Leu Pro Val Lys Arg Asp Ser Leu Thr Leu Ser Ile Asp Leu Pro Gly
145          150          155          160

Met Thr Asn Gln Asp Asn Lys Ile Val Val Lys Asn Ala Thr Lys Ser
      165          170          175

Asn Val Asn Asn Ala Val Asn Thr Leu Val Glu Arg Trp Asn Glu Lys
      180          185          190

Tyr Ala Gln Ala Tyr Pro Asn Val Ser Ala Lys Ile Asp Tyr Asp Asp
      195          200          205
    
```

P-78391-PC-SEQ-LISTING-18DEC15

Glu Met Ala Tyr Ser Glu Ser Gln Leu Ile Ala Lys Phe Gly Thr Ala
210 215 220

Phe Lys Ala Val Asn Asn Ser Leu Asn Val Asn Phe Gly Ala Ile Ser
225 230 235 240

Glu Gly Lys Met Gln Glu Glu Val Ile Ser Phe Lys Gln Ile Tyr Tyr
245 250 255

Asn Val Asn Val Asn Glu Pro Thr Arg Pro Ser Arg Phe Phe Gly Lys
260 265 270

Ala Val Thr Lys Glu Gln Leu Gln Ala Leu Gly Val Asn Ala Glu Asn
275 280 285

Pro Pro Ala Tyr Ile Ser Ser Val Ala Tyr Gly Arg Gln Val Tyr Leu
290 295 300

Lys Leu Ser Thr Asn Ser His Ser Thr Lys Val Lys Ala Ala Phe Asp
305 310 315 320

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

Ile Ile Lys Asn Ser Ser Phe Lys Ala Val Ile Tyr Gly Gly Ser Ala
340 345 350

Lys Asp Glu Val Gln Ile Ile Asp Gly Asn Leu Gly Asp Leu Arg Asp
355 360 365

Ile Leu Lys Lys Gly Ala Thr Phe Asn Arg Glu Thr Pro Gly Val Pro
370 375 380

Ile Ala Tyr Thr Thr Asn Phe Leu Lys Asp Asn Glu Leu Ala Val Ile
385 390 395 400

Lys Asn Asn Ser Glu Tyr Ile Glu Thr Thr Ser Lys Ala Tyr Thr Asp
405 410 415

Gly Lys Ile Asn Ile Asp His Ser Gly Gly Tyr Val Ala Gln Phe Asn
420 425 430

Ile Ser Trp Asp Glu Val Asn Tyr Asp Leu Glu Ile Val Gly Gly Trp
435 440 445

Glu Cys Glu Lys His Ser Gln Pro Trp Gln Val Leu Val Ala Ser Arg
450 455 460

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Gly Arg Ala Val Cys Gly Gly Val Leu Val His Pro Gln Trp Val Leu
465 470 475 480

Thr Ala Ala His Cys Ile Arg Asn Lys Ser Val Ile Leu Leu Gly Arg
485 490 495

His Ser Leu Phe His Pro Glu Asp Thr Gly Gln Val Phe Gln Val Ser
500 505 510

His Ser Phe Pro His Pro Leu Tyr Asp Met Ser Leu Leu Lys Asn Arg
515 520 525

Phe Leu Arg Pro Gly Asp Asp Ser Ser His Asp Leu Met Leu Leu Arg
530 535 540

Leu Ser Glu Pro Ala Glu Leu Thr Asp Ala Val Lys Val Met Asp Leu
545 550 555 560

Pro Thr Gln Glu Pro Ala Leu Gly Thr Thr Cys Tyr Ala Ser Gly Trp
565 570 575

Gly Ser Ile Glu Pro Glu Glu Phe Leu Thr Pro Lys Lys Leu Gln Cys
580 585 590

Val Asp Leu His Val Ile Ser Asn Asp Val Cys Ala Gln Val His Pro
595 600 605

Gln Lys Val Thr Lys Phe Met Leu Cys Ala Gly Arg Trp Thr Gly Gly
610 615 620

Lys Ser Thr Cys Ser Gly Asp Ser Gly Gly Pro Leu Val Cys Tyr Gly
625 630 635 640

Val Leu Gln Gly Ile Thr Ser Trp Gly Ser Glu Pro Cys Ala Leu Pro
645 650 655

Glu Arg Pro Ser Leu Tyr Thr Lys Val Val His Tyr Arg Lys Trp Ile
660 665 670

Lys Asp Thr Ile Val Ala Asn Pro
675 680

<210> 52
<211> 98
<212> PRT
<213> Artificial Sequence

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<220>

<223> E7 protein

<400> 52

Met His Gly Asp Thr Pro Thr Leu His Glu Tyr Met Leu Asp Leu Gln
1 5 10 15

Pro Glu Thr Thr Asp Leu Tyr Cys Tyr Glu Gln Leu Asn Asp Ser Ser
20 25 30

Glu Glu Glu Asp Glu Ile Asp Gly Pro Ala Gly Gln Ala Glu Pro Asp
35 40 45

Arg Ala His Tyr Asn Ile Val Thr Phe Cys Cys Lys Cys Asp Ser Thr
50 55 60

Leu Arg Leu Cys Val Gln Ser Thr His Val Asp Ile Arg Thr Leu Glu
65 70 75 80

Asp Leu Leu Met Gly Thr Leu Gly Ile Val Cys Pro Ile Cys Ser Gln
85 90 95

Lys Pro

<210> 53

<211> 105

<212> PRT

<213> Artificial sequence

<220>

<223> E7 protein

<400> 53

Met His Gly Pro Lys Ala Thr Leu Gln Asp Ile Val Leu His Leu Glu
1 5 10 15

Pro Gln Asn Glu Ile Pro Val Asp Leu Leu Cys His Glu Gln Leu Ser
20 25 30

Asp Ser Glu Glu Glu Asn Asp Glu Ile Asp Gly Val Asn His Gln His
35 40 45

Leu Pro Ala Arg Arg Ala Glu Pro Gln Arg His Thr Met Leu Cys Met
50 55 60

Cys Cys Lys Cys Glu Ala Arg Ile Glu Leu Val Val Glu Ser Ser Ala
65 70 75 80

P-78391-PC-SEQ-LISTING-18DEC15

Asp Asp Leu Arg Ala Phe Gln Gln Leu Phe Leu Asn Thr Leu Ser Phe
85 90 95

Val Cys Pro Trp Cys Ala Ser Gln Gln
100 105

<210> 54
<211> 97
<212> PRT
<213> Artificial Sequence

<220>
<223> E7 protein

<400> 54

His Gly Asp Thr Pro Thr Leu His Glu Tyr Met Leu Asp Leu Gln Pro
1 5 10 15

Glu Thr Thr Asp Leu Tyr Cys Tyr Glu Gln Leu Asn Asp Ser Ser Glu
20 25 30

Glu Glu Asp Glu Ile Asp Gly Pro Ala Gly Gln Ala Glu Pro Asp Arg
35 40 45

Ala His Tyr Asn Ile Val Thr Phe Cys Cys Lys Cys Asp Ser Thr Leu
50 55 60

Arg Leu Cys Val Gln Ser Thr His Val Asp Ile Arg Thr Leu Glu Asp
65 70 75 80

Leu Leu Met Gly Thr Leu Gly Ile Val Cys Pro Ile Cys Ser Gln Lys
85 90 95

Pro

<210> 55
<211> 540
<212> PRT
<213> Artificial Sequence

<220>
<223> Truncated LLO fused to an E7 protein

<400> 55

Met Lys Lys Ile Met Leu Val Phe Ile Thr Leu Ile Leu Val Ser Leu
1 5 10 15

Pro Ile Ala Gln Gln Thr Glu Ala Lys Asp Ala Ser Ala Phe Asn Lys
20 25 30

P-78391-PC-SEQ-LISTING-18DEC15

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

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Pro Pro Ala Tyr Ile Ser Ser Val Ala Tyr Gly Arg Gln Val Tyr Leu
290 295 300

Lys Leu Ser Thr Asn Ser His Ser Thr Lys Val Lys Ala Ala Phe Asp
305 310 315 320

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

Ile Ile Lys Asn Ser Ser Phe Lys Ala Val Ile Tyr Gly Gly Ser Ala
340 345 350

Lys Asp Glu Val Gln Ile Ile Asp Gly Asn Leu Gly Asp Leu Arg Asp
355 360 365

Ile Leu Lys Lys Gly Ala Thr Phe Asn Arg Glu Thr Pro Gly Val Pro
370 375 380

Ile Ala Tyr Thr Thr Asn Phe Leu Lys Asp Asn Glu Leu Ala Val Ile
385 390 395 400

Lys Asn Asn Ser Glu Tyr Ile Glu Thr Thr Ser Lys Ala Tyr Thr Asp
405 410 415

Gly Lys Ile Asn Ile Asp His Ser Gly Gly Tyr Val Ala Gln Phe Asn
420 425 430

Ile Ser Trp Asp Glu Val Asn Tyr Asp Leu Glu His Gly Asp Thr Pro
435 440 445

Thr Leu His Glu Tyr Met Leu Asp Leu Gln Pro Glu Thr Thr Asp Leu
450 455 460

Tyr Cys Tyr Glu Gln Leu Asn Asp Ser Ser Glu Glu Glu Asp Glu Ile
465 470 475 480

Asp Gly Pro Ala Gly Gln Ala Glu Pro Asp Arg Ala His Tyr Asn Ile
485 490 495

Val Thr Phe Cys Cys Lys Cys Asp Ser Thr Leu Arg Leu Cys Val Gln
500 505 510

Ser Thr His Val Asp Ile Arg Thr Leu Glu Asp Leu Leu Met Gly Thr
515 520 525

Leu Gly Ile Val Cys Pro Ile Cys Ser Gln Lys Pro

530

<210> 56
<211> 1263
<212> DNA
<213> Artificial Sequence

<220>
<223> Nucleotide molecule encoding the Her-2 chimeric protein

<400> 56
gagaccacc tggacatgct ccgccacctc taccagggct gccaggtggt gcagggaaac 60
ctggaactca cctacctgcc caccaatgcc agcctgtcct tcctgcagga tatccaggag 120
gtgcagggct acgtgctcat cgctcacaac caagtgaggc aggtccact gcagaggctg 180
cggattgtgc gaggcaccca gctctttgag gacaactatg ccctggccgt gctagacaat 240
ggagaccgc tgaacaatac caccctgtc acaggggcct cccagaggag cctgcgggag 300
ctgcagcttc gaagcctcac agagatcttg aaaggagggg tcttgatcca gcggaacccc 360
cagctctgct accaggacac gatctttgtg aagaatatcc aggagtttgc tggctgcaag 420
aagatctttg ggagcctggc atttctgccg gagagctttg atggggaccc agcctccaac 480
actgccccgc tccagccaga gcagctcaa gtgtttgaga ctctggaaga gatcacaggt 540
tacctataca tctcagcatg gccggacagc ctgcctgacc tcagcgtctt ccagaacctg 600
caagtaatcc ggggacgaat tctgcacaat ggcgcctact cgctgaccct gcaagggctg 660
ggcatcagct ggctggggct gcgctcactg agggaaactgg gcagtggact ggccctcatc 720
caccataaca cccacctctg cttcgtgcac acggtgccct gggaccagct ctttcggaac 780
ccgcaccaag ctctgctcca cactgccaac cggccagagg acgagtgtgt gggcgagggc 840
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caggcgaga tgcggatcct gaaagagacg gagctgagga aggtgaaggt gcttgatct 1020
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ccagtggcca tcaaagtgtt gagggaaaac acatcccca aagccaacaa agaaatctta 1140
gacgaagcat acgtgatggc tgggtgtggc tccccatatg tctccgcct tctgggcatc 1200
tgcctgacat ccacggtgca gctggtgaca cagcttatgc cctatggctg cctcttagac 1260
taa 1263

<210> 57
<211> 419
<212> PRT
<213> Artificial Sequence

<220>

<223> Her-2 chimeric protein

<400> 57

Thr His Leu Asp Met Leu Arg His Leu Tyr Gln Gly Cys Gln Val Val
 1 5 10 15
 Gln Gly Asn Leu Glu Leu Thr Tyr Leu Pro Thr Asn Ala Ser Leu Ser
 20 25 30
 Phe Leu Gln Asp Ile Gln Glu Val Gln Gly Tyr Val Leu Ile Ala His
 35 40 45
 Asn Gln Val Arg Gln Val Pro Leu Gln Arg Leu Arg Ile Val Arg Gly
 50 55 60
 Thr Gln Leu Phe Glu Asp Asn Tyr Ala Leu Ala Val Leu Asp Asn Gly
 65 70 75 80
 Asp Pro Leu Asn Asn Thr Thr Pro Val Thr Gly Ala Ser Pro Gly Gly
 85 90 95
 Leu Arg Glu Leu Gln Leu Arg Ser Leu Thr Glu Ile Leu Lys Gly Gly
 100 105 110
 Val Leu Ile Gln Arg Asn Pro Gln Leu Cys Tyr Gln Asp Thr Ile Leu
 115 120 125
 Trp Lys Asn Ile Gln Glu Phe Ala Gly Cys Lys Lys Ile Phe Gly Ser
 130 135 140
 Leu Ala Phe Leu Pro Glu Ser Phe Asp Gly Asp Pro Ala Ser Asn Thr
 145 150 155 160
 Ala Pro Leu Gln Pro Glu Gln Leu Gln Val Phe Glu Thr Leu Glu Glu
 165 170 175
 Ile Thr Gly Tyr Leu Tyr Ile Ser Ala Trp Pro Asp Ser Leu Pro Asp
 180 185 190
 Leu Ser Val Phe Gln Asn Leu Gln Val Ile Arg Gly Arg Ile Leu His
 195 200 205
 Asn Gly Ala Tyr Ser Leu Thr Leu Gln Gly Leu Gly Ile Ser Trp Leu
 210 215 220
 Gly Leu Arg Ser Leu Arg Glu Leu Gly Ser Gly Leu Ala Leu Ile His
 225 230 235 240

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His Asn Thr His Leu Cys Phe Val His Thr Val Pro Trp Asp Gln Leu
245 250 255

Phe Arg Asn Pro His Gln Ala Leu Leu His Thr Ala Asn Arg Pro Glu
260 265 270

Asp Glu Cys Val Gly Glu Gly Leu Ala Cys His Gln Leu Cys Ala Arg
275 280 285

Gly Gln Gln Lys Ile Arg Lys Tyr Thr Met Arg Arg Leu Leu Gln Glu
290 295 300

Thr Glu Leu Val Glu Pro Leu Thr Pro Ser Gly Ala Met Pro Asn Gln
305 310 315 320

Ala Gln Met Arg Ile Leu Lys Glu Thr Glu Leu Arg Lys Val Lys Val
325 330 335

Leu Gly Ser Gly Ala Phe Gly Thr Val Tyr Lys Gly Ile Trp Ile Pro
340 345 350

Asp Gly Glu Asn Val Lys Ile Pro Val Ala Ile Lys Val Leu Arg Glu
355 360 365

Asn Thr Ser Pro Lys Ala Asn Lys Glu Ile Leu Asp Glu Ala Tyr Val
370 375 380

Met Ala Gly Val Gly Ser Pro Tyr Val Ser Arg Leu Leu Gly Ile Cys
385 390 395 400

Leu Thr Ser Thr Val Gln Leu Val Thr Gln Leu Met Pro Tyr Gly Cys
405 410 415

Leu Leu Asp

<210> 58

<211> 2586

<212> DNA

<213> Artificial Sequence

<220>

<223> open reading frame encoding tLLO fused to Cher2

<400> 58

atgaaaaaaa taatgctagt ttttattaca cttatattag ttagtctacc aattgcgcaa 60

caactgaag caaaggatgc atctgcattc aataaagaaa attcaatttc atccatggca 120

ccaccagcat ctccgcctgc aagtcctaag acgccaatcg aaaagaaaca cgcggatgaa 180

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<400> 59

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Lys Asn Asn Ser Glu Tyr Ile Glu Thr Thr Ser Lys Ala Tyr Thr Asp
405 410 415

Gly Lys Ile Asn Ile Asp His Ser Gly Gly Tyr Val Ala Gln Phe Asn
420 425 430

Ile Ser Trp Asp Glu Val Asn Tyr Asp Leu Glu Thr His Leu Asp Met
435 440 445

Leu Arg His Leu Tyr Gln Gly Cys Gln Val Val Gln Gly Asn Leu Glu
450 455 460

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

Gln Glu Val Gln Gly Tyr Val Leu Ile Ala His Asn Gln Val Arg Gln
485 490 495

Val Pro Leu Gln Arg Leu Arg Ile Val Arg Gly Thr Gln Leu Phe Glu
500 505 510

Asp Asn Tyr Ala Leu Ala Val Leu Asp Asn Gly Asp Pro Leu Asn Asn
515 520 525

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

Leu Arg Ser Leu Thr Glu Ile Leu Lys Gly Gly Val Leu Ile Gln Arg
545 550 555 560

Asn Pro Gln Leu Cys Tyr Gln Asp Thr Ile Leu Trp Lys Asn Ile Gln
565 570 575

Glu Phe Ala Gly Cys Lys Lys Ile Phe Gly Ser Leu Ala Phe Leu Pro
580 585 590

Glu Ser Phe Asp Gly Asp Pro Ala Ser Asn Thr Ala Pro Leu Gln Pro
595 600 605

Glu Gln Leu Gln Val Phe Glu Thr Leu Glu Glu Ile Thr Gly Tyr Leu
610 615 620

Tyr Ile Ser Ala Trp Pro Asp Ser Leu Pro Asp Leu Ser Val Phe Gln
625 630 635 640

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Asn Leu Gln Val Ile Arg Gly Arg Ile Leu His Asn Gly Ala Tyr Ser
645 650 655

Leu Thr Leu Gln Gly Leu Gly Ile Ser Trp Leu Gly Leu Arg Ser Leu
660 665 670

Arg Glu Leu Gly Ser Gly Leu Ala Leu Ile His His Asn Thr His Leu
675 680 685

Cys Phe Val His Thr Val Pro Trp Asp Gln Leu Phe Arg Asn Pro His
690 695 700

Gln Ala Leu Leu His Thr Ala Asn Arg Pro Glu Asp Glu Cys Val Gly
705 710 715 720

Glu Gly Leu Ala Cys His Gln Leu Cys Ala Arg Gly Gln Gln Lys Ile
725 730 735

Arg Lys Tyr Thr Met Arg Arg Leu Leu Gln Glu Thr Glu Leu Val Glu
740 745 750

Pro Leu Thr Pro Ser Gly Ala Met Pro Asn Gln Ala Gln Met Arg Ile
755 760 765

Leu Lys Glu Thr Glu Leu Arg Lys Val Lys Val Leu Gly Ser Gly Ala
770 775 780

Phe Gly Thr Val Tyr Lys Gly Ile Trp Ile Pro Asp Gly Glu Asn Val
785 790 795 800

Lys Ile Pro Val Ala Ile Lys Val Leu Arg Glu Asn Thr Ser Pro Lys
805 810 815

Ala Asn Lys Glu Ile Leu Asp Glu Ala Tyr Val Met Ala Gly Val Gly
820 825 830

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<223> Human-Her2/neu gene

<400> 60

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 <213> Artificial Sequence

<220>
 <223> Nucleotide molecule encoding the human her2/neu EC1 fragment implemented into the chimera

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gtgcagggt acgtgctcat cgctcacaac caagtgaggc aggtcccact gcagaggctg	180
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 <212> DNA
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 <223> EC1 human her2/neu fragment

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<220>
 <223> EC2 human her2/neu fragment

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agtggactgg ccctcatcca ccataacacc cacctctgct tcgtgcacac ggtgccctgg 540
gaccagctct ttcggaaccc gcaccaagct ctgctccaca ctgccaaccg gccagag 597

<210> 65
<211> 391
<212> DNA
<213> Artificial Sequence

<220>
<223> Nucleotide molecule encoding the human her2/neu IC1 fragment implemented into the chimera

<400> 65
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