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<110> University of Basel

<120> Bacteria-based protein delivery

<130> P3119PC00

<160> 199

<170> PatentIn version 3.5

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<213> Yersinia enterocolitica

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Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                  10                  15


Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30


Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45


Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60


Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80


Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95


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


Thr Leu Pro Lys Tyr Met Gln Gln Leu Ser Ser Leu Asp Ala Glu Thr
        115                 120                 125
```

```
Leu Gln Lys Asn His Asp Gln Phe Ala Thr Gly Ser Gly Pro Leu Arg
    130                 135                 140

Gly Ser Ile Thr Gln Cys Gln Gly Leu Met Gln Phe Cys Gly Gly Glu
145                 150                 155                 160

Leu Gln Ala Glu Ala Ser Ala Ile Leu Asn Thr Pro Val Cys Gly Ile
                165                 170                 175

Pro Phe Ser Gln Trp Gly Thr Val Gly Gly Ala Ala Ser Ala Tyr Val
            180                 185                 190

Ala Ser Gly Val Asp Leu Thr Gln Ala Ala Asn Glu Ile Lys Gly Leu
        195                 200                 205

Gly Gln Gln Met Gln Gln Leu Leu Ser Leu Met
    210                 215
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<210> 2
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<400> 2

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Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                   10                  15

Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30

Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45

Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60

Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80
```

```
Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95


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


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


Leu Gln Lys Asn His Asp Gln Phe Ala Thr
    130                 135


<210>  3
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<213>  Artificial Sequence

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<223>  YopE1-138-MycHis

<400>  3

Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                   10                  15


Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30


Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45


Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60


Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80


Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95
```

```
Pro Ser Pro Thr Ser Phe Ser Asp Ser Ile Lys Gln Leu Ala Ala Glu
            100                 105                 110

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

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Ser Arg Phe Glu
    130                 135                 140

Lys Leu Gly Pro Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu Asn Ser
145                 150                 155                 160

Ala Val Asp His His His His His His
                165
```

<210> 4
<211> 348
<212> PRT
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<220>
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```
Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                   10                  15

Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30

Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45

Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60

Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80
```

```
Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95

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

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

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Met Gln Ile Leu
    130                 135                 140

Asn Lys Ile Leu Pro Gln Val Glu Phe Ala Ile Pro Arg Pro Ser Phe
145                 150                 155                 160

Asp Ser Leu Ser Arg Asn Lys Leu Val Lys Lys Ile Leu Ser Val Phe
                165                 170                 175

Asn Leu Lys Gln Arg Phe Pro Gln Lys Asn Phe Gly Cys Pro Val Asn
            180                 185                 190

Ile Asn Lys Ile Arg Asp Ser Val Ile Asp Lys Ile Lys Asp Ser Asn
        195                 200                 205

Ser Gly Asn Gln Leu Phe Cys Trp Met Ser Gln Glu Arg Thr Thr Tyr
    210                 215                 220

Val Ser Ser Met Ile Asn Arg Ser Ile Asp Glu Met Ala Ile His Asn
225                 230                 235                 240

Gly Val Val Leu Thr Ser Asp Asn Lys Arg Asn Ile Phe Ala Ala Ile
                245                 250                 255

Glu Lys Lys Phe Pro Asp Ile Lys Leu Asp Glu Lys Ser Ala Gln Thr
            260                 265                 270
```

```
Ser Ile Ser His Thr Ala Leu Asn Glu Ile Ala Ser Ser Gly Leu Arg
        275                 280                 285

Ala Lys Ile Leu Lys Arg Tyr Ser Ser Asp Met Asp Leu Phe Asn Thr
    290                 295                 300

Gln Met Lys Asp Leu Thr Asn Leu Val Ser Ser Ser Val Tyr Asp Lys
305                 310                 315                 320

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

Val Leu Lys Ala Val Tyr Arg Gln Ser Asn Thr Asn
            340                 345
```

<210> 5
<211> 380
<212> PRT
<213> Artificial Sequence

<220>
<223> YopE1-138 - SopE

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Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                   10                  15

Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30

Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45

Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60

Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80
```

```
Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95

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

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

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Val Thr Asn Ile
    130                 135                 140

Thr Leu Ser Thr Gln His Tyr Arg Ile His Arg Ser Asp Val Glu Pro
145                 150                 155                 160

Val Lys Glu Lys Thr Thr Glu Lys Asp Ile Phe Ala Lys Ser Ile Thr
                165                 170                 175

Ala Val Arg Asn Ser Phe Ile Ser Leu Ser Thr Ser Leu Ser Asp Arg
            180                 185                 190

Phe Ser Leu His Gln Gln Thr Asp Ile Pro Thr Thr His Phe His Arg
        195                 200                 205

Gly Asn Ala Ser Glu Gly Arg Ala Val Leu Thr Ser Lys Thr Val Lys
    210                 215                 220

Asp Phe Met Leu Gln Lys Leu Asn Ser Leu Asp Ile Lys Gly Asn Ala
225                 230                 235                 240

Ser Lys Asp Pro Ala Tyr Ala Arg Gln Thr Cys Glu Ala Ile Leu Ser
                245                 250                 255

Ala Val Tyr Ser Asn Asn Lys Asp Gln Cys Cys Lys Leu Leu Ile Ser
            260                 265                 270

Lys Gly Val Ser Ile Thr Pro Phe Leu Lys Glu Ile Gly Glu Ala Ala
        275                 280                 285
```

```
Gln Asn Ala Gly Leu Pro Gly Glu Ile Lys Asn Gly Val Phe Thr Pro
    290                 295                 300

Gly Gly Ala Gly Ala Asn Pro Phe Val Val Pro Leu Ile Ala Ser Ala
305                 310                 315                 320

Ser Ile Lys Tyr Pro His Met Phe Ile Asn His Asn Gln Gln Val Ser
                325                 330                 335

Phe Lys Ala Tyr Ala Glu Lys Ile Val Met Lys Glu Val Thr Pro Leu
            340                 345                 350

Phe Asn Lys Gly Thr Met Pro Thr Pro Gln Gln Phe Gln Leu Thr Ile
        355                 360                 365

Glu Asn Ile Ala Asn Lys Tyr Leu Gln Asn Ala Ser
    370                 375                 380
```

<210> 6
<211> 701
<212> PRT
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<223> YopE1-138 - SopB

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```
Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                   10                  15

Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30

Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45

Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60
```

```
Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80

Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95

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

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

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Met Gln Ile Gln
    130                 135                 140

Ser Phe Tyr His Ser Ala Ser Leu Lys Thr Gln Glu Ala Phe Lys Ser
145                 150                 155                 160

Leu Gln Lys Thr Leu Tyr Asn Gly Met Gln Ile Leu Ser Gly Gln Gly
                165                 170                 175

Lys Ala Pro Ala Lys Ala Pro Asp Ala Arg Pro Glu Ile Ile Val Leu
            180                 185                 190

Arg Glu Pro Gly Ala Thr Trp Gly Asn Tyr Leu Gln His Gln Lys Ala
        195                 200                 205

Ser Asn His Ser Leu His Asn Leu Tyr Asn Leu Gln Arg Asp Leu Leu
    210                 215                 220

Thr Val Ala Ala Thr Val Leu Gly Lys Gln Asp Pro Val Leu Thr Ser
225                 230                 235                 240

Met Ala Asn Gln Met Glu Leu Ala Lys Val Lys Ala Asp Arg Pro Ala
                245                 250                 255
```

```
Thr Lys Gln Glu Glu Ala Ala Ala Lys Ala Leu Lys Lys Asn Leu Ile
            260                 265                 270

Glu Leu Ile Ala Ala Arg Thr Gln Gln Gln Asp Gly Leu Pro Ala Lys
        275                 280                 285

Glu Ala His Arg Phe Ala Ala Val Ala Phe Arg Asp Ala Gln Val Lys
    290                 295                 300

Gln Leu Asn Asn Gln Pro Trp Gln Thr Ile Lys Asn Thr Leu Thr His
305                 310                 315                 320

Asn Gly His His Tyr Thr Asn Thr Gln Leu Pro Ala Ala Glu Met Lys
                325                 330                 335

Ile Gly Ala Lys Asp Ile Phe Pro Ser Ala Tyr Glu Gly Lys Gly Val
            340                 345                 350

Cys Ser Trp Asp Thr Lys Asn Ile His His Ala Asn Asn Leu Trp Met
        355                 360                 365

Ser Thr Val Ser Val His Glu Asp Gly Lys Asp Lys Thr Leu Phe Cys
    370                 375                 380

Gly Ile Arg His Gly Val Leu Ser Pro Tyr His Glu Lys Asp Pro Leu
385                 390                 395                 400

Leu Arg His Val Gly Ala Glu Asn Lys Ala Lys Glu Val Leu Thr Ala
                405                 410                 415

Ala Leu Phe Ser Lys Pro Glu Leu Leu Asn Lys Ala Leu Ala Gly Glu
            420                 425                 430

Ala Val Ser Leu Lys Leu Val Ser Val Gly Leu Leu Thr Ala Ser Asn
        435                 440                 445

Ile Phe Gly Lys Glu Gly Thr Met Val Glu Asp Gln Met Arg Ala Trp
    450                 455                 460
```

```
Gln Ser Leu Thr Gln Pro Gly Lys Met Ile His Leu Lys Ile Arg Asn
465                 470                 475                 480

Lys Asp Gly Asp Leu Gln Thr Val Lys Ile Lys Pro Asp Val Ala Ala
                485                 490                 495

Phe Asn Val Gly Val Asn Glu Leu Ala Leu Lys Leu Gly Phe Gly Leu
            500                 505                 510

Lys Ala Ser Asp Ser Tyr Asn Ala Glu Ala Leu His Gln Leu Leu Gly
        515                 520                 525

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

Leu Ala Gln Tyr Pro Asp Asn Tyr Glu Val Val Asn Thr Leu Ala Arg
545                 550                 555                 560

Gln Ile Lys Asp Ile Trp Lys Asn Asn Gln His His Lys Asp Gly Gly
                565                 570                 575

Glu Pro Tyr Lys Leu Ala Gln Arg Leu Ala Met Leu Ala His Glu Ile
            580                 585                 590

Asp Ala Val Pro Ala Trp Asn Cys Lys Ser Gly Lys Asp Arg Thr Gly
        595                 600                 605

Met Met Asp Ser Glu Ile Lys Arg Glu Ile Ile Ser Leu His Gln Thr
    610                 615                 620

His Met Leu Ser Ala Pro Gly Ser Leu Pro Asp Ser Gly Gly Gln Lys
625                 630                 635                 640

Ile Phe Gln Lys Val Leu Leu Asn Ser Gly Asn Leu Glu Ile Gln Lys
                645                 650                 655
```

```
Gln Asn Thr Gly Gly Ala Gly Asn Lys Val Met Lys Asn Leu Ser Pro
            660                 665                 670


Glu Val Leu Asn Leu Ser Tyr Gln Lys Arg Val Gly Asp Glu Asn Ile
        675                 680                 685


Trp Gln Ser Val Lys Gly Ile Ser Ser Leu Ile Thr Ser
    690                 695                 700
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<210> 7
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<213> Artificial Sequence

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<223> YopE1-138 - OspF

<400> 7

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Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                   10                  15


Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30


Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45


Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60


Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80


Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95


Pro Ser Pro Thr Ser Phe Ser Asp Ser Ile Lys Gln Leu Ala Ala Glu
            100                 105                 110
```

```
Thr Leu Pro Lys Tyr Met Gln Gln Leu Ser Ser Leu Asp Ala Glu Thr
        115                 120                 125

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Ser Arg Phe Glu
    130                 135                 140

Met Pro Ile Lys Lys Pro Cys Leu Lys Leu Asn Leu Asp Ser Leu Asn
145                 150                 155                 160

Val Val Arg Ser Glu Ile Pro Gln Met Leu Ser Ala Asn Glu Arg Leu
                165                 170                 175

Lys Asn Asn Phe Asn Ile Leu Tyr Asn Gln Ile Arg Gln Tyr Pro Ala
            180                 185                 190

Tyr Tyr Phe Lys Val Ala Ser Asn Val Pro Thr Tyr Ser Asp Ile Cys
        195                 200                 205

Gln Ser Phe Ser Val Met Tyr Gln Gly Phe Gln Ile Val Asn His Ser
    210                 215                 220

Gly Asp Val Phe Ile His Ala Cys Arg Glu Asn Pro Gln Ser Lys Gly
225                 230                 235                 240

Asp Phe Val Gly Asp Lys Phe His Ile Ser Ile Ala Arg Glu Gln Val
                245                 250                 255

Pro Leu Ala Phe Gln Ile Leu Ser Gly Leu Leu Phe Ser Glu Asp Ser
            260                 265                 270

Pro Ile Asp Lys Trp Lys Ile Thr Asp Met Asn Arg Val Ser Gln Gln
        275                 280                 285

Ser Arg Val Gly Ile Gly Ala Gln Phe Thr Leu Tyr Val Lys Ser Asp
    290                 295                 300

Gln Glu Cys Ser Gln Tyr Ser Ala Leu Leu Leu His Lys Ile Arg Gln
305                 310                 315                 320
```

```
Phe Ile Met Cys Leu Glu Ser Asn Leu Leu Arg Ser Lys Ile Ala Pro
                325                 330                 335


Gly Glu Tyr Pro Ala Ser Asp Val Arg Pro Glu Asp Trp Lys Tyr Val
            340                 345                 350


Ser Tyr Arg Asn Glu Leu Arg Ser Asp Arg Asp Gly Ser Glu Arg Gln
        355                 360                 365


Glu Gln Met Leu Arg Glu Glu Pro Phe Tyr Arg Leu Met Ile Glu
    370                 375                 380


<210>  8
<211>  685
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  YopE1-138 - SptP

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Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                   10                  15


Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30


Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45


Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60


Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80


Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95
```

```
Pro Ser Pro Thr Ser Phe Ser Asp Ser Ile Lys Gln Leu Ala Ala Glu
            100                 105                 110

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

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Ser Arg Met Leu
    130                 135                 140

Lys Tyr Glu Glu Arg Lys Leu Asn Asn Leu Thr Leu Ser Ser Phe Ser
145                 150                 155                 160

Lys Val Gly Val Ser Asn Asp Ala Arg Leu Tyr Ile Ala Lys Glu Asn
                165                 170                 175

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

Thr Trp Leu Gly Lys Met Pro Leu Phe Lys Asn Thr Glu Val Val Gln
        195                 200                 205

Lys His Thr Glu Asn Ile Arg Val Gln Asp Gln Lys Ile Leu Gln Thr
    210                 215                 220

Phe Leu His Ala Leu Thr Glu Lys Tyr Gly Glu Thr Ala Val Asn Asp
225                 230                 235                 240

Ala Leu Leu Met Ser Arg Ile Asn Met Asn Lys Pro Leu Thr Gln Arg
                245                 250                 255

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

Ile Asn Leu Ile Lys Ser Lys Asp Asn Val Gly Val Arg Asn Ala Ala
        275                 280                 285
```

```
Leu Val Ile Lys Gly Gly Asp Thr Lys Val Ala Glu Lys Asn Asn Asp
    290                 295                 300

Val Gly Ala Glu Ser Lys Gln Pro Leu Leu Asp Ile Ala Leu Lys Gly
305                 310                 315                 320

Leu Lys Arg Thr Leu Pro Gln Leu Glu Gln Met Asp Gly Asn Ser Leu
                325                 330                 335

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

Leu Met Thr Asn Leu Gln Asn Leu Asn Lys Ile Pro Glu Ala Lys Gln
        355                 360                 365

Leu Asn Asp Tyr Val Thr Thr Leu Thr Asn Ile Gln Val Gly Val Ala
    370                 375                 380

Arg Phe Ser Gln Trp Gly Thr Cys Gly Gly Glu Val Glu Arg Trp Val
385                 390                 395                 400

Asp Lys Ala Ser Thr His Glu Leu Thr Gln Ala Val Lys Lys Ile His
                405                 410                 415

Val Ile Ala Lys Glu Leu Lys Asn Val Thr Ala Glu Leu Glu Lys Ile
            420                 425                 430

Glu Ala Gly Ala Pro Met Pro Gln Thr Met Ser Gly Pro Thr Leu Gly
        435                 440                 445

Leu Ala Arg Phe Ala Val Ser Ser Ile Pro Ile Asn Gln Gln Thr Gln
    450                 455                 460

Val Lys Leu Ser Asp Gly Met Pro Val Pro Val Asn Thr Leu Thr Phe
465                 470                 475                 480

Asp Gly Lys Pro Val Ala Leu Ala Gly Ser Tyr Pro Lys Asn Thr Pro
                485                 490                 495
```

```
Asp Ala Leu Glu Ala His Met Lys Met Leu Leu Glu Lys Glu Cys Ser
            500                 505                 510

Cys Leu Val Val Leu Thr Ser Glu Asp Gln Met Gln Ala Lys Gln Leu
        515                 520                 525

Pro Pro Tyr Phe Arg Gly Ser Tyr Thr Phe Gly Glu Val His Thr Asn
    530                 535                 540

Ser Gln Lys Val Ser Ser Ala Ser Gln Gly Glu Ala Ile Asp Gln Tyr
545                 550                 555                 560

Asn Met Gln Leu Ser Cys Gly Glu Lys Arg Tyr Thr Ile Pro Val Leu
                565                 570                 575

His Val Lys Asn Trp Pro Asp His Gln Pro Leu Pro Ser Thr Asp Gln
            580                 585                 590

Leu Glu Tyr Leu Ala Asp Arg Val Lys Asn Ser Asn Gln Asn Gly Ala
        595                 600                 605

Pro Gly Arg Ser Ser Ser Asp Lys His Leu Pro Met Ile His Cys Leu
    610                 615                 620

Gly Gly Val Gly Arg Thr Gly Thr Met Ala Ala Ala Leu Val Leu Lys
625                 630                 635                 640

Asp Asn Pro His Ser Asn Leu Glu Gln Val Arg Ala Asp Phe Arg Asp
                645                 650                 655

Ser Arg Asn Asn Arg Met Leu Glu Asp Ala Ser Gln Phe Val Gln Leu
            660                 665                 670

Lys Ala Met Gln Ala Gln Leu Leu Met Thr Thr Ala Ser
        675                 680                 685
```

<210> 9
<211> 678
<212> PRT
<213> Artificial Sequence

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<223> YopE1-138 - IpgD

<400> 9

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Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                   10                  15


Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30


Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45


Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60


Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80


Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95


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


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


Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Met His Ile Thr
    130                 135                 140


Asn Leu Gly Leu His Gln Val Ser Phe Gln Ser Gly Asp Ser Tyr Lys
145                 150                 155                 160
```

```
Gly Ala Glu Glu Thr Gly Lys His Lys Gly Val Ser Val Ile Ser Tyr
                165                 170                 175

Gln Arg Val Lys Asn Gly Glu Arg Asn Lys Gly Ile Glu Ala Leu Asn
            180                 185                 190

Arg Leu Tyr Leu Gln Asn Gln Thr Ser Leu Thr Gly Lys Ser Leu Leu
        195                 200                 205

Phe Ala Arg Asp Lys Ala Glu Val Phe Cys Glu Ala Ile Lys Leu Ala
    210                 215                 220

Gly Gly Asp Thr Ser Lys Ile Lys Ala Met Met Glu Arg Leu Asp Thr
225                 230                 235                 240

Tyr Lys Leu Gly Glu Val Asn Lys Arg His Ile Asn Glu Leu Asn Lys
                245                 250                 255

Val Ile Ser Glu Glu Ile Arg Ala Gln Leu Gly Ile Lys Asn Lys Lys
            260                 265                 270

Glu Leu Gln Thr Lys Ile Lys Gln Ile Phe Thr Asp Tyr Leu Asn Asn
        275                 280                 285

Lys Asn Trp Gly Pro Val Asn Lys Asn Ile Ser His His Gly Lys Asn
    290                 295                 300

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

Asn Ile Phe Val Lys Glu Tyr Asn Gly Lys Gly Ile Cys Cys Ala Ser
                325                 330                 335

Thr Arg Glu Arg Asp His Ile Ala Asn Met Trp Leu Ser Lys Val Val
            340                 345                 350

Asp Asp Glu Gly Lys Glu Ile Phe Ser Gly Ile Arg His Gly Val Ile
        355                 360                 365
```

```
Ser Ala Tyr Gly Leu Lys Lys Asn Ser Ser Glu Arg Ala Val Ala Ala
    370                 375                 380

Arg Asn Lys Ala Glu Glu Leu Val Ser Ala Ala Leu Tyr Ser Arg Pro
385                 390                 395                 400

Glu Leu Leu Ser Gln Ala Leu Ser Gly Lys Thr Val Asp Leu Lys Ile
                405                 410                 415

Val Ser Thr Ser Leu Leu Thr Pro Thr Ser Leu Thr Gly Gly Glu Glu
            420                 425                 430

Ser Met Leu Lys Asp Gln Val Ser Ala Leu Lys Gly Leu Asn Ser Lys
        435                 440                 445

Arg Gly Gly Pro Thr Lys Leu Leu Ile Arg Asn Ser Asp Gly Leu Leu
    450                 455                 460

Lys Glu Val Ser Val Asn Leu Lys Val Val Thr Phe Asn Phe Gly Val
465                 470                 475                 480

Asn Glu Leu Ala Leu Lys Met Gly Leu Gly Trp Arg Asn Val Asp Lys
                485                 490                 495

Leu Asn Asp Glu Ser Ile Cys Ser Leu Leu Gly Asp Asn Phe Leu Lys
            500                 505                 510

Asn Gly Val Ile Gly Gly Trp Ala Ala Glu Ala Ile Glu Lys Asn Pro
        515                 520                 525

Pro Cys Lys Asn Asp Val Ile Tyr Leu Ala Asn Gln Ile Lys Glu Ile
    530                 535                 540

Val Asn Asn Lys Leu Gln Lys Asn Asp Asn Gly Glu Pro Tyr Lys Leu
545                 550                 555                 560
```

```
Ser Gln Arg Val Thr Leu Leu Ala Tyr Thr Ile Gly Ala Val Pro Cys
                565                 570                 575


Trp Asn Cys Lys Ser Gly Lys Asp Arg Thr Gly Met Gln Asp Ala Glu
            580                 585                 590


Ile Lys Arg Glu Ile Ile Arg Lys His Glu Thr Gly Gln Phe Ser Gln
        595                 600                 605


Leu Asn Ser Lys Leu Ser Ser Glu Glu Lys Arg Leu Phe Ser Thr Ile
    610                 615                 620


Leu Met Asn Ser Gly Asn Met Glu Ile Gln Glu Met Asn Thr Gly Val
625                 630                 635                 640


Pro Gly Asn Lys Val Met Lys Lys Leu Pro Leu Ser Ser Leu Glu Leu
                645                 650                 655


Ser Tyr Ser Glu Arg Ile Gly Asp Pro Lys Ile Trp Asn Met Val Lys
            660                 665                 670


Gly Tyr Ser Ser Phe Val
        675


<210>  10
<211>  446
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  YopE1-138 - BepA

<400>  10

Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                   10                  15


Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30
```

```
Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45

Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60

Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80

Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95

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

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

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Ser Arg Met Pro
    130                 135                 140

Lys Ala Lys Ala Lys Thr Lys Asn Thr Glu Ile Ile Ser Pro His His
145                 150                 155                 160

Tyr Val Tyr Pro Asn Thr Thr Thr Leu Lys Asn Lys Tyr Gly Ile Lys
                165                 170                 175

Asn Leu Asn Ala Phe Leu Glu Lys Cys Ser His Asp Thr Ala Lys Ala
            180                 185                 190

Met Ile Asn Leu Arg Glu Glu Ser Leu Pro Glu Tyr Phe Asp Thr Ala
        195                 200                 205

Tyr Leu Cys His Ile His Gln Gln Leu Phe Lys Asn Thr Phe Glu Trp
    210                 215                 220

Ala Gly Tyr Leu Arg His Ile Pro Phe Thr Phe Ala Asp Gly Thr Thr
225                 230                 235                 240
```

```
Ala Ala Met Pro Glu Met Lys Arg Thr Gly Trp Lys Asn Ala Phe Ala
               245                 250                 255

Ile Gly Asp Glu Ile Gln Glu Gly Leu Gln Arg Leu Asp Gln Thr Leu
            260                 265                 270

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

Glu Ala Ile Glu Leu Phe Asn Ser Leu Asn Gln Leu His Pro Phe Arg
    290                 295                 300

Glu Gly Asn Gly Arg Thr Gln Arg Leu Phe Phe Glu Asn Leu Ala Lys
305                 310                 315                 320

Ala Ala Gly His Gln Leu Asn Phe Ser Leu Ile Thr Lys Glu Arg Met
               325                 330                 335

Met Val Ala Ser Val Ala Val Ala Glu Asn Gly Asp Leu Glu Pro Met
            340                 345                 350

Gln His Leu Phe Glu Asp Ile Ser Asn Pro Glu Lys Ile Arg Leu Leu
        355                 360                 365

Lys Glu Phe Met His Thr Met Lys Asn Thr Gly Arg Asn Val Asn Asp
    370                 375                 380

Arg Pro Val Met Val Ala Lys Glu Gly Glu Thr Tyr Thr Gly Thr Tyr
385                 390                 395                 400

Arg Gly Ala Gly Leu Glu Gly Phe Ala Leu Asn Val Lys Gly Ala Tyr
               405                 410                 415

Ile Ile Gly Asn Ile Asp His Leu Pro Pro Glu Gln Leu Lys Ile Leu
            420                 425                 430
```

Lys Pro Gly Asp Lys Ile Thr Phe Thr Ala Pro Lys Ala Glu
        435   440   445

<210> 11
<211> 284
<212> PRT
<213> Artificial Sequence

<220>
<223> YopE1-138 - BepA E305-end

<400> 11

Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1   5   10   15

Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20   25   30

Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35   40   45

Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50   55   60

Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65   70   75   80

Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85   90   95

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

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

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Ser Arg Glu Gly
    130   135   140

```
Asn Gly Arg Thr Gln Arg Leu Phe Phe Glu Asn Leu Ala Lys Ala Ala
145                 150                 155                 160


Gly His Gln Leu Asn Phe Ser Leu Ile Thr Lys Glu Arg Met Met Val
                165                 170                 175


Ala Ser Val Ala Val Ala Glu Asn Gly Asp Leu Glu Pro Met Gln His
            180                 185                 190


Leu Phe Glu Asp Ile Ser Asn Pro Glu Lys Ile Arg Leu Leu Lys Glu
        195                 200                 205


Phe Met His Thr Met Lys Asn Thr Gly Arg Asn Val Asn Asp Arg Pro
    210                 215                 220


Val Met Val Ala Lys Glu Gly Glu Thr Tyr Thr Gly Thr Tyr Arg Gly
225                 230                 235                 240


Ala Gly Leu Glu Gly Phe Ala Leu Asn Val Lys Gly Ala Tyr Ile Ile
                245                 250                 255


Gly Asn Ile Asp His Leu Pro Pro Glu Gln Leu Lys Ile Leu Lys Pro
            260                 265                 270


Gly Asp Lys Ile Thr Phe Thr Ala Pro Lys Ala Glu
        275                 280


<210>  12
<211>  672
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  YopE1-138 - murine Traf6

<400>  12

Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                   10                  15
```

```
Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30

Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45

Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60

Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80

Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95

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

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

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Ser Arg Met Ser
    130                 135                 140

Leu Leu Asn Cys Glu Asn Ser Cys Gly Ser Ser Gln Ser Ser Ser Asp
145                 150                 155                 160

Cys Cys Ala Ala Met Ala Ala Ser Cys Ser Ala Ala Val Lys Asp Asp
                165                 170                 175

Ser Val Ser Gly Ser Ala Ser Thr Gly Asn Leu Ser Ser Ser Phe Met
            180                 185                 190

Glu Glu Ile Gln Gly Tyr Asp Val Glu Phe Asp Pro Pro Leu Glu Ser
        195                 200                 205

Lys Tyr Glu Cys Pro Ile Cys Leu Met Ala Leu Arg Glu Ala Val Gln
    210                 215                 220
```

```
Thr Pro Cys Gly His Arg Phe Cys Lys Ala Cys Ile Ile Lys Ser Ile
225                 230                 235                 240

Arg Asp Ala Gly His Lys Cys Pro Val Asp Asn Glu Ile Leu Leu Glu
                245                 250                 255

Asn Gln Leu Phe Pro Asp Asn Phe Ala Lys Arg Glu Ile Leu Ser Leu
            260                 265                 270

Thr Val Lys Cys Pro Asn Lys Gly Cys Leu Gln Lys Met Glu Leu Arg
        275                 280                 285

His Leu Glu Asp His Gln Val His Cys Glu Phe Ala Leu Val Asn Cys
    290                 295                 300

Pro Gln Cys Gln Arg Pro Phe Gln Lys Cys Gln Val Asn Thr His Ile
305                 310                 315                 320

Ile Glu Asp Cys Pro Arg Arg Gln Val Ser Cys Val Asn Cys Ala Val
                325                 330                 335

Ser Met Ala Tyr Glu Glu Lys Glu Ile His Asp Gln Ser Cys Pro Leu
            340                 345                 350

Ala Asn Ile Ile Cys Glu Tyr Cys Gly Thr Ile Leu Ile Arg Glu Gln
        355                 360                 365

Met Pro Asn His Tyr Asp Leu Asp Cys Pro Thr Ala Pro Ile Pro Cys
    370                 375                 380

Thr Phe Ser Val Phe Gly Cys His Gln Lys Met Gln Arg Asn His Leu
385                 390                 395                 400

Ala Arg His Leu Gln Glu Asn Thr Gln Leu His Met Arg Leu Leu Ala
                405                 410                 415
```

```
Gln Ala Val His Asn Val Asn Leu Ala Leu Arg Pro Cys Asp Ala Ala
            420                 425                 430

Ser Pro Ser Arg Gly Cys Arg Pro Glu Asp Pro Asn Tyr Glu Glu Thr
        435                 440                 445

Ile Lys Gln Leu Glu Ser Arg Leu Val Arg Gln Asp His Gln Ile Arg
    450                 455                 460

Glu Leu Thr Ala Lys Met Glu Thr Gln Ser Met Tyr Val Gly Glu Leu
465                 470                 475                 480

Lys Arg Thr Ile Arg Thr Leu Glu Asp Lys Val Ala Glu Met Glu Ala
                485                 490                 495

Gln Gln Cys Asn Gly Ile Tyr Ile Trp Lys Ile Gly Lys Phe Gly Met
            500                 505                 510

His Leu Lys Ser Gln Glu Glu Glu Arg Pro Val Val Ile His Ser Pro
        515                 520                 525

Gly Phe Tyr Thr Gly Arg Pro Gly Tyr Lys Leu Cys Met Arg Leu His
    530                 535                 540

Leu Gln Leu Pro Thr Ala Gln Arg Cys Ala Asn Tyr Ile Ser Leu Phe
545                 550                 555                 560

Val His Thr Met Gln Gly Glu Tyr Asp Ser His Leu Pro Trp Pro Phe
                565                 570                 575

Gln Gly Thr Ile Arg Leu Thr Ile Leu Asp Gln Ser Glu Ala Leu Ile
            580                 585                 590

Arg Gln Asn His Glu Glu Val Met Asp Ala Lys Pro Glu Leu Leu Ala
        595                 600                 605

Phe Gln Arg Pro Thr Ile Pro Arg Asn Pro Lys Gly Phe Gly Tyr Val
    610                 615                 620
```

```
Thr Phe Met His Leu Glu Ala Leu Arg Gln Gly Thr Phe Ile Lys Asp
625                 630                 635                 640


Asp Thr Leu Leu Val Arg Cys Glu Val Ser Thr Arg Phe Asp Met Gly
                645                 650                 655


Gly Leu Arg Lys Glu Gly Phe Gln Pro Arg Ser Thr Asp Ala Gly Val
            660                 665                 670


<210>  13
<211>  326
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  YopE1-138 - TIFA

<400>  13

Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                   10                  15


Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30


Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45


Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60


Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80


Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95


Pro Ser Pro Thr Ser Phe Ser Asp Ser Ile Lys Gln Leu Ala Ala Glu
            100                 105                 110
```

```
Thr Leu Pro Lys Tyr Met Gln Gln Leu Ser Ser Leu Asp Ala Glu Thr
        115                 120                 125

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Ser Arg Met Thr
    130                 135                 140

Ser Phe Glu Asp Ala Asp Thr Glu Glu Thr Val Thr Cys Leu Gln Met
145                 150                 155                 160

Thr Val Tyr His Pro Gly Gln Leu Gln Cys Gly Ile Phe Gln Ser Ile
                165                 170                 175

Ser Phe Asn Arg Glu Lys Leu Pro Ser Ser Glu Val Val Lys Phe Gly
            180                 185                 190

Arg Asn Ser Asn Ile Cys His Tyr Thr Phe Gln Asp Lys Gln Val Ser
        195                 200                 205

Arg Val Gln Phe Ser Leu Gln Leu Phe Lys Lys Phe Asn Ser Ser Val
    210                 215                 220

Leu Ser Phe Glu Ile Lys Asn Met Ser Lys Lys Thr Asn Leu Ile Val
225                 230                 235                 240

Asp Ser Arg Glu Leu Gly Tyr Leu Asn Lys Met Asp Leu Pro Tyr Arg
                245                 250                 255

Cys Met Val Arg Phe Gly Glu Tyr Gln Phe Leu Met Glu Lys Glu Asp
            260                 265                 270

Gly Glu Ser Leu Glu Phe Phe Glu Thr Gln Phe Ile Leu Ser Pro Arg
        275                 280                 285

Ser Leu Leu Gln Glu Asn Asn Trp Pro Pro His Arg Pro Ile Pro Glu
    290                 295                 300
```

Tyr Gly Thr Tyr Ser Leu Cys Ser Ser Gln Ser Ser Ser Pro Thr Glu
305 310 315 320

Met Asp Glu Asn Glu Ser
325

<210> 14
<211> 437
<212> PRT
<213> Artificial Sequence

<220>
<223> YopE1-138 - Cdk1

<400> 14

Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1 5 10 15

Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
20 25 30

Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
35 40 45

Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
50 55 60

Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65 70 75 80

Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
85 90 95

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

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

```
Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Met Glu Asp Tyr
    130                 135                 140

Thr Lys Ile Glu Lys Ile Gly Glu Gly Thr Tyr Gly Val Val Tyr Lys
145                 150                 155                 160

Gly Arg His Lys Thr Thr Gly Gln Val Val Ala Met Lys Lys Ile Arg
                165                 170                 175

Leu Glu Ser Glu Glu Glu Gly Val Pro Ser Thr Ala Ile Arg Glu Ile
            180                 185                 190

Ser Leu Leu Lys Glu Leu Arg His Pro Asn Ile Val Ser Leu Gln Asp
        195                 200                 205

Val Leu Met Gln Asp Ser Arg Leu Tyr Leu Ile Phe Glu Phe Leu Ser
    210                 215                 220

Met Asp Leu Lys Lys Tyr Leu Asp Ser Ile Pro Pro Gly Gln Tyr Met
225                 230                 235                 240

Asp Ser Ser Leu Val Lys Ser Tyr Leu Tyr Gln Ile Leu Gln Gly Ile
                245                 250                 255

Val Phe Cys His Ser Arg Arg Val Leu His Arg Asp Leu Lys Pro Gln
            260                 265                 270

Asn Leu Leu Ile Asp Asp Lys Gly Thr Ile Lys Leu Ala Asp Phe Gly
        275                 280                 285

Leu Ala Arg Ala Phe Gly Ile Pro Ile Arg Val Tyr Thr His Glu Val
    290                 295                 300

Val Thr Leu Trp Tyr Arg Ser Pro Glu Val Leu Leu Gly Ser Ala Arg
305                 310                 315                 320

Tyr Ser Thr Pro Val Asp Ile Trp Ser Ile Gly Thr Ile Phe Ala Glu
                325                 330                 335
```

```
Leu Ala Thr Lys Lys Pro Leu Phe His Gly Asp Ser Glu Ile Asp Gln
            340                 345                 350

Leu Phe Arg Ile Phe Arg Ala Leu Gly Thr Pro Asn Asn Glu Val Trp
        355                 360                 365

Pro Glu Val Glu Ser Leu Gln Asp Tyr Lys Asn Thr Phe Pro Lys Trp
    370                 375                 380

Lys Pro Gly Ser Leu Ala Ser His Val Lys Asn Leu Asp Glu Asn Gly
385                 390                 395                 400

Leu Asp Leu Leu Ser Lys Met Leu Ile Tyr Asp Pro Ala Lys Arg Ile
                405                 410                 415

Ser Gly Lys Met Ala Leu Asn His Pro Tyr Phe Asn Asp Leu Asp Asn
            420                 425                 430

Gln Ile Lys Lys Met
        435
```

<210> 15
<211> 347
<212> PRT
<213> Artificial Sequence

<220>
<223> YopE1-138 - Mad2

<400> 15

```
Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                   10                  15

Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30

Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45
```

```
Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60

Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80

Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95

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

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

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Ser Arg Met Ala
    130                 135                 140

Leu Gln Leu Ser Arg Glu Gln Gly Ile Thr Leu Arg Gly Ser Ala Glu
145                 150                 155                 160

Ile Val Ala Glu Phe Phe Ser Phe Gly Ile Asn Ser Ile Leu Tyr Gln
                165                 170                 175

Arg Gly Ile Tyr Pro Ser Glu Thr Phe Thr Arg Val Gln Lys Tyr Gly
            180                 185                 190

Leu Thr Leu Leu Val Thr Thr Asp Leu Glu Leu Ile Lys Tyr Leu Asn
        195                 200                 205

Asn Val Val Glu Gln Leu Lys Asp Trp Leu Tyr Lys Cys Ser Val Gln
    210                 215                 220

Lys Leu Val Val Val Ile Ser Asn Ile Glu Ser Gly Glu Val Leu Glu
225                 230                 235                 240
```

```
Arg Trp Gln Phe Asp Ile Glu Cys Asp Lys Thr Ala Lys Asp Asp Ser
                245                 250                 255


Ala Pro Arg Glu Lys Ser Gln Lys Ala Ile Gln Asp Glu Ile Arg Ser
            260                 265                 270


Val Ile Arg Gln Ile Thr Ala Thr Val Thr Phe Leu Pro Leu Leu Glu
        275                 280                 285


Val Ser Cys Ser Phe Asp Leu Leu Ile Tyr Thr Asp Lys Asp Leu Val
    290                 295                 300


Val Pro Glu Lys Trp Glu Glu Ser Gly Pro Gln Phe Ile Thr Asn Ser
305                 310                 315                 320


Glu Glu Val Arg Leu Arg Ser Phe Thr Thr Thr Ile His Lys Val Asn
                325                 330                 335


Ser Met Val Ala Tyr Lys Ile Pro Val Asn Asp
            340                 345


<210>  16
<211>  298
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  YopE1-138 - Ink4A

<400>  16

Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                   10                  15


Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30


Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45
```

```
Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60

Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80

Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95

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

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

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Ser Arg Met Glu
    130                 135                 140

Pro Ala Ala Gly Ser Ser Met Glu Pro Ser Ala Asp Trp Leu Ala Thr
145                 150                 155                 160

Ala Ala Ala Arg Gly Arg Val Glu Glu Val Arg Ala Leu Leu Glu Ala
                165                 170                 175

Gly Ala Leu Pro Asn Ala Pro Asn Ser Tyr Gly Arg Arg Pro Ile Gln
            180                 185                 190

Val Met Met Met Gly Ser Ala Arg Val Ala Glu Leu Leu Leu Leu His
        195                 200                 205

Gly Ala Glu Pro Asn Cys Ala Asp Pro Ala Thr Leu Thr Arg Pro Val
    210                 215                 220

His Asp Ala Ala Arg Glu Gly Phe Leu Asp Thr Leu Val Val Leu His
225                 230                 235                 240

Arg Ala Gly Ala Arg Leu Asp Val Arg Asp Ala Trp Gly Arg Leu Pro
                245                 250                 255
```

Val Asp Leu Ala Glu Glu Leu Gly His Arg Asp Val Ala Arg Tyr Leu
            260   265   270

Arg Ala Ala Ala Gly Gly Thr Arg Gly Ser Asn His Ala Arg Ile Asp
        275   280   285

Ala Ala Glu Gly Pro Ser Asp Ile Pro Asp
    290   295

<210> 17
<211> 280
<212> PRT
<213> Artificial Sequence

<220>
<223> YopE1-138 - Ink4B

<400> 17

Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1   5   10   15

Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20   25   30

Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35   40   45

Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50   55   60

Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65   70   75   80

Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85   90   95

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

```
Thr Leu Pro Lys Tyr Met Gln Gln Leu Ser Ser Leu Asp Ala Glu Thr
        115                 120                 125

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Ser Arg Met Arg
    130                 135                 140

Glu Glu Asn Lys Gly Met Pro Ser Gly Gly Gly Ser Asp Glu Gly Leu
145                 150                 155                 160

Ala Ser Ala Ala Ala Arg Gly Leu Val Glu Lys Val Arg Gln Leu Leu
                165                 170                 175

Glu Ala Gly Ala Asp Pro Asn Gly Val Asn Arg Phe Gly Arg Arg Ala
            180                 185                 190

Ile Gln Val Met Met Met Gly Ser Ala Arg Val Ala Glu Leu Leu Leu
        195                 200                 205

Leu His Gly Ala Glu Pro Asn Cys Ala Asp Pro Ala Thr Leu Thr Arg
    210                 215                 220

Pro Val His Asp Ala Ala Arg Glu Gly Phe Leu Asp Thr Leu Val Val
225                 230                 235                 240

Leu His Arg Ala Gly Ala Arg Leu Asp Val Arg Asp Ala Trp Gly Arg
                245                 250                 255

Leu Pro Val Asp Leu Ala Glu Glu Arg Gly His Arg Asp Val Ala Gly
            260                 265                 270

Tyr Leu Arg Thr Ala Thr Gly Asp
        275                 280
```

<210> 18
<211> 310
<212> PRT
<213> Artificial Sequence

<220>
<223> YopE1-138 - Ink4C

<400> 18

```
Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                   10                  15


Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30


Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45


Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60


Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80


Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95


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


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


Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Ser Arg Met Ala
    130                 135                 140


Glu Pro Trp Gly Asn Glu Leu Ala Ser Ala Ala Ala Arg Gly Asp Leu
145                 150                 155                 160


Glu Gln Leu Thr Ser Leu Leu Gln Asn Asn Val Asn Val Asn Ala Gln
                165                 170                 175
```

```
Asn Gly Phe Gly Arg Thr Ala Leu Gln Val Met Lys Leu Gly Asn Pro
            180                 185                 190


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


Asp Arg Thr Gly Phe Ala Val Ile His Asp Ala Ala Arg Ala Gly Phe
    210                 215                 220


Leu Asp Thr Leu Gln Ala Leu Pro Glu Phe Gln Ala Asp Val Asn Ile
225                 230                 235                 240


Glu Asp Asn Glu Gly Asn Leu Pro Leu His Leu Ala Ala Lys Glu Gly
                245                 250                 255


His Leu Arg Val Val Glu Phe Leu Val Lys His Thr Ala Ser Asn Val
            260                 265                 270


Gly His Arg Asn His Lys Gly Asp Thr Ala Cys Asp Leu Ala Arg Leu
        275                 280                 285


Tyr Gly Arg Asn Glu Val Val Ser Leu Met Gln Ala Asn Gly Ala Gly
    290                 295                 300


Gly Ala Thr Asn Leu Gln
305                 310


<210>  19
<211>  329
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  YopE1-138 - z-Bid

<400>  19

Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                   10                  15
```

```
Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30

Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45

Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60

Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80

Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95

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

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

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Ser Arg Met Asp
    130                 135                 140

Phe Asn Arg Asn Phe Asp His Ile Pro His Thr Ser Leu Val Leu Leu
145                 150                 155                 160

Ser Phe Leu Asn Gln Lys Asp Cys Gln Asn Gly Glu Ser Gly Arg Val
                165                 170                 175

Phe Asp Tyr Arg Glu Asp Asn Leu Ser Thr Asn His Ile Asp Ser Asp
            180                 185                 190

Gly Asp Ile Glu Thr Asp Gly His Ser Pro Pro Ala Thr Tyr Arg Asp
        195                 200                 205

Leu Leu His Glu Leu Gln His Glu Val Gln Pro Gly Leu Ser Val Asn
    210                 215                 220
```

```
Ala Glu Glu Ala Arg Ala Ala Arg Glu Met Ala Ala Glu Leu Ile Arg
225                 230                 235                 240


Ile Ala Asp Leu Leu Glu Gln Ser Val Leu Ser Gln Ala Ala Glu Ser
                245                 250                 255


Leu Thr Lys Lys Leu Arg Ser Phe Gln Glu Gln Val Trp Ala Ser His
            260                 265                 270


Leu Ser Lys Gly Val Gln Thr Leu Leu Gln His Val Ala Ala Ala Lys
        275                 280                 285


Glu Phe Lys Lys Glu Leu Val Glu Met Ala Phe Thr Phe Met Leu Met
    290                 295                 300


Lys Thr Val Cys Glu Arg Thr Pro Asp Phe Leu Phe Gly Leu Tyr Gly
305                 310                 315                 320


Thr Val Val Gln Phe Phe Gly Ser Asn
                325
```

<210> 20
<211> 273
<212> PRT
<213> Artificial Sequence

<220>
<223> YopE1-138 - z-t-Bid

<400> 20

```
Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                   10                  15


Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30


Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45
```

```
Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60

Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80

Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95

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

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

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Ser Arg Gly His
    130                 135                 140

Ser Pro Pro Ala Thr Tyr Arg Asp Leu Leu His Glu Leu Gln His Glu
145                 150                 155                 160

Val Gln Pro Gly Leu Ser Val Asn Ala Glu Glu Ala Arg Ala Ala Arg
                165                 170                 175

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

Val Leu Ser Gln Ala Ala Glu Ser Leu Thr Lys Lys Leu Arg Ser Phe
        195                 200                 205

Gln Glu Gln Val Trp Ala Ser His Leu Ser Lys Gly Val Gln Thr Leu
    210                 215                 220

Leu Gln His Val Ala Ala Ala Lys Glu Phe Lys Lys Glu Leu Val Glu
225                 230                 235                 240
```

Met Ala Phe Thr Phe Met Leu Met Lys Thr Val Cys Glu Arg Thr Pro
245 250 255

Asp Phe Leu Phe Gly Leu Tyr Gly Thr Val Val Gln Phe Phe Gly Ser
260 265 270

Asn

<210> 21
<211> 318
<212> PRT
<213> Artificial Sequence

<220>
<223> YopE1-138 - z-BIM

<400> 21

Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1 5 10 15

Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
20 25 30

Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
35 40 45

Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
50 55 60

Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65 70 75 80

Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
85 90 95

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

```
Thr Leu Pro Lys Tyr Met Gln Gln Leu Ser Ser Leu Asp Ala Glu Thr
        115                 120                 125

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Ser Arg Met Ser
    130                 135                 140

Asp Thr Ser Arg Glu Gln Thr Leu Ala Asn Gly Pro Ala Ser Gln Gly
145                 150                 155                 160

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

Asp Phe Pro Gln Pro Gly Glu Gly Asp Pro Leu Arg Gly Gly Ile Ser
            180                 185                 190

Met Ser Asn Asn Gln Ser Arg Ser Pro Met Asn Arg Thr Phe Ser Arg
        195                 200                 205

Ser Ser Ser Gly Tyr Phe Ser Val Asp Ser Asp Ser Val Pro Gly Ser
    210                 215                 220

Pro Leu Met Pro Asn Ile Ser Glu Ala Gln Asp Gly Gln Asn Asp Glu
225                 230                 235                 240

Val Trp Leu Ser Glu His Ser His Gln His Leu Gln Met Ala Ala Pro
                245                 250                 255

Val Ala Ala Leu Pro Pro Glu Met Val Val Ala Arg Glu Leu Arg Arg
            260                 265                 270

Ile Gly Asp Glu Phe Asn Arg Leu Tyr Cys Glu Ala Gly Ala Gly Val
        275                 280                 285

Asn Gln Leu Arg Ala Pro Asn Glu His Ala Ile Val Leu Trp Met Asn
    290                 295                 300

Val Ile Ile Gly Arg Leu Val His Phe Phe Leu Arg Arg Arg
305                 310                 315
```

<210> 22
<211> 289
<212> PRT
<213> Artificial Sequence

<220>
<223> YopE1-138 - Caspase3 p17

<400> 22

```
Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                   10                  15


Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30


Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45


Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60


Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80


Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95


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


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


Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Ser Arg Ser Gly
    130                 135                 140


Ile Ser Leu Asp Asn Ser Tyr Lys Met Asp Tyr Pro Glu Met Gly Leu
145                 150                 155                 160
```

```
Cys Ile Ile Ile Asn Asn Lys Asn Phe His Lys Ser Thr Gly Met Thr
                165                 170                 175


Ser Arg Ser Gly Thr Asp Val Asp Ala Ala Asn Leu Arg Glu Thr Phe
            180                 185                 190


Arg Asn Leu Lys Tyr Glu Val Arg Asn Lys Asn Asp Leu Thr Arg Glu
        195                 200                 205


Glu Ile Val Glu Leu Met Arg Asp Val Ser Lys Glu Asp His Ser Lys
    210                 215                 220


Arg Ser Ser Phe Val Cys Val Leu Leu Ser His Gly Glu Glu Gly Ile
225                 230                 235                 240


Ile Phe Gly Thr Asn Gly Pro Val Asp Leu Lys Lys Ile Thr Asn Phe
                245                 250                 255


Phe Arg Gly Asp Arg Cys Arg Ser Leu Thr Gly Lys Pro Lys Leu Phe
            260                 265                 270


Ile Ile Gln Ala Cys Arg Gly Thr Glu Leu Asp Cys Gly Ile Glu Thr
        275                 280                 285


Asp
```

<210> 23
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> YopE1-138 - Caspase3 p10/12

<400> 23

```
Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                   10                  15
```

```
Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30

Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45

Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60

Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80

Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95

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

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

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Ser Gly Val Asp
    130                 135                 140

Asp Asp Met Ala Cys His Lys Ile Pro Val Glu Ala Asp Phe Leu Tyr
145                 150                 155                 160

Ala Tyr Ser Thr Ala Pro Gly Tyr Tyr Ser Trp Arg Asn Ser Lys Asp
                165                 170                 175

Gly Ser Trp Phe Ile Gln Ser Leu Cys Ala Met Leu Lys Gln Tyr Ala
            180                 185                 190

Asp Lys Leu Glu Phe Met His Ile Leu Thr Arg Val Asn Arg Lys Val
        195                 200                 205
```

```
Ala Thr Glu Phe Glu Ser Phe Ser Phe Asp Ala Thr Phe His Ala Lys
    210                 215                 220

Lys Gln Ile Pro Cys Ile Val Ser Met Leu Thr Lys Glu Leu Tyr Phe
225                 230                 235                 240

Tyr His
```

<210> 24
<211> 337
<212> PRT
<213> Artificial Sequence

<220>
<223> YopE1-138 - human Bid

<400> 24

```
Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                   10                  15

Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30

Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45

Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60

Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80

Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95

Pro Ser Pro Thr Ser Phe Ser Asp Ser Ile Lys Gln Leu Ala Ala Glu
            100                 105                 110
```

```
Thr Leu Pro Lys Tyr Met Gln Gln Leu Ser Ser Leu Asp Ala Glu Thr
        115                 120                 125

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Ser Arg Met Asp
    130                 135                 140

Cys Glu Val Asn Asn Gly Ser Ser Leu Arg Asp Glu Cys Ile Thr Asn
145                 150                 155                 160

Leu Leu Val Phe Gly Phe Leu Gln Ser Cys Ser Asp Asn Ser Phe Arg
                165                 170                 175

Arg Glu Leu Asp Ala Leu Gly His Glu Leu Pro Val Leu Ala Pro Gln
            180                 185                 190

Trp Glu Gly Tyr Asp Glu Leu Gln Thr Asp Gly Asn Arg Ser Ser His
        195                 200                 205

Ser Arg Leu Gly Arg Ile Glu Ala Asp Ser Glu Ser Gln Glu Asp Ile
    210                 215                 220

Ile Arg Asn Ile Ala Arg His Leu Ala Gln Val Gly Asp Ser Met Asp
225                 230                 235                 240

Arg Ser Ile Pro Pro Gly Leu Val Asn Gly Leu Ala Leu Gln Leu Arg
                245                 250                 255

Asn Thr Ser Arg Ser Glu Glu Asp Arg Asn Arg Asp Leu Ala Thr Ala
            260                 265                 270

Leu Glu Gln Leu Leu Gln Ala Tyr Pro Arg Asp Met Glu Lys Glu Lys
        275                 280                 285

Thr Met Leu Val Leu Ala Leu Leu Leu Ala Lys Lys Val Ala Ser His
    290                 295                 300

Thr Pro Ser Leu Leu Arg Asp Val Phe His Thr Thr Val Asn Phe Ile
305                 310                 315                 320
```

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

Asp

<210> 25
<211> 277
<212> PRT
<213> Artificial Sequence

<220>
<223> YopE1-138 - human t-Bid

<400> 25

Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1 5 10 15

Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
20 25 30

Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
35 40 45

Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
50 55 60

Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65 70 75 80

Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
85 90 95

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

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

```
Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Ser Arg Gly Asn
    130                 135                 140

Arg Ser Ser His Ser Arg Leu Gly Arg Ile Glu Ala Asp Ser Glu Ser
145                 150                 155                 160

Gln Glu Asp Ile Ile Arg Asn Ile Ala Arg His Leu Ala Gln Val Gly
                165                 170                 175

Asp Ser Met Asp Arg Ser Ile Pro Pro Gly Leu Val Asn Gly Leu Ala
            180                 185                 190

Leu Gln Leu Arg Asn Thr Ser Arg Ser Glu Glu Asp Arg Asn Arg Asp
        195                 200                 205

Leu Ala Thr Ala Leu Glu Gln Leu Leu Gln Ala Tyr Pro Arg Asp Met
    210                 215                 220

Glu Lys Glu Lys Thr Met Leu Val Leu Ala Leu Leu Leu Ala Lys Lys
225                 230                 235                 240

Val Ala Ser His Thr Pro Ser Leu Leu Arg Asp Val Phe His Thr Thr
                245                 250                 255

Val Asn Phe Ile Asn Gln Asn Leu Arg Thr Tyr Val Arg Ser Leu Ala
            260                 265                 270

Arg Asn Gly Met Asp
        275
```

<210> 26
<211> 327
<212> PRT
<213> Artificial Sequence

<220>
<223> YopE1-138 - Rac1 Q61E

<400> 26

```
Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                   10                  15


Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30


Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45


Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60


Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80


Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95


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


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


Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Gln Ala Ile Lys
    130                 135                 140


Cys Val Val Val Gly Asp Gly Ala Val Gly Lys Thr Cys Leu Leu Ile
145                 150                 155                 160


Ser Tyr Thr Thr Asn Ala Phe Pro Gly Glu Tyr Ile Pro Thr Val Phe
                165                 170                 175


Asp Asn Tyr Ser Ala Asn Val Met Val Asp Gly Lys Pro Val Asn Leu
            180                 185                 190
```

```
Gly Leu Trp Asp Thr Ala Gly Glu Glu Asp Tyr Asp Arg Leu Arg Pro
        195                 200                 205

Leu Ser Tyr Pro Gln Thr Asp Val Phe Leu Ile Cys Phe Ser Leu Val
    210                 215                 220

Ser Pro Ala Ser Phe Glu Asn Val Arg Ala Lys Trp Tyr Pro Glu Val
225                 230                 235                 240

Arg His His Cys Pro Asn Thr Pro Ile Ile Leu Val Gly Thr Lys Leu
                245                 250                 255

Asp Leu Arg Asp Asp Lys Asp Thr Ile Glu Lys Leu Lys Glu Lys Lys
            260                 265                 270

Leu Thr Pro Ile Thr Tyr Pro Gln Gly Leu Ala Met Ala Lys Glu Ile
        275                 280                 285

Gly Ala Val Lys Tyr Leu Glu Cys Ser Ala Leu Thr Gln Arg Gly Leu
    290                 295                 300

Lys Thr Val Phe Asp Glu Ala Ile Arg Ala Val Leu Cys Pro Pro Pro
305                 310                 315                 320

Val Lys Lys Arg Lys Arg Lys
                325
```

<210> 27
<211> 333
<212> PRT
<213> Artificial Sequence

<220>
<223> YopE1-138 - RhoA Q63L

<400> 27

```
Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                   10                  15
```

```
Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30

Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45

Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60

Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80

Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95

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

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

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Met Ala Ala Ile
    130                 135                 140

Arg Lys Lys Leu Val Ile Val Gly Asp Gly Ala Cys Gly Lys Thr Cys
145                 150                 155                 160

Leu Leu Ile Val Phe Ser Lys Asp Gln Phe Pro Glu Val Tyr Val Pro
                165                 170                 175

Thr Val Phe Glu Asn Tyr Val Ala Asp Ile Glu Val Asp Gly Lys Gln
            180                 185                 190

Val Glu Leu Ala Leu Trp Asp Thr Ala Gly Leu Glu Asp Tyr Asp Arg
        195                 200                 205

Leu Arg Pro Leu Ser Tyr Pro Asp Thr Asp Val Ile Leu Met Cys Phe
    210                 215                 220
```

```
Ser Ile Asp Ser Pro Asp Ser Leu Glu Asn Ile Pro Glu Lys Trp Thr
225                 230                 235                 240


Pro Glu Val Lys His Phe Cys Pro Asn Val Pro Ile Ile Leu Val Gly
                245                 250                 255


Asn Lys Lys Asp Leu Arg Asn Asp Glu His Thr Arg Arg Glu Leu Ala
            260                 265                 270


Lys Met Lys Gln Glu Pro Val Lys Pro Glu Glu Gly Arg Asp Met Ala
        275                 280                 285


Asn Arg Ile Gly Ala Phe Gly Tyr Met Glu Cys Ser Ala Lys Thr Lys
    290                 295                 300


Asp Gly Val Arg Glu Val Phe Glu Met Ala Thr Arg Ala Ala Leu Gln
305                 310                 315                 320


Ala Arg Arg Gly Lys Lys Lys Ser Gly Cys Leu Val Leu
                325                 330


<210>  28
<211>  350
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  YopE1-138 - FADD

<400>  28

Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                   10                  15


Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30


Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45
```

```
Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60

Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80

Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95

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

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

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Ser Arg Met Asp
    130                 135                 140

Pro Phe Leu Val Leu Leu His Ser Val Ser Ser Ser Leu Ser Ser Ser
145                 150                 155                 160

Glu Leu Thr Glu Leu Lys Phe Leu Cys Leu Gly Arg Val Gly Lys Arg
                165                 170                 175

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

Glu Gln Asn Asp Leu Glu Pro Gly His Thr Glu Leu Leu Arg Glu Leu
        195                 200                 205

Leu Ala Ser Leu Arg Arg His Asp Leu Leu Arg Arg Val Asp Asp Phe
    210                 215                 220

Glu Ala Gly Ala Ala Ala Gly Ala Ala Pro Gly Glu Glu Asp Leu Cys
225                 230                 235                 240
```

```
Ala Ala Phe Asn Val Ile Cys Asp Asn Val Gly Lys Asp Trp Arg Arg
                245                 250                 255


Leu Ala Arg Gln Leu Lys Val Ser Asp Thr Lys Ile Asp Ser Ile Glu
            260                 265                 270


Asp Arg Tyr Pro Arg Asn Leu Thr Glu Arg Val Arg Glu Ser Leu Arg
        275                 280                 285


Ile Trp Lys Asn Thr Glu Lys Glu Asn Ala Thr Val Ala His Leu Val
    290                 295                 300


Gly Ala Leu Arg Ser Cys Gln Met Asn Leu Val Ala Asp Leu Val Gln
305                 310                 315                 320


Glu Val Gln Gln Ala Arg Asp Leu Gln Asn Arg Ser Gly Ala Met Ser
                325                 330                 335


Pro Met Ser Trp Asn Ser Asp Ala Ser Thr Ser Glu Ala Ser
            340                 345                 350


<210>  29
<211>  308
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  YopE1-138 - Bad

<400>  29

Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                   10                  15


Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30


Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45
```

```
Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60

Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80

Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95

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

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

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Met Phe Gln Ile
    130                 135                 140

Pro Glu Phe Glu Pro Ser Glu Gln Glu Asp Ser Ser Ser Ala Glu Arg
145                 150                 155                 160

Gly Leu Gly Pro Ser Pro Ala Gly Asp Gly Pro Ser Gly Ser Gly Lys
                165                 170                 175

His His Arg Gln Ala Pro Gly Leu Leu Trp Asp Ala Ser His Gln Gln
            180                 185                 190

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

Ile Arg Ser Arg His Ser Ser Tyr Pro Ala Gly Thr Glu Asp Asp Glu
    210                 215                 220

Gly Met Gly Glu Glu Pro Ser Pro Phe Arg Gly Arg Ser Arg Ser Ala
225                 230                 235                 240

Pro Pro Asn Leu Trp Ala Ala Gln Arg Tyr Gly Arg Glu Leu Arg Arg
                245                 250                 255
```

```
Met Ser Asp Glu Phe Val Asp Ser Phe Lys Lys Gly Leu Pro Arg Pro
            260                 265                 270


Lys Ser Ala Gly Thr Ala Thr Gln Met Arg Gln Ser Ser Ser Trp Thr
        275                 280                 285


Arg Val Phe Gln Ser Trp Trp Asp Arg Asn Leu Gly Arg Gly Ser Thr
    290                 295                 300


Ala Pro Ser Gln
305
```

<210> 30
<211> 309
<212> PRT
<213> Artificial Sequence

<220>
<223> YopE1-138 - GPCR GNA12

<400> 30

```
Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                   10                  15


Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30


Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45


Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60


Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80


Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95
```

```
Pro Ser Pro Thr Ser Phe Ser Asp Ser Ile Lys Gln Leu Ala Ala Glu
            100                 105                 110

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

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Met Ser Gly Val
    130                 135                 140

Val Gly Pro Met Gln Glu Pro Gly Ala Leu Asp Val Gly Gly Leu Arg
145                 150                 155                 160

Ser Gln Arg Gln Lys Trp Phe Gln Cys Phe Asp Gly Ile Thr Ser Ile
                165                 170                 175

Leu Phe Met Val Ser Ser Ser Glu Tyr Asp Gln Val Leu Met Glu Asp
            180                 185                 190

Arg Arg Thr Asn Arg Leu Val Glu Ser Met Asn Ile Phe Glu Thr Ile
        195                 200                 205

Val Asn Asn Lys Leu Phe Phe Asn Val Ser Ile Ile Leu Phe Leu Asn
    210                 215                 220

Lys Met Asp Leu Leu Val Glu Lys Val Lys Thr Val Ser Ile Lys Lys
225                 230                 235                 240

His Phe Pro Asp Phe Arg Gly Asp Pro His Arg Leu Glu Asp Val Gln
                245                 250                 255

Arg Tyr Leu Val Gln Cys Phe Asp Arg Lys Arg Arg Asn Arg Ser Lys
            260                 265                 270

Pro Leu Phe His His Phe Thr Thr Ala Ile Asp Thr Glu Asn Val Arg
        275                 280                 285
```

Phe Val Phe His Ala Val Lys Asp Thr Ile Leu Gln Glu Asn Leu Lys
290 295 300

Asp Ile Met Leu Gln
305

<210> 31
<211> 259
<212> PRT
<213> Artificial Sequence

<220>
<223> YopE1-138 - VhH4 nanobody recognizing EGFP

<400> 31

Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1 5 10 15

Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
20 25 30

Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
35 40 45

Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
50 55 60

Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65 70 75 80

Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
85 90 95

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

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

```
Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Ser Arg Met Asp
    130                 135                 140

Gln Val Gln Leu Val Glu Ser Gly Gly Ala Leu Val Gln Pro Gly Gly
145                 150                 155                 160

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Pro Val Asn Arg Tyr
                165                 170                 175

Ser Met Arg Trp Tyr Arg Gln Ala Pro Gly Lys Glu Arg Glu Trp Val
            180                 185                 190

Ala Gly Met Ser Ser Ala Gly Asp Arg Ser Ser Tyr Glu Asp Ser Val
        195                 200                 205

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asp Ala Arg Asn Thr Val Tyr
    210                 215                 220

Leu Gln Met Asn Ser Leu Lys Pro Glu Asp Thr Ala Val Tyr Tyr Cys
225                 230                 235                 240

Asn Val Asn Val Gly Phe Glu Tyr Trp Gly Gln Gly Thr Gln Val Thr
                245                 250                 255

Val Ser Ser
```

<210> 32
<211> 458
<212> PRT
<213> Artificial Sequence

<220>
<223> YopE1-138 - Slmb1-VhH4

<400> 32

```
Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                   10                  15
```

```
Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30

Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45

Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60

Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80

Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95

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

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

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Ser Arg Lys Met
    130                 135                 140

Met Lys Met Glu Thr Asp Lys Ile Met Asp Glu Thr Asn Ser Asn Ala
145                 150                 155                 160

Gln Ala Phe Thr Thr Thr Met Leu Tyr Asp Pro Val Arg Lys Lys Asp
                165                 170                 175

Ser Ser Pro Thr Tyr Gln Thr Glu Arg Glu Leu Cys Phe Gln Tyr Phe
            180                 185                 190

Thr Gln Trp Ser Glu Ser Gly Gln Val Asp Phe Val Glu His Leu Leu
        195                 200                 205

Ser Arg Met Cys His Tyr Gln His Gly Gln Ile Asn Ala Tyr Leu Lys
    210                 215                 220
```

```
Pro Met Leu Gln Arg Asp Phe Ile Thr Leu Leu Pro Ile Lys Gly Leu
225                 230                 235                 240

Asp His Ile Ala Glu Asn Ile Leu Ser Tyr Leu Asp Ala Glu Ser Leu
                245                 250                 255

Lys Ser Ser Glu Leu Val Cys Lys Glu Trp Leu Arg Val Ile Ser Glu
            260                 265                 270

Gly Met Leu Trp Lys Lys Leu Ile Glu Arg Lys Val Arg Thr Asp Ser
        275                 280                 285

Leu Trp Arg Gly Leu Ala Glu Arg Arg Asn Trp Met Gln Tyr Leu Phe
    290                 295                 300

Lys Pro Arg Pro Gly Gln Thr Gln Arg Pro His Ser Phe His Arg Glu
305                 310                 315                 320

Leu Phe Pro Lys Ile Met Asn Asp Ile Asp Ser Ile Glu Asn Asn Trp
                325                 330                 335

Arg Thr Gly Arg His Met Asp Gln Val Gln Leu Val Glu Ser Gly Gly
            340                 345                 350

Ala Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser
        355                 360                 365

Gly Phe Pro Val Asn Arg Tyr Ser Met Arg Trp Tyr Arg Gln Ala Pro
    370                 375                 380

Gly Lys Glu Arg Glu Trp Val Ala Gly Met Ser Ser Ala Gly Asp Arg
385                 390                 395                 400

Ser Ser Tyr Glu Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp
                405                 410                 415
```

Asp Ala Arg Asn Thr Val Tyr Leu Gln Met Asn Ser Leu Lys Pro Glu
            420   425   430

Asp Thr Ala Val Tyr Tyr Cys Asn Val Asn Val Gly Phe Glu Tyr Trp
        435   440   445

Gly Gln Gly Thr Gln Val Thr Val Ser Ser
    450   455

<210> 33
<211> 470
<212> PRT
<213> Artificial Sequence

<220>
<223> YopE1-138 - NLS-Slmb1-VhH4

<400> 33

Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1   5   10   15

Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20   25   30

Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35   40   45

Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50   55   60

Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65   70   75   80

Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85   90   95

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

```
Thr Leu Pro Lys Tyr Met Gln Gln Leu Ser Ser Leu Asp Ala Glu Thr
        115                 120                 125

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Ser Arg Pro Pro
    130                 135                 140

Lys Lys Lys Arg Lys Val Gln Phe Lys Met Met Lys Met Glu Thr Asp
145                 150                 155                 160

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

Met Leu Tyr Asp Pro Val Arg Lys Lys Asp Ser Ser Pro Thr Tyr Gln
            180                 185                 190

Thr Glu Arg Glu Leu Cys Phe Gln Tyr Phe Thr Gln Trp Ser Glu Ser
        195                 200                 205

Gly Gln Val Asp Phe Val Glu His Leu Leu Ser Arg Met Cys His Tyr
    210                 215                 220

Gln His Gly Gln Ile Asn Ala Tyr Leu Lys Pro Met Leu Gln Arg Asp
225                 230                 235                 240

Phe Ile Thr Leu Leu Pro Ile Lys Gly Leu Asp His Ile Ala Glu Asn
                245                 250                 255

Ile Leu Ser Tyr Leu Asp Ala Glu Ser Leu Lys Ser Ser Glu Leu Val
            260                 265                 270

Cys Lys Glu Trp Leu Arg Val Ile Ser Glu Gly Met Leu Trp Lys Lys
        275                 280                 285

Leu Ile Glu Arg Lys Val Arg Thr Asp Ser Leu Trp Arg Gly Leu Ala
    290                 295                 300

Glu Arg Arg Asn Trp Met Gln Tyr Leu Phe Lys Pro Arg Pro Gly Gln
305                 310                 315                 320
```

```
Thr Gln Arg Pro His Ser Phe His Arg Glu Leu Phe Pro Lys Ile Met
                325                 330                 335

Asn Asp Ile Asp Ser Ile Glu Asn Asn Trp Arg Thr Gly Arg His Leu
            340                 345                 350

Glu Met Asp Gln Val Gln Leu Val Glu Ser Gly Gly Ala Leu Val Gln
        355                 360                 365

Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Pro Val
    370                 375                 380

Asn Arg Tyr Ser Met Arg Trp Tyr Arg Gln Ala Pro Gly Lys Glu Arg
385                 390                 395                 400

Glu Trp Val Ala Gly Met Ser Ser Ala Gly Asp Arg Ser Ser Tyr Glu
                405                 410                 415

Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asp Ala Arg Asn
            420                 425                 430

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

Tyr Tyr Cys Asn Val Asn Val Gly Phe Glu Tyr Trp Gly Gln Gly Thr
    450                 455                 460

Gln Val Thr Val Ser Ser
465                 470
```

<210> 34
<211> 466
<212> PRT
<213> Artificial Sequence

<220>
<223> YopE1-138 - Slmb1-VhH4-NLS

<400> 34

```
Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                   10                  15


Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30


Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45


Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60


Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80


Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95


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


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


Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Ser Arg Lys Met
    130                 135                 140


Met Lys Met Glu Thr Asp Lys Ile Met Asp Glu Thr Asn Ser Asn Ala
145                 150                 155                 160


Gln Ala Phe Thr Thr Thr Met Leu Tyr Asp Pro Val Arg Lys Lys Asp
                165                 170                 175


Ser Ser Pro Thr Tyr Gln Thr Glu Arg Glu Leu Cys Phe Gln Tyr Phe
            180                 185                 190
```

```
Thr Gln Trp Ser Glu Ser Gly Gln Val Asp Phe Val Glu His Leu Leu
        195                 200                 205

Ser Arg Met Cys His Tyr Gln His Gly Gln Ile Asn Ala Tyr Leu Lys
    210                 215                 220

Pro Met Leu Gln Arg Asp Phe Ile Thr Leu Leu Pro Ile Lys Gly Leu
225                 230                 235                 240

Asp His Ile Ala Glu Asn Ile Leu Ser Tyr Leu Asp Ala Glu Ser Leu
                245                 250                 255

Lys Ser Ser Glu Leu Val Cys Lys Glu Trp Leu Arg Val Ile Ser Glu
            260                 265                 270

Gly Met Leu Trp Lys Lys Leu Ile Glu Arg Lys Val Arg Thr Asp Ser
        275                 280                 285

Leu Trp Arg Gly Leu Ala Glu Arg Arg Asn Trp Met Gln Tyr Leu Phe
    290                 295                 300

Lys Pro Arg Pro Gly Gln Thr Gln Arg Pro His Ser Phe His Arg Glu
305                 310                 315                 320

Leu Phe Pro Lys Ile Met Asn Asp Ile Asp Ser Ile Glu Asn Asn Trp
                325                 330                 335

Arg Thr Gly Arg His Met Asp Gln Val Gln Leu Val Glu Ser Gly Gly
            340                 345                 350

Ala Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser
        355                 360                 365

Gly Phe Pro Val Asn Arg Tyr Ser Met Arg Trp Tyr Arg Gln Ala Pro
    370                 375                 380

Gly Lys Glu Arg Glu Trp Val Ala Gly Met Ser Ser Ala Gly Asp Arg
385                 390                 395                 400
```

Ser Ser Tyr Glu Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp
405 410 415

Asp Ala Arg Asn Thr Val Tyr Leu Gln Met Asn Ser Leu Lys Pro Glu
420 425 430

Asp Thr Ala Val Tyr Tyr Cys Asn Val Asn Val Gly Phe Glu Tyr Trp
435 440 445

Gly Gln Gly Thr Gln Val Thr Val Ser Ser Pro Pro Lys Lys Lys Arg
450 455 460

Lys Val
465

<210> 35
<211> 246
<212> PRT
<213> Artificial Sequence

<220>
<223> YopE1-138 - Akt PH-domain

<400> 35

Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1 5 10 15

Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
20 25 30

Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
35 40 45

Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
50 55 60

Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65 70 75 80

```
Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95

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

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

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Ser Arg Ala Ile
    130                 135                 140

Val Lys Glu Gly Trp Leu His Lys Arg Gly Glu Tyr Ile Lys Thr Trp
145                 150                 155                 160

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

Lys Glu Arg Pro Gln Asp Val Asp Gln Arg Glu Ala Pro Leu Asn Asn
            180                 185                 190

Phe Ser Val Ala Gln Cys Gln Leu Met Lys Thr Glu Arg Pro Arg Pro
        195                 200                 205

Asn Thr Phe Ile Ile Arg Cys Leu Gln Trp Thr Thr Val Ile Glu Arg
    210                 215                 220

Thr Phe His Val Glu Thr Pro Glu Glu Arg Glu Glu Trp Thr Thr Ala
225                 230                 235                 240

Ile Gln Thr Val Ala Asp
                245
```

<210> 36
<211> 465
<212> PRT
<213> Artificial Sequence

<220>
<223> YopE1-138 - ET1

<400> 36

```
Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                  10                  15


Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30


Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45


Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60


Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80


Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95


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


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


Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Ser Arg Met Pro
    130                 135                 140


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


Val Leu Lys Arg Cys Gly Pro Ile Glu Phe Thr Leu Ser Gly Val Ala
                165                 170                 175
```

```
Lys Glu Val Gly Leu Ser Arg Ala Ala Leu Ile Gln Arg Phe Thr Asn
            180                 185                 190

Arg Asp Thr Leu Leu Val Arg Met Met Glu Arg Gly Val Glu Gln Val
        195                 200                 205

Arg His Tyr Leu Asn Ala Ile Pro Ile Gly Ala Gly Pro Gln Gly Leu
    210                 215                 220

Trp Glu Phe Leu Gln Val Leu Val Arg Ser Met Asn Thr Arg Asn Asp
225                 230                 235                 240

Phe Ser Val Asn Tyr Leu Ile Ser Trp Tyr Glu Leu Gln Val Pro Glu
                245                 250                 255

Leu Arg Thr Leu Ala Ile Gln Arg Asn Arg Ala Val Val Glu Gly Ile
            260                 265                 270

Arg Lys Arg Leu Pro Pro Gly Ala Pro Ala Ala Ala Glu Leu Leu Leu
        275                 280                 285

His Ser Val Ile Ala Gly Ala Thr Met Gln Trp Ala Val Asp Pro Asp
    290                 295                 300

Gly Glu Leu Ala Asp His Val Leu Ala Gln Ile Ala Ala Ile Leu Cys
305                 310                 315                 320

Leu Met Phe Pro Glu His Asp Asp Phe Gln Leu Leu Gln Ala His Ala
                325                 330                 335

Ser Ala Tyr Ser Arg Ala Arg Thr Lys Asn Asn Tyr Gly Ser Thr Ile
            340                 345                 350

Glu Gly Leu Leu Asp Leu Pro Asp Asp Asp Ala Pro Glu Glu Ala Gly
        355                 360                 365

Leu Ala Ala Pro Arg Leu Ser Phe Leu Pro Ala Gly His Thr Arg Arg
    370                 375                 380
```

```
Leu Ser Thr Ala Pro Pro Thr Asp Val Ser Leu Gly Asp Glu Leu His
385                 390                 395                 400


Leu Asp Gly Glu Asp Val Ala Met Ala His Ala Asp Ala Leu Asp Asp
                405                 410                 415


Phe Asp Leu Asp Met Leu Gly Asp Gly Asp Ser Pro Gly Pro Gly Phe
            420                 425                 430


Thr Pro His Asp Ser Ala Pro Tyr Gly Ala Leu Asp Met Ala Asp Phe
        435                 440                 445


Glu Phe Glu Gln Met Phe Thr Asp Ala Leu Gly Ile Asp Glu Tyr Gly
    450                 455                 460


Gly
465


<210>  37
<211>  381
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  YopE1-138 - EGFP

<400>  37

Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                   10                  15


Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30


Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45


Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60
```

```
Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80

Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95

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

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

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Ser Arg Met Val
    130                 135                 140

Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val Glu
145                 150                 155                 160

Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu Gly
                165                 170                 175

Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys Thr
            180                 185                 190

Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu Thr
        195                 200                 205

Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln His
    210                 215                 220

Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg Thr
225                 230                 235                 240

Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val Lys
                245                 250                 255
```

```
Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile Asp
            260                 265                 270

Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn Tyr
        275                 280                 285

Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly Ile
    290                 295                 300

Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val Gln
305                 310                 315                 320

Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro Val
                325                 330                 335

Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser Lys
            340                 345                 350

Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe Val Thr
        355                 360                 365

Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys
    370                 375                 380
```

<210> 38
<211> 402
<212> PRT
<213> Artificial Sequence

<220>
<223> YopE1-138 - 2xTEVsite - NLS - EGFP

<400> 38

```
Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                   10                  15

Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30
```

```
Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45

Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60

Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80

Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95

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

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

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Ser Arg Glu Asn
    130                 135                 140

Leu Tyr Phe Gln Ser Glu Asn Leu Tyr Phe Gln Ser Pro Pro Lys Lys
145                 150                 155                 160

Lys Arg Lys Val Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val
                165                 170                 175

Pro Ile Leu Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser
            180                 185                 190

Val Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu
        195                 200                 205

Lys Phe Ile Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu
    210                 215                 220

Val Thr Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp
225                 230                 235                 240
```

```
His Met Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr
                245                 250                 255

Val Gln Glu Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr
            260                 265                 270

Arg Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu
        275                 280                 285

Leu Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys
    290                 295                 300

Leu Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys
305                 310                 315                 320

Gln Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu
                325                 330                 335

Asp Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile
            340                 345                 350

Gly Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln
        355                 360                 365

Ser Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu
    370                 375                 380

Leu Glu Phe Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu
385                 390                 395                 400

Tyr Lys
```

<210> 39
<211> 402
<212> PRT
<213> Artificial Sequence

<220>
<223> YopE1-138 - 2xTEVsite - EGFP - NLS

<400> 39

```
Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                  10                  15


Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30


Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45


Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60


Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80


Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95


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


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


Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Ser Arg Glu Asn
    130                 135                 140


Leu Tyr Phe Gln Ser Glu Asn Leu Tyr Phe Gln Ser Val Ser Lys Gly
145                 150                 155                 160


Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val Glu Leu Asp Gly
                165                 170                 175
```

```
Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu Gly Glu Gly Asp
            180                 185                 190

Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys Thr Thr Gly Lys
        195                 200                 205

Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu Thr Tyr Gly Val
    210                 215                 220

Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln His Asp Phe Phe
225                 230                 235                 240

Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg Thr Ile Phe Phe
                245                 250                 255

Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val Lys Phe Glu Gly
            260                 265                 270

Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile Asp Phe Lys Glu
        275                 280                 285

Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn Tyr Asn Ser His
    290                 295                 300

Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly Ile Lys Val Asn
305                 310                 315                 320

Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val Gln Leu Ala Asp
                325                 330                 335

His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro Val Leu Leu Pro
            340                 345                 350

Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser Lys Asp Pro Asn
        355                 360                 365

Glu Lys Arg Asp His Met Val Leu Leu Glu Phe Val Thr Ala Ala Gly
    370                 375                 380
```

```
Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Pro Pro Lys Lys Lys Arg
385                 390                 395                 400


Lys Val
```

<210> 40
<211> 324
<212> PRT
<213> Artificial Sequence

<220>
<223> YopE1-138 - 2x TEVsite - INK4C

<400> 40

```
Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                   10                  15


Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30


Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45


Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60


Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80


Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95


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


Thr Leu Pro Lys Tyr Met Gln Gln Leu Ser Ser Leu Asp Ala Glu Thr
        115                 120                 125
```

```
Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Ser Arg Glu Asn
    130                 135                 140

Leu Tyr Phe Gln Ser Glu Asn Leu Tyr Phe Gln Ser Met Ala Glu Pro
145                 150                 155                 160

Trp Gly Asn Glu Leu Ala Ser Ala Ala Ala Arg Gly Asp Leu Glu Gln
                165                 170                 175

Leu Thr Ser Leu Leu Gln Asn Asn Val Asn Val Asn Ala Gln Asn Gly
            180                 185                 190

Phe Gly Arg Thr Ala Leu Gln Val Met Lys Leu Gly Asn Pro Glu Ile
        195                 200                 205

Ala Arg Arg Leu Leu Leu Arg Gly Ala Asn Pro Asp Leu Lys Asp Arg
    210                 215                 220

Thr Gly Phe Ala Val Ile His Asp Ala Ala Arg Ala Gly Phe Leu Asp
225                 230                 235                 240

Thr Leu Gln Ala Leu Pro Glu Phe Gln Ala Asp Val Asn Ile Glu Asp
                245                 250                 255

Asn Glu Gly Asn Leu Pro Leu His Leu Ala Ala Lys Glu Gly His Leu
            260                 265                 270

Arg Val Val Glu Phe Leu Val Lys His Thr Ala Ser Asn Val Gly His
        275                 280                 285

Arg Asn His Lys Gly Asp Thr Ala Cys Asp Leu Ala Arg Leu Tyr Gly
    290                 295                 300

Arg Asn Glu Val Val Ser Leu Met Gln Ala Asn Gly Ala Gly Gly Ala
305                 310                 315                 320
```

Thr Asn Leu Gln

<210> 41
<211> 479
<212> PRT
<213> Artificial Sequence

<220>
<223> YopE1-138 - 2x TEVsite - ET1

<400> 41

Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1 5 10 15

Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
20 25 30

Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
35 40 45

Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
50 55 60

Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65 70 75 80

Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
85 90 95

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

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

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Ser Arg Glu Asn
130 135 140

```
Leu Tyr Phe Gln Ser Glu Asn Leu Tyr Phe Gln Ser Met Pro Arg Pro
145                 150                 155                 160

Lys Leu Lys Ser Asp Asp Glu Val Leu Glu Ala Ala Thr Val Val Leu
                165                 170                 175

Lys Arg Cys Gly Pro Ile Glu Phe Thr Leu Ser Gly Val Ala Lys Glu
            180                 185                 190

Val Gly Leu Ser Arg Ala Ala Leu Ile Gln Arg Phe Thr Asn Arg Asp
        195                 200                 205

Thr Leu Leu Val Arg Met Met Glu Arg Gly Val Glu Gln Val Arg His
    210                 215                 220

Tyr Leu Asn Ala Ile Pro Ile Gly Ala Gly Pro Gln Gly Leu Trp Glu
225                 230                 235                 240

Phe Leu Gln Val Leu Val Arg Ser Met Asn Thr Arg Asn Asp Phe Ser
                245                 250                 255

Val Asn Tyr Leu Ile Ser Trp Tyr Glu Leu Gln Val Pro Glu Leu Arg
            260                 265                 270

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

Arg Leu Pro Pro Gly Ala Pro Ala Ala Ala Glu Leu Leu Leu His Ser
    290                 295                 300

Val Ile Ala Gly Ala Thr Met Gln Trp Ala Val Asp Pro Asp Gly Glu
305                 310                 315                 320

Leu Ala Asp His Val Leu Ala Gln Ile Ala Ala Ile Leu Cys Leu Met
                325                 330                 335

Phe Pro Glu His Asp Asp Phe Gln Leu Leu Gln Ala His Ala Ser Ala
            340                 345                 350
```

```
Tyr Ser Arg Ala Arg Thr Lys Asn Asn Tyr Gly Ser Thr Ile Glu Gly
        355                 360                 365

Leu Leu Asp Leu Pro Asp Asp Asp Ala Pro Glu Glu Ala Gly Leu Ala
    370                 375                 380

Ala Pro Arg Leu Ser Phe Leu Pro Ala Gly His Thr Arg Arg Leu Ser
385                 390                 395                 400

Thr Ala Pro Pro Thr Asp Val Ser Leu Gly Asp Glu Leu His Leu Asp
                405                 410                 415

Gly Glu Asp Val Ala Met Ala His Ala Asp Ala Leu Asp Asp Phe Asp
            420                 425                 430

Leu Asp Met Leu Gly Asp Gly Asp Ser Pro Gly Pro Gly Phe Thr Pro
        435                 440                 445

His Asp Ser Ala Pro Tyr Gly Ala Leu Asp Met Ala Asp Phe Glu Phe
    450                 455                 460

Glu Gln Met Phe Thr Asp Ala Leu Gly Ile Asp Glu Tyr Gly Gly
465                 470                 475
```

<210> 42
<211> 380
<212> PRT
<213> Artificial Sequence

<220>
<223> YopE1-138 - TEV protease S219V

<400> 42

```
Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                   10                  15

Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30
```

```
Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45

Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60

Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80

Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95

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

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

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Glu Ser Leu Phe
    130                 135                 140

Lys Gly Pro Arg Asp Tyr Asn Pro Ile Ser Ser Thr Ile Cys His Leu
145                 150                 155                 160

Thr Asn Glu Ser Asp Gly His Thr Thr Ser Leu Tyr Gly Ile Gly Phe
                165                 170                 175

Gly Pro Phe Ile Ile Thr Asn Lys His Leu Phe Arg Arg Asn Asn Gly
            180                 185                 190

Thr Leu Leu Val Gln Ser Leu His Gly Val Phe Lys Val Lys Asn Thr
        195                 200                 205

Thr Thr Leu Gln Gln His Leu Ile Asp Gly Arg Asp Met Ile Ile Ile
    210                 215                 220
```

```
Arg Met Pro Lys Asp Phe Pro Pro Phe Pro Gln Lys Leu Lys Phe Arg
225                 230                 235                 240


Glu Pro Gln Arg Glu Glu Arg Ile Cys Leu Val Thr Thr Asn Phe Gln
                245                 250                 255


Thr Lys Ser Met Ser Ser Met Val Ser Asp Thr Ser Cys Thr Phe Pro
            260                 265                 270


Ser Ser Asp Gly Ile Phe Trp Lys His Trp Ile Gln Thr Lys Asp Gly
        275                 280                 285


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


Ile His Ser Ala Ser Asn Phe Thr Asn Thr Asn Asn Tyr Phe Thr Ser
305                 310                 315                 320


Val Pro Lys Asn Phe Met Glu Leu Leu Thr Asn Gln Glu Ala Gln Gln
                325                 330                 335


Trp Val Ser Gly Trp Arg Leu Asn Ala Asp Ser Val Leu Trp Gly Gly
            340                 345                 350


His Lys Val Phe Met Val Lys Pro Glu Glu Pro Phe Gln Pro Val Lys
        355                 360                 365


Glu Ala Thr Gln Leu Met Asn Arg Arg Arg Arg Arg Arg
    370                 375                 380
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<210> 43
<211> 332
<212> PRT
<213> Artificial Sequence

<220>
<223> YopE1-138 - 2x TEVsite - Flag - INK4C

<400> 43

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Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                   10                  15

Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30

Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45

Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60

Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80

Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95

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

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

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Ser Arg Glu Asn
    130                 135                 140

Leu Tyr Phe Gln Ser Glu Asn Leu Tyr Phe Gln Ser Asp Tyr Lys Asp
145                 150                 155                 160

Asp Asp Asp Lys Met Ala Glu Pro Trp Gly Asn Glu Leu Ala Ser Ala
                165                 170                 175

Ala Ala Arg Gly Asp Leu Glu Gln Leu Thr Ser Leu Leu Gln Asn Asn
            180                 185                 190

Val Asn Val Asn Ala Gln Asn Gly Phe Gly Arg Thr Ala Leu Gln Val
        195                 200                 205
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Met Lys Leu Gly Asn Pro Glu Ile Ala Arg Arg Leu Leu Leu Arg Gly
210 215 220

Ala Asn Pro Asp Leu Lys Asp Arg Thr Gly Phe Ala Val Ile His Asp
225 230 235 240

Ala Ala Arg Ala Gly Phe Leu Asp Thr Leu Gln Ala Leu Pro Glu Phe
245 250 255

Gln Ala Asp Val Asn Ile Glu Asp Asn Glu Gly Asn Leu Pro Leu His
260 265 270

Leu Ala Ala Lys Glu Gly His Leu Arg Val Val Glu Phe Leu Val Lys
275 280 285

His Thr Ala Ser Asn Val Gly His Arg Asn His Lys Gly Asp Thr Ala
290 295 300

Cys Asp Leu Ala Arg Leu Tyr Gly Arg Asn Glu Val Val Ser Leu Met
305 310 315 320

Gln Ala Asn Gly Ala Gly Gly Ala Thr Asn Leu Gln
325 330

<210> 44
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_285

<400> 44
cataccatgg gagtgagcaa gggcgag 27

<210> 45
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_286

<400> 45
ggaagatctt tacttgtaca gctcgtccat 30

<210> 46
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_287

<400> 46
cggggtacct caactaaatg accgtggtg 29

<210> 47
<211> 43
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_288

<400> 47
gttaaagctt ttcgaatcta gactcgagcg tggcgaactg gtc 43

<210> 48
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_292

<400> 48
cagtctcgag caaattctaa acaaaatact tccac 35

<210> 49
<211> 32
<212> DNA
<213> Artificial Sequence

<220>

<223> Primer No. : Si_293

<400> 49
cagtttcgaa ttaatttgta ttgctttgac gg 32

<210> 50
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_296

<400> 50
cagtctcgag actaacataa cactatccac ccag 34

<210> 51
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_297

<400> 51
gttaaagctt tcaggaggca ttctgaag 28

<210> 52
<211> 28
<212> DNA
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<220>
<223> Primer No. : Si_299

<400> 52
cagtctcgag caggccatca agtgtgtg 28

<210> 53
<211> 33
<212> DNA
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<220>
<223> Primer No. : Si_300

<400> 53
cagtttcgaa tcattttctc ttcctcttct tca 33

<210> 54
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_301

<400> 54
cagtctcgag gctgccatcc ggaa 24

<210> 55
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_302

<400> 55
cagtttcgaa tcacaagaca aggcaccc 28

<210> 56
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_306

<400> 56
gttaaagctt ggaggcattc tgaagatact tatt 34

<210> 57
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_307

<400> 57
cagtctcgag caaatacaga gcttctatca ctcag 35

<210> 58
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_308

<400> 58
gttaaagctt tcaagatgtg attaatgaag aaatg 35

<210> 59
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_317

<400> 59
cagtttcgaa cccataaaaa agccctgtc 29

<210> 60
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_318

<400> 60
gttaaagctt ctactctatc atcaaacgat aaaatgg 37

<210> 61
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_324

<400> 61
cagtctcgag ttcactcaag aaacgcaaa 29

<210> 62
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_339

<400> 62
cagtttcgaa ttttctcttc ctcttcttca cg 32

<210> 63
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_341

<400> 63
cgtatctaga aaaatgatga aaatggagac tg 32

<210> 64
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_342

<400> 64
gttaaagctt ttagctggag acggtgac 28

<210> 65
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_346

<400> 65
cagtctcgag ttccagatcc cagagtttg 29

<210> 66
<211> 24

<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_347

<400> 66
gttaaagctt tcactgggag gggg 24

<210> 67
<211> 45
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_351

<400> 67
cagtctcgag ctcgagttat ctactcatag aaactacttt tgcag 45

<210> 68
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_352

<400> 68
cgcggatcct cagtgtctct gcggcatta 29

<210> 69
<211> 43
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_353

<400> 69
catttattcc tcctagttag tcacagcaac tgctgctcct ttc 43

<210> 70
<211> 43
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_354

<400> 70
gaaaggagca gcagttgctg tgactaacta ggaggaataa atg 43

<210> 71
<211> 41
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_355

<400> 71
cgattcacgg attgctttct cattattccc tccaggtact a 41

<210> 72
<211> 41
<212> DNA
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<220>
<223> Primer No. : Si_356

<400> 72
tagtacctgg agggaataat gagaaagcaa tccgtgaatc g 41

<210> 73
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_357

<400> 73
cgtatctaga cggctttaag tgcgacattc 30

<210> 74
<211> 36
<212> DNA
<213> Artificial Sequence

<220>

<223> Primer No. : Si_364

<400> 74
cgtatctaga ctaaagtatg aggagagaaa attgaa 36

<210> 75
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_365

<400> 75
gttaaagctt tcagcttgcc gtcgt 25

<210> 76
<211> 26
<212> DNA
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<220>
<223> Primer No. : Si_367

<400> 76
cgtatctaga gacccgttcc tggtgc 26

<210> 77
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_369

<400> 77
cgtatctaga ccccccaaga agaagc 26

<210> 78
<211> 26
<212> DNA
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<220>
<223> Primer No. : Si_373

<400> 78
gttaaagctt gctggagacg gtgacc 26

<210> 79
<211> 30
<212> DNA
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<220>
<223> Primer No. : Si_386

<400> 79
cgtatctaga tcaggacgct tcggaggtag 30

<210> 80
<211> 30
<212> DNA
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<220>
<223> Primer No. : Si_387

<400> 80
cgtatctaga atggactgtg aggtcaacaa 30

<210> 81
<211> 23
<212> DNA
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<220>
<223> Primer No. : Si_389

<400> 81
cgtatctaga ggcaaccgca gca 23

<210> 82
<211> 29
<212> DNA
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<220>
<223> Primer No. : Si_391

<400> 82
gttaaagctt tcagtccatc ccatttctg 29

<210> 83
<211> 29
<212> DNA
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<220>
<223> Primer No. : Si_403

<400> 83
cgtatctaga tctggaatat ccctggaca 29

<210> 84
<211> 30
<212> DNA
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<220>
<223> Primer No. : Si_406

<400> 84
gttaaagctt gtctgtctca atgccacagt 30

<210> 85
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_410

<400> 85
cagtctcgag atgtccgggg tggtg 25

<210> 86
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_413

<400> 86
cagtttcgaa tcactgcagc atgatgtc 28

<210> 87
<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_417

<400> 87
cagtctcgag agtggtgttg atgatgacat g 31

<210> 88
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_420

<400> 88
cagtttcgaa ttagtgataa aaatagagtt cttttgtgag 40

<210> 89
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_423

<400> 89
cagtctcgag atgcacataa ctaatttggg att 33

<210> 90
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_424

<400> 90
cagtttcgaa ttatacaaat gacgaatacc cttt 34

<210> 91
<211> 52

<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_425

<400> 91
gttaaagctt ttacaccttg cgcttcttct tgggcgggct ggagacggtg ac 52

<210> 92
<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_428

<400> 92
cgtatctaga atggacttca acaggaactt t 31

<210> 93
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_429

<400> 93
cgtatctaga ggacatagtc caccagcg 28

<210> 94
<211> 29
<212> DNA
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<220>
<223> Primer No. : Si_430

<400> 94
gttaaagctt tcagttggat ccgaaaaac 29

<210> 95
<211> 34
<212> DNA
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<220>
<223> Primer No. : Si_433

<400> 95
cgtatctaga gaattaaaaa aaacactcat ccca 34

<210> 96
<211> 29
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<220>
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<400> 96
cgtatctaga ccaaaggcaa aagcaaaaa 29

<210> 97
<211> 29
<212> DNA
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<220>
<223> Primer No. : Si_435

<400> 97
gttaaagctt ttagctagcc atggcaagc 29

<210> 98
<211> 22
<212> DNA
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<220>
<223> Primer No. : Si_436

<400> 98
cgtatctaga atgccccgcc cc 22

<210> 99
<211> 31
<212> DNA
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<220>

<223> Primer No. : Si_437

<400> 99
gttaaagctt ctacccaccg tactcgtcaa t 31

<210> 100
<211> 31
<212> DNA
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<220>
<223> Primer No. : Si_438

<400> 100
cgtatctaga atgtctgaca cgtccagaga g 31

<210> 101
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_439

<400> 101
gttaaagctt tcatcttctt cgcaggaaaa ag 32

<210> 102
<211> 30
<212> DNA
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<220>
<223> Primer No. : Si_445

<400> 102
cgcggatcct tatgggttct cacagcaaaa 30

<210> 103
<211> 43
<212> DNA
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<220>
<223> Primer No. : Si_446

<400> 103
catttattcc tcctagttag tcaaggcaac agccaatcaa gag 43

<210> 104
<211> 43
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_447

<400> 104
ctcttgattg gctgttgcct tgactaacta ggaggaataa atg 43

<210> 105
<211> 41
<212> DNA
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<220>
<223> Primer No. : Si_448

<400> 105
ttgattgcag tgacatggtg cattattccc tccaggtact a 41

<210> 106
<211> 41
<212> DNA
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<220>
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<400> 106
tagtacctgg agggaataat gcaccatgtc actgcaatca a 41

<210> 107
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<220>
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<400> 107
cgtatctaga tagccgcaga tgttggtatg 30

<210> 108
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<212> DNA
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<220>
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<400> 108
cgtatctaga gatcaagtcc aactggtgg 29

<210> 109
<211> 29
<212> DNA
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<220>
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<400> 109
cagtctcgag gaaagcttgt ttaaggggc 29

<210> 110
<211> 25
<212> DNA
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<220>
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<400> 110
cagtttcgaa ttagcgacgg cgacg 25

<210> 111
<211> 31
<212> DNA
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<220>
<223> Primer No. : Si_476

<400> 111
gttaaagctt ttacttgtac agctcgtcca t 31

<210> 112
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
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<400> 112
cgtatctaga gtgagcaagg gcgag 25

<210> 113
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_478

<400> 113
cagtctcgag atggaagatt ataccaaaat agagaaa 37

<210> 114
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_479

<400> 114
gttaaagctt ctacatcttc ttaatctgat tgtcca 36

<210> 115
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_482

<400> 115
cgtatctaga atggcgctgc agct 24

<210> 116
<211> 32

<212> DNA
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<220>
<223> Primer No. : Si_483

<400> 116
gttaaagctt tcagtcattg acaggaattt tg 32

<210> 117
<211> 25
<212> DNA
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<220>
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<400> 117
cgtatctaga atggagccgg cggcg 25

<210> 118
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_487

<400> 118
gttaaagctt tcaatcgggg atgtctg 27

<210> 119
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_492

<400> 119
cgtatctaga atgcgcgagg agaacaaggg 30

<210> 120
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_493

<400> 120
gttaaagctt tcagtcccct gtggctgtgc 30

<210> 121
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_494

<400> 121
cgtatctaga atggccgagc cttg 24

<210> 122
<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_495

<400> 122
gttaaagctt ttattgaaga tttgtggctc c 31

<210> 123
<211> 64
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_504

<400> 123
cgtatctaga gaaaatctgt attttcaaag tgaaaatctg tattttcaaa gtatgccccg 60

cccc 64

<210> 124
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_505

<400> 124
gttaaagctt cccaccgtac tcgtcaattc 30

<210> 125
<211> 66
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_508

<400> 125
cgtatctaga gaaaatctgt attttcaaag tgaaaatctg tattttcaaa gtatggccga 60

gccttg 66

<210> 126
<211> 29
<212> DNA
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<220>
<223> Primer No. : Si_509

<400> 126
gttaaagctt ttgaagattt gtggctccc 29

<210> 127
<211> 67
<212> DNA
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<220>
<223> Primer No. : Si_511

<400> 127
cgtatctaga gaaaatctgt attttcaaag tgaaaatctg tattttcaaa gtgtgagcaa 60

gggcgag 67

<210> 128
<211> 91

<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_512

<400> 128
cgtatctaga gaaaatctgt attttcaaag tgaaaatctg tattttcaaa gtccgccgaa 60

aaaaaaacgt aaagttgtga gcaagggcga g 91

<210> 129
<211> 55
<212> DNA
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<220>
<223> Primer No. : Si_513

<400> 129
gttaaagctt ttaaacttta cgtttttttt tcggcggctt gtacagctcg tccat 55

<210> 130
<211> 90
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_515

<400> 130
cgtatctaga gaaaatctgt attttcaaag tgaaaatctg tattttcaaa gtgattataa 60

agatgatgat gataaaatgg ccgagccttg 90

<210> 131
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<220>
<223> Primer No. : Si_558

<400> 131
cgtatctaga atgaccagtt ttgaagatgc 30

<210> 132
<211> 31
<212> DNA
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<220>
<223> Primer No. : Si_559

<400> 132
gttaaagctt tcatgactca ttttcatcca t 31

<210> 133
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_561

<400> 133
cgtatctaga atgagtctct taaactgtga gaacag 36

<210> 134
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_562

<400> 134
gttaaagctt ctacaccccc gcatca 26

<210> 135
<211> 405
<212> PRT
<213> Artificial Sequence

<220>
<223> YopE1-138 - SopE - MycHis

<400> 135

Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1 5 10 15

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Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30

Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45

Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60

Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80

Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95

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

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

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Val Thr Asn Ile
    130                 135                 140

Thr Leu Ser Thr Gln His Tyr Arg Ile His Arg Ser Asp Val Glu Pro
145                 150                 155                 160

Val Lys Glu Lys Thr Thr Glu Lys Asp Ile Phe Ala Lys Ser Ile Thr
                165                 170                 175

Ala Val Arg Asn Ser Phe Ile Ser Leu Ser Thr Ser Leu Ser Asp Arg
            180                 185                 190

Phe Ser Leu His Gln Gln Thr Asp Ile Pro Thr Thr His Phe His Arg
        195                 200                 205

Gly Asn Ala Ser Glu Gly Arg Ala Val Leu Thr Ser Lys Thr Val Lys
    210                 215                 220
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Asp Phe Met Leu Gln Lys Leu Asn Ser Leu Asp Ile Lys Gly Asn Ala
225                 230                 235                 240

Ser Lys Asp Pro Ala Tyr Ala Arg Gln Thr Cys Glu Ala Ile Leu Ser
                245                 250                 255

Ala Val Tyr Ser Asn Asn Lys Asp Gln Cys Cys Lys Leu Leu Ile Ser
            260                 265                 270

Lys Gly Val Ser Ile Thr Pro Phe Leu Lys Glu Ile Gly Glu Ala Ala
        275                 280                 285

Gln Asn Ala Gly Leu Pro Gly Glu Ile Lys Asn Gly Val Phe Thr Pro
    290                 295                 300

Gly Gly Ala Gly Ala Asn Pro Phe Val Val Pro Leu Ile Ala Ser Ala
305                 310                 315                 320

Ser Ile Lys Tyr Pro His Met Phe Ile Asn His Asn Gln Gln Val Ser
                325                 330                 335

Phe Lys Ala Tyr Ala Glu Lys Ile Val Met Lys Glu Val Thr Pro Leu
            340                 345                 350

Phe Asn Lys Gly Thr Met Pro Thr Pro Gln Gln Phe Gln Leu Thr Ile
        355                 360                 365

Glu Asn Ile Ala Asn Lys Tyr Leu Gln Asn Ala Ser Lys Leu Gly Pro
    370                 375                 380

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

His His His His His
                405
```

<210> 136
<211> 435
<212> PRT
<213> Artificial Sequence

<220>
<223> YopE1-138 - BepG 715-end

<400> 136

```
Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                   10                  15


Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30


Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45


Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60


Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80


Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95


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


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


Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Phe Thr Gln Glu
    130                 135                 140


Thr Gln Lys Met Leu Ile Glu Lys Glu Ile Ile Pro Pro Leu Ser Tyr
145                 150                 155                 160
```

```
Val Asp Val Ala Ser Lys Ile Arg Glu Ser Glu Val Val Lys Ser Ser
                165                 170                 175

Met Gln Lys Ile Lys Thr Leu Cys Gly Val Val Tyr Gly Asn Pro Asp
            180                 185                 190

Ile Leu Glu Gly Lys Met Pro Lys Met Gly Ile Pro Val Thr Asn Lys
        195                 200                 205

Asn Val Glu Glu Leu Glu Lys Phe Ala Arg Gln Val Gly Asn Phe Pro
    210                 215                 220

Ser Ser Cys Gly Lys Ile Val Gly Phe Ser Phe Leu Gly Ile Lys Ser
225                 230                 235                 240

Glu Ala Arg Ala His Ala Glu Glu Asn Phe Leu Pro Leu Ser His Ala
                245                 250                 255

Ile Phe Ser Tyr Ala His Asn Val Lys Gln Ala Glu Lys Asp Ile Leu
            260                 265                 270

Glu Ala Tyr Phe Lys Glu Gln Glu Arg Cys Ala Gln Ser Val Glu Thr
        275                 280                 285

Pro Ser Glu Glu Ile Thr Asn Leu Leu Ser Phe Thr Gln Glu Gln Gln
    290                 295                 300

Lys Glu Ile Leu Ser Asn Ser Pro Lys Leu Arg Thr Gln Val Lys Ala
305                 310                 315                 320

Tyr Ser Gln Lys Leu His Asn Arg Leu Ser Pro Asn Asp Leu Gln Ala
                325                 330                 335

Ile Ser Glu Arg Ser His Thr Lys Leu Ala Glu Ser Leu Gly Thr Ser
            340                 345                 350

Val Asn Gln Ala Glu Lys Ile Ala Gln Ile Leu Thr Gln Thr Lys Asp
        355                 360                 365
```

```
Val Val Gln Ile Leu Gln Gln Gln Glu Lys Leu Gly Leu Tyr Gln Ser
    370                 375                 380

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

Ile Lys Ala Thr Gln Met Thr Thr Lys Val Thr Ser Leu Lys Ala Val
                405                 410                 415

Glu Gln Ile Val Arg Pro Pro Lys Val Glu Thr Ala Lys Val Val Ser
            420                 425                 430

Met Ser Arg
        435
```

<210> 137
<211> 354
<212> PRT
<213> Artificial Sequence

<220>
<223> YopE1-138 - Rac1 Q61E - MycHis

<400> 137

```
Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                   10                  15

Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30

Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45

Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60

Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80
```

```
Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
               85                  90                  95

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

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

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Gln Ala Ile Lys
    130                 135                 140

Cys Val Val Val Gly Asp Gly Ala Val Gly Lys Thr Cys Leu Leu Ile
145                 150                 155                 160

Ser Tyr Thr Thr Asn Ala Phe Pro Gly Glu Tyr Ile Pro Thr Val Phe
               165                 170                 175

Asp Asn Tyr Ser Ala Asn Val Met Val Asp Gly Lys Pro Val Asn Leu
            180                 185                 190

Gly Leu Trp Asp Thr Ala Gly Glu Glu Asp Tyr Asp Arg Leu Arg Pro
        195                 200                 205

Leu Ser Tyr Pro Gln Thr Asp Val Phe Leu Ile Cys Phe Ser Leu Val
    210                 215                 220

Ser Pro Ala Ser Phe Glu Asn Val Arg Ala Lys Trp Tyr Pro Glu Val
225                 230                 235                 240

Arg His His Cys Pro Asn Thr Pro Ile Ile Leu Val Gly Thr Lys Leu
               245                 250                 255

Asp Leu Arg Asp Asp Lys Asp Thr Ile Glu Lys Leu Lys Glu Lys Lys
            260                 265                 270
```

```
Leu Thr Pro Ile Thr Tyr Pro Gln Gly Leu Ala Met Ala Lys Glu Ile
        275                 280                 285

Gly Ala Val Lys Tyr Leu Glu Cys Ser Ala Leu Thr Gln Arg Gly Leu
    290                 295                 300

Lys Thr Val Phe Asp Glu Ala Ile Arg Ala Val Leu Cys Pro Pro Pro
305                 310                 315                 320

Val Lys Lys Arg Lys Arg Lys Phe Glu Lys Leu Gly Pro Glu Gln Lys
                325                 330                 335

Leu Ile Ser Glu Glu Asp Leu Asn Ser Ala Val Asp His His His His
            340                 345                 350

His His
```

<210> 138
<211> 163
<212> PRT
<213> Artificial Sequence

<220>
<223> YopE1-138 - Y. enterocolitica codon optimized murine BID BH3 part

<400> 138

```
Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                   10                  15

Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30

Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45

Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60

Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
```

65 70 75 80

Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
85 90 95

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

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

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Ser Arg Phe Glu
130 135 140

Glu Ile Ile His Asn Ile Ala Arg His Leu Ala Gln Ile Gly Asp Glu
145 150 155 160

Met Asp His

<210> 139
<211> 156
<212> PRT
<213> Artificial Sequence

<220>
<223> YopE1-138 - Y. enterocolitica codon optimized murine Bax BH3 part

<400> 139

Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1 5 10 15

Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
20 25 30

Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
35 40 45

Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser

```
    50                  55                  60

Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80

Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95

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

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

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Lys Lys Leu Ser
    130                 135                 140

Glu Cys Leu Arg Arg Ile Gly Asp Glu Leu Asp Ser
145                 150                 155


<210>  140
<211>  20
<212>  PRT
<213>  Salmonella enterica

<220>
<223>  SteA1-20

<400>  140

Met Pro Tyr Thr Ser Val Ser Thr Tyr Ala Arg Ala Leu Ser Gly Asn
1               5                   10                  15

Lys Leu Pro His
            20


<210>  141
<211>  210
<212>  PRT
<213>  Salmonella enterica
```

<220>
<223> SteA

<400> 141

Met Pro Tyr Thr Ser Val Ser Thr Tyr Ala Arg Ala Leu Ser Gly Asn
1   5   10   15

Lys Leu Pro His Val Ala Ala Gly Asp Tyr Glu Asn Lys Leu Ser Thr
            20   25   30

Lys Ile Met Lys Gly Ile Leu Tyr Val Leu Thr Ala Gly Leu Ala Tyr
        35   40   45

Gly Phe Thr Arg Val Ile Glu His Tyr Cys Asn Val Thr Pro Lys Val
    50   55   60

Ala Glu Phe Cys Ala Asn Ala Gly Asn Ile His Asn His Leu Ala Asp
65   70   75   80

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

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

Ile Val Arg Ile Ser Asp Gly Glu His Thr Val Glu Val Glu Gly Thr
        115   120   125

Phe Glu Glu Ile Cys Met Arg Leu Glu Glu Gly Phe Phe Glu Ala Pro
    130   135   140

Ala Tyr Tyr Asp Tyr Asp Ile Asp Glu Lys Tyr Lys Thr Val Arg Glu
145   150   155   160

Arg Met Ala Ala Tyr Asn Ala Leu Pro Gln Ala Leu Gly Ala Ile Pro
                165   170   175

Cys Leu Glu Tyr Tyr Ile Ala Arg Ala Ser Asn Met Gln Glu Ala Lys

180 185 190

Ala Gln Trp Ala Ala Asp Ile Lys Ala Arg Tyr His Asn Tyr Leu Asp
195 200 205

Asn Tyr
210

<210> 142
<211> 81
<212> PRT
<213> Salmonella enterica

<220>
<223> SopE1-81

<400> 142

Val Thr Lys Ile Thr Leu Ser Pro Gln Asn Phe Arg Ile Gln Lys Gln
1 5 10 15

Glu Thr Thr Leu Leu Lys Glu Lys Ser Thr Glu Lys Asn Ser Leu Ala
20 25 30

Lys Ser Ile Leu Ala Val Lys Asn His Phe Ile Glu Leu Arg Ser Lys
35 40 45

Leu Ser Glu Arg Phe Ile Ser His Lys Asn Thr Glu Ser Ser Ala Thr
50 55 60

His Phe His Arg Gly Ser Ala Ser Glu Gly Arg Ala Val Leu Thr Asn
65 70 75 80

Lys

<210> 143
<211> 105
<212> PRT
<213> Salmonella enterica

<220>

<223> SopE1-105

<400> 143

Val Thr Lys Ile Thr Leu Ser Pro Gln Asn Phe Arg Ile Gln Lys Gln
1   5   10   15

Glu Thr Thr Leu Leu Lys Glu Lys Ser Thr Glu Lys Asn Ser Leu Ala
            20   25   30

Lys Ser Ile Leu Ala Val Lys Asn His Phe Ile Glu Leu Arg Ser Lys
        35   40   45

Leu Ser Glu Arg Phe Ile Ser His Lys Asn Thr Glu Ser Ser Ala Thr
    50   55   60

His Phe His Arg Gly Ser Ala Ser Glu Gly Arg Ala Val Leu Thr Asn
65   70   75   80

Lys Val Val Lys Asp Phe Met Leu Gln Thr Leu Asn Asp Ile Asp Ile
                85   90   95

Arg Gly Ser Ala Ser Lys Asp Pro Ala
            100   105

<210> 144
<211> 158
<212> PRT
<213> Artificial Sequence

<220>
<223> SteA1-20 - S. enterica codon optimized murine t-BID

<400> 144

Met Pro Tyr Thr Ser Val Ser Thr Tyr Ala Arg Ala Leu Ser Gly Asn
1   5   10   15

Lys Leu Pro His Gly Thr Gly Ser Gln Ala Ser Arg Ser Phe Asn Gln
            20   25   30

```
Gly Arg Ile Glu Pro Asp Ser Glu Ser Gln Glu Glu Ile Ile His Asn
        35                  40                  45


Ile Ala Arg His Leu Ala Gln Ile Gly Asp Glu Met Asp His Asn Ile
    50                  55                  60


Gln Pro Thr Leu Val Arg Gln Leu Ala Ala Gln Phe Met Asn Gly Ser
65                  70                  75                  80


Leu Ser Glu Glu Asp Lys Arg Asn Cys Leu Ala Lys Ala Leu Asp Glu
                85                  90                  95


Val Lys Thr Ala Phe Pro Arg Asp Met Glu Asn Asp Lys Ala Met Leu
            100                 105                 110


Ile Met Thr Met Leu Leu Ala Lys Lys Val Ala Ser His Ala Pro Ser
        115                 120                 125


Leu Leu Arg Asp Val Phe His Thr Thr Val Asn Phe Ile Asn Gln Asn
    130                 135                 140


Leu Phe Ser Tyr Val Arg Asn Leu Val Arg Asn Glu Met Asp
145                 150                 155


<210>  145
<211>  348
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  SteA - S. enterica codon optimized murine t-BID

<400>  145

Met Pro Tyr Thr Ser Val Ser Thr Tyr Ala Arg Ala Leu Ser Gly Asn
1               5                   10                  15


Lys Leu Pro His Val Ala Ala Gly Asp Tyr Glu Asn Lys Leu Ser Thr
            20                  25                  30
```

```
Lys Ile Met Lys Gly Ile Leu Tyr Val Leu Thr Ala Gly Leu Ala Tyr
        35                  40                  45

Gly Phe Thr Arg Val Ile Glu His Tyr Cys Asn Val Thr Pro Lys Val
    50                  55                  60

Ala Glu Phe Cys Ala Asn Ala Gly Asn Ile His Asn His Leu Ala Asp
65                  70                  75                  80

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

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

Ile Val Arg Ile Ser Asp Gly Glu His Thr Val Glu Val Glu Gly Thr
        115                 120                 125

Phe Glu Glu Ile Cys Met Arg Leu Glu Glu Gly Phe Phe Glu Ala Pro
    130                 135                 140

Ala Tyr Tyr Asp Tyr Asp Ile Asp Glu Lys Tyr Lys Thr Val Arg Glu
145                 150                 155                 160

Arg Met Ala Ala Tyr Asn Ala Leu Pro Gln Ala Leu Gly Ala Ile Pro
                165                 170                 175

Cys Leu Glu Tyr Tyr Ile Ala Arg Ala Ser Asn Met Gln Glu Ala Lys
            180                 185                 190

Ala Gln Trp Ala Ala Asp Ile Lys Ala Arg Tyr His Asn Tyr Leu Asp
        195                 200                 205

Asn Tyr Gly Thr Gly Ser Gln Ala Ser Arg Ser Phe Asn Gln Gly Arg
    210                 215                 220

Ile Glu Pro Asp Ser Glu Ser Gln Glu Glu Ile Ile His Asn Ile Ala
225                 230                 235                 240
```

```
Arg His Leu Ala Gln Ile Gly Asp Glu Met Asp His Asn Ile Gln Pro
                245                 250                 255


Thr Leu Val Arg Gln Leu Ala Ala Gln Phe Met Asn Gly Ser Leu Ser
            260                 265                 270


Glu Glu Asp Lys Arg Asn Cys Leu Ala Lys Ala Leu Asp Glu Val Lys
        275                 280                 285


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


Thr Met Leu Leu Ala Lys Lys Val Ala Ser His Ala Pro Ser Leu Leu
305                 310                 315                 320


Arg Asp Val Phe His Thr Thr Val Asn Phe Ile Asn Gln Asn Leu Phe
                325                 330                 335


Ser Tyr Val Arg Asn Leu Val Arg Asn Glu Met Asp
            340                 345


<210>  146
<211>  219
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  SopE1-81 - S. enterica codon optimized murine t-BID

<400>  146

Val Thr Lys Ile Thr Leu Ser Pro Gln Asn Phe Arg Ile Gln Lys Gln
1               5                   10                  15


Glu Thr Thr Leu Leu Lys Glu Lys Ser Thr Glu Lys Asn Ser Leu Ala
            20                  25                  30


Lys Ser Ile Leu Ala Val Lys Asn His Phe Ile Glu Leu Arg Ser Lys
        35                  40                  45
```

```
Leu Ser Glu Arg Phe Ile Ser His Lys Asn Thr Glu Ser Ser Ala Thr
    50                  55                  60

His Phe His Arg Gly Ser Ala Ser Glu Gly Arg Ala Val Leu Thr Asn
65                  70                  75                  80

Lys Gly Thr Gly Ser Gln Ala Ser Arg Ser Phe Asn Gln Gly Arg Ile
                85                  90                  95

Glu Pro Asp Ser Glu Ser Gln Glu Glu Ile Ile His Asn Ile Ala Arg
            100                 105                 110

His Leu Ala Gln Ile Gly Asp Glu Met Asp His Asn Ile Gln Pro Thr
        115                 120                 125

Leu Val Arg Gln Leu Ala Ala Gln Phe Met Asn Gly Ser Leu Ser Glu
    130                 135                 140

Glu Asp Lys Arg Asn Cys Leu Ala Lys Ala Leu Asp Glu Val Lys Thr
145                 150                 155                 160

Ala Phe Pro Arg Asp Met Glu Asn Asp Lys Ala Met Leu Ile Met Thr
                165                 170                 175

Met Leu Leu Ala Lys Lys Val Ala Ser His Ala Pro Ser Leu Leu Arg
            180                 185                 190

Asp Val Phe His Thr Thr Val Asn Phe Ile Asn Gln Asn Leu Phe Ser
        195                 200                 205

Tyr Val Arg Asn Leu Val Arg Asn Glu Met Asp
    210                 215
```

<210> 147
<211> 243
<212> PRT
<213> Artificial Sequence

<220>
<223> SopE1-105 - S. enterica codon optimized murine t-BID

<400> 147

```
Val Thr Lys Ile Thr Leu Ser Pro Gln Asn Phe Arg Ile Gln Lys Gln
1               5                  10                  15


Glu Thr Thr Leu Leu Lys Glu Lys Ser Thr Glu Lys Asn Ser Leu Ala
            20                  25                  30


Lys Ser Ile Leu Ala Val Lys Asn His Phe Ile Glu Leu Arg Ser Lys
        35                  40                  45


Leu Ser Glu Arg Phe Ile Ser His Lys Asn Thr Glu Ser Ser Ala Thr
    50                  55                  60


His Phe His Arg Gly Ser Ala Ser Glu Gly Arg Ala Val Leu Thr Asn
65                  70                  75                  80


Lys Val Val Lys Asp Phe Met Leu Gln Thr Leu Asn Asp Ile Asp Ile
                85                  90                  95


Arg Gly Ser Ala Ser Lys Asp Pro Ala Gly Thr Gly Ser Gln Ala Ser
            100                 105                 110


Arg Ser Phe Asn Gln Gly Arg Ile Glu Pro Asp Ser Glu Ser Gln Glu
        115                 120                 125


Glu Ile Ile His Asn Ile Ala Arg His Leu Ala Gln Ile Gly Asp Glu
    130                 135                 140


Met Asp His Asn Ile Gln Pro Thr Leu Val Arg Gln Leu Ala Ala Gln
145                 150                 155                 160


Phe Met Asn Gly Ser Leu Ser Glu Glu Asp Lys Arg Asn Cys Leu Ala
                165                 170                 175
```

Lys Ala Leu Asp Glu Val Lys Thr Ala Phe Pro Arg Asp Met Glu Asn
180 185 190

Asp Lys Ala Met Leu Ile Met Thr Met Leu Leu Ala Lys Lys Val Ala
195 200 205

Ser His Ala Pro Ser Leu Leu Arg Asp Val Phe His Thr Thr Val Asn
210 215 220

Phe Ile Asn Gln Asn Leu Phe Ser Tyr Val Arg Asn Leu Val Arg Asn
225 230 235 240

Glu Met Asp

<210> 148
<211> 82
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_677

<400> 148
ttactattcg aagaaattat tcataatatt gcccgccatc tggcccaaat tggtgatgaa 60

atggatcatt aagcttggag ta 82

<210> 149
<211> 82
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_678

<400> 149
tactccaagc ttaatgatcc atttcatcac caatttgggc cagatggcgg gcaatattat 60

gaataatttc ttcgaatagt aa 82

<210> 150
<211> 73

<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_682

<400> 150
ttactactcg agaaaaaact gagcgaatgt ctgcgccgca ttggtgatga actggatagc 60

taagcttgga gta 73

<210> 151
<211> 73
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_683

<400> 151
tactccaagc ttagctatcc agttcatcac caatgcggcg cagacattcg ctcagttttt 60

tctcgagtag taa 73

<210> 152
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_580

<400> 152
catgccatgg atttatggtc atagatatga cctc 34

<210> 153
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_612

<400> 153
cggggtacca tgaggtagct tatttcctga taaag 35

<210> 154
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_613

<400> 154
cggggtacca taattgtcca aatagttatg gtagc 35

<210> 155
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_614

<400> 155
catgccatggc ggcaaggctc ctc 24

<210> 156
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_615

<400> 156
cggggtacct ttatttgtca acactgccc 29

<210> 157
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_616

<400> 157
cggggtacct gcggggtctt tactcg 26

<210> 158
<211> 164

<212> PRT
<213> Artificial Sequence

<220>
<223> YopE1-138-Y. enterocolitica codon optimized Ink4A 84-103

<400> 158

Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1 5 10 15

Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
20 25 30

Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
35 40 45

Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
50 55 60

Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65 70 75 80

Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
85 90 95

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

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

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Gly Ala Ile Asp
130 135 140

Asp Ala Ala Arg Glu Gly Phe Leu Asp Thr Leu Val Val Leu His Arg
145 150 155 160

Ala Gly Ala Arg

<210> 159
<211> 164
<212> PRT
<213> Artificial Sequence

<220>
<223> YopE1-138-Y. enterocolitica codon optimized p107/RBL1 657-662
(AAA02489.1)

<400> 159

Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1 5 10 15

Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
20 25 30

Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
35 40 45

Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
50 55 60

Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65 70 75 80

Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
85 90 95

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

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

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Gly Ala Ile Asp
130 135 140

Tyr Gly Arg Lys Lys Arg Arg Gln Arg Arg Arg Gly Pro Val Lys Arg

145 150 155 160

Arg Leu Phe Gly

<210> 160
<211> 164
<212> PRT
<213> Artificial Sequence

<220>
<223> YopE1-138-Y. enterocolitica codon optimized p21 141-160 (AAH13967.1)

<400> 160

Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1 5 10 15

Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
20 25 30

Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
35 40 45

Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
50 55 60

Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65 70 75 80

Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
85 90 95

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

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

```
Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Gly Ala Ile Asp
    130                 135                 140

Lys Arg Arg Gln Thr Ser Met Thr Ala Phe Tyr His Ser Lys Arg Arg
145                 150                 155                 160

Leu Ile Phe Ser
```

<210> 161
<211> 160
<212> PRT
<213> Artificial Sequence

<220>
<223> YopE1-138-Y. enterocolitica codon optimized p21 145-160 (AAH13967.1)

<400> 161

```
Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                   10                  15

Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30

Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45

Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60

Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80

Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95

Pro Ser Pro Thr Ser Phe Ser Asp Ser Ile Lys Gln Leu Ala Ala Glu
            100                 105                 110
```

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

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Gly Ala Ile Asp
130 135 140

Thr Ser Met Thr Ala Phe Tyr His Ser Lys Arg Arg Leu Ile Phe Ser
145 150 155 160

<210> 162
<211> 161
<212> PRT
<213> Artificial Sequence

<220>
<223> YopE1-138-Y. enterocolitica codon optimized p21 17-33
(AAH13967.1)

<400> 162

Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1 5 10 15

Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
20 25 30

Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
35 40 45

Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
50 55 60

Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65 70 75 80

Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
85 90 95

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

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

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Gly Ala Ile Asp
130 135 140

Ala Cys Arg Arg Leu Phe Gly Pro Val Asp Ser Glu Gln Leu Ser Arg
145 150 155 160

Asp

<210> 163
<211> 153
<212> PRT
<213> Artificial Sequence

<220>
<223> YopE1-138-Y. enterocolitica codon optimized cyclin D2 139-147 (CAA48493.1)

<400> 163

Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1 5 10 15

Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
20 25 30

Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
35 40 45

Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
50 55 60

Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65 70 75 80

Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met

85 90 95

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

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

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Gly Ala Ile Asp
130 135 140

Trp Glu Leu Val Val Leu Gly Lys Leu
145 150

<210> 164
<211> 397
<212> PRT
<213> Artificial Sequence

<220>
<223> SteA-Ink4a-MycHis

<400> 164

Met Pro Tyr Thr Ser Val Ser Thr Tyr Ala Arg Ala Leu Ser Gly Asn
1 5 10 15

Lys Leu Pro His Val Ala Ala Gly Asp Tyr Glu Asn Lys Leu Ser Thr
20 25 30

Lys Ile Met Lys Gly Ile Leu Tyr Val Leu Thr Ala Gly Leu Ala Tyr
35 40 45

Gly Phe Thr Arg Val Ile Glu His Tyr Cys Asn Val Thr Pro Lys Val
50 55 60

Ala Glu Phe Cys Ala Asn Ala Gly Asn Ile His Asn His Leu Ala Asp
65 70 75 80

Ala Val Arg Asp Gly Leu Phe Thr Ile Asp Val Glu Leu Ser Asp Gly

```
                85                  90                  95

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

Ile Val Arg Ile Ser Asp Gly Glu His Thr Val Glu Val Glu Gly Thr
        115                 120                 125

Phe Glu Glu Ile Cys Met Arg Leu Glu Glu Gly Phe Phe Glu Ala Pro
    130                 135                 140

Ala Tyr Tyr Asp Tyr Asp Ile Asp Glu Lys Tyr Lys Thr Val Arg Glu
145                 150                 155                 160

Arg Met Ala Ala Tyr Asn Ala Leu Pro Gln Ala Leu Gly Ala Ile Pro
                165                 170                 175

Cys Leu Glu Tyr Tyr Ile Ala Arg Ala Ser Asn Met Gln Glu Ala Lys
            180                 185                 190

Ala Gln Trp Ala Ala Asp Ile Lys Ala Arg Tyr His Asn Tyr Leu Asp
        195                 200                 205

Asn Tyr Gly Thr Ile Trp Glu Phe Met Glu Pro Ala Ala Gly Ser Ser
    210                 215                 220

Met Glu Pro Ser Ala Asp Trp Leu Ala Thr Ala Ala Ala Arg Gly Arg
225                 230                 235                 240

Val Glu Glu Val Arg Ala Leu Leu Glu Ala Gly Ala Leu Pro Asn Ala
                245                 250                 255

Pro Asn Ser Tyr Gly Arg Arg Pro Ile Gln Val Met Met Met Gly Ser
            260                 265                 270

Ala Arg Val Ala Glu Leu Leu Leu Leu His Gly Ala Glu Pro Asn Cys
        275                 280                 285
```

```
Ala Asp Pro Ala Thr Leu Thr Arg Pro Val His Asp Ala Ala Arg Glu
    290                 295                 300

Gly Phe Leu Asp Thr Leu Val Val Leu His Arg Ala Gly Ala Arg Leu
305                 310                 315                 320

Asp Val Arg Asp Ala Trp Gly Arg Leu Pro Val Asp Leu Ala Glu Glu
                325                 330                 335

Leu Gly His Arg Asp Val Ala Arg Tyr Leu Arg Ala Ala Ala Gly Gly
            340                 345                 350

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

Asp Ile Pro Asp Lys Leu Gly Pro Glu Gln Lys Leu Ile Ser Glu Glu
    370                 375                 380

Asp Leu Asn Ser Ala Val Asp His His His His His His
385                 390                 395
```

<210> 165
<211> 292
<212> PRT
<213> Artificial Sequence

<220>
<223> SopE1-105-Ink4a-MycHis

<400> 165

```
Val Thr Lys Ile Thr Leu Ser Pro Gln Asn Phe Arg Ile Gln Lys Gln
1               5                   10                  15

Glu Thr Thr Leu Leu Lys Glu Lys Ser Thr Glu Lys Asn Ser Leu Ala
            20                  25                  30

Lys Ser Ile Leu Ala Val Lys Asn His Phe Ile Glu Leu Arg Ser Lys
        35                  40                  45
```

```
Leu Ser Glu Arg Phe Ile Ser His Lys Asn Thr Glu Ser Ser Ala Thr
    50                  55                  60

His Phe His Arg Gly Ser Ala Ser Glu Gly Arg Ala Val Leu Thr Asn
65                  70                  75                  80

Lys Val Val Lys Asp Phe Met Leu Gln Thr Leu Asn Asp Ile Asp Ile
                85                  90                  95

Arg Gly Ser Ala Ser Lys Asp Pro Ala Gly Thr Ile Trp Glu Phe Met
            100                 105                 110

Glu Pro Ala Ala Gly Ser Ser Met Glu Pro Ser Ala Asp Trp Leu Ala
        115                 120                 125

Thr Ala Ala Ala Arg Gly Arg Val Glu Glu Val Arg Ala Leu Leu Glu
    130                 135                 140

Ala Gly Ala Leu Pro Asn Ala Pro Asn Ser Tyr Gly Arg Arg Pro Ile
145                 150                 155                 160

Gln Val Met Met Met Gly Ser Ala Arg Val Ala Glu Leu Leu Leu Leu
                165                 170                 175

His Gly Ala Glu Pro Asn Cys Ala Asp Pro Ala Thr Leu Thr Arg Pro
            180                 185                 190

Val His Asp Ala Ala Arg Glu Gly Phe Leu Asp Thr Leu Val Val Leu
        195                 200                 205

His Arg Ala Gly Ala Arg Leu Asp Val Arg Asp Ala Trp Gly Arg Leu
    210                 215                 220

Pro Val Asp Leu Ala Glu Glu Leu Gly His Arg Asp Val Ala Arg Tyr
225                 230                 235                 240

Leu Arg Ala Ala Ala Gly Gly Thr Arg Gly Ser Asn His Ala Arg Ile
```

245 250 255

Asp Ala Ala Glu Gly Pro Ser Asp Ile Pro Asp Lys Leu Gly Pro Glu
260 265 270

Gln Lys Leu Ile Ser Glu Glu Asp Leu Asn Ser Ala Val Asp His His
275 280 285

His His His His
290

<210> 166
<211> 409
<212> PRT
<213> Artificial Sequence

<220>
<223> SteA-Ink4c-MycHis

<400> 166

Met Pro Tyr Thr Ser Val Ser Thr Tyr Ala Arg Ala Leu Ser Gly Asn
1 5 10 15

Lys Leu Pro His Val Ala Ala Gly Asp Tyr Glu Asn Lys Leu Ser Thr
20 25 30

Lys Ile Met Lys Gly Ile Leu Tyr Val Leu Thr Ala Gly Leu Ala Tyr
35 40 45

Gly Phe Thr Arg Val Ile Glu His Tyr Cys Asn Val Thr Pro Lys Val
50 55 60

Ala Glu Phe Cys Ala Asn Ala Gly Asn Ile His Asn His Leu Ala Asp
65 70 75 80

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

Arg Met Leu Thr Phe Glu Gln Leu Ser Leu Ile Ala Glu Gly Lys Pro

```
            100                 105                 110

Ile Val Arg Ile Ser Asp Gly Glu His Thr Val Glu Val Glu Gly Thr
        115                 120                 125

Phe Glu Glu Ile Cys Met Arg Leu Glu Glu Gly Phe Phe Glu Ala Pro
    130                 135                 140

Ala Tyr Tyr Asp Tyr Asp Ile Asp Glu Lys Tyr Lys Thr Val Arg Glu
145                 150                 155                 160

Arg Met Ala Ala Tyr Asn Ala Leu Pro Gln Ala Leu Gly Ala Ile Pro
                165                 170                 175

Cys Leu Glu Tyr Tyr Ile Ala Arg Ala Ser Asn Met Gln Glu Ala Lys
            180                 185                 190

Ala Gln Trp Ala Ala Asp Ile Lys Ala Arg Tyr His Asn Tyr Leu Asp
        195                 200                 205

Asn Tyr Gly Thr Ile Trp Glu Phe Met Ala Glu Pro Trp Gly Asn Glu
    210                 215                 220

Leu Ala Ser Ala Ala Ala Arg Gly Asp Leu Glu Gln Leu Thr Ser Leu
225                 230                 235                 240

Leu Gln Asn Asn Val Asn Val Asn Ala Gln Asn Gly Phe Gly Arg Thr
                245                 250                 255

Ala Leu Gln Val Met Lys Leu Gly Asn Pro Glu Ile Ala Arg Arg Leu
            260                 265                 270

Leu Leu Arg Gly Ala Asn Pro Asp Leu Lys Asp Arg Thr Gly Phe Ala
        275                 280                 285

Val Ile His Asp Ala Ala Arg Ala Gly Phe Leu Asp Thr Leu Gln Thr
    290                 295                 300
```

```
Leu Leu Glu Phe Gln Ala Asp Val Asn Ile Glu Asp Asn Glu Gly Asn
305                 310                 315                 320


Leu Pro Leu His Leu Ala Ala Lys Glu Gly His Leu Arg Val Val Glu
                325                 330                 335


Phe Leu Val Lys His Thr Ala Ser Asn Val Gly His Arg Asn His Lys
            340                 345                 350


Gly Asp Thr Ala Cys Asp Leu Ala Arg Leu Tyr Gly Arg Asn Glu Val
        355                 360                 365


Val Ser Leu Met Gln Ala Asn Gly Ala Gly Gly Ala Thr Asn Leu Gln
    370                 375                 380


Lys Leu Gly Pro Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu Asn Ser
385                 390                 395                 400


Ala Val Asp His His His His His His
                405


<210>  167
<211>  304
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  SopE1-105-Ink4c-MycHis

<400>  167

Val Thr Lys Ile Thr Leu Ser Pro Gln Asn Phe Arg Ile Gln Lys Gln
1               5                   10                  15


Glu Thr Thr Leu Leu Lys Glu Lys Ser Thr Glu Lys Asn Ser Leu Ala
            20                  25                  30


Lys Ser Ile Leu Ala Val Lys Asn His Phe Ile Glu Leu Arg Ser Lys
        35                  40                  45
```

```
Leu Ser Glu Arg Phe Ile Ser His Lys Asn Thr Glu Ser Ser Ala Thr
    50                  55                  60

His Phe His Arg Gly Ser Ala Ser Glu Gly Arg Ala Val Leu Thr Asn
65                  70                  75                  80

Lys Val Val Lys Asp Phe Met Leu Gln Thr Leu Asn Asp Ile Asp Ile
                85                  90                  95

Arg Gly Ser Ala Ser Lys Asp Pro Ala Gly Thr Ile Trp Glu Phe Met
            100                 105                 110

Ala Glu Pro Trp Gly Asn Glu Leu Ala Ser Ala Ala Ala Arg Gly Asp
        115                 120                 125

Leu Glu Gln Leu Thr Ser Leu Leu Gln Asn Asn Val Asn Val Asn Ala
    130                 135                 140

Gln Asn Gly Phe Gly Arg Thr Ala Leu Gln Val Met Lys Leu Gly Asn
145                 150                 155                 160

Pro Glu Ile Ala Arg Arg Leu Leu Leu Arg Gly Ala Asn Pro Asp Leu
                165                 170                 175

Lys Asp Arg Thr Gly Phe Ala Val Ile His Asp Ala Ala Arg Ala Gly
            180                 185                 190

Phe Leu Asp Thr Leu Gln Thr Leu Leu Glu Phe Gln Ala Asp Val Asn
        195                 200                 205

Ile Glu Asp Asn Glu Gly Asn Leu Pro Leu His Leu Ala Ala Lys Glu
    210                 215                 220

Gly His Leu Arg Val Val Glu Phe Leu Val Lys His Thr Ala Ser Asn
225                 230                 235                 240

Val Gly His Arg Asn His Lys Gly Asp Thr Ala Cys Asp Leu Ala Arg
```

245 250 255

Leu Tyr Gly Arg Asn Glu Val Val Ser Leu Met Gln Ala Asn Gly Ala
260 265 270

Gly Gly Ala Thr Asn Leu Gln Lys Leu Gly Pro Glu Gln Lys Leu Ile
275 280 285

Ser Glu Glu Asp Leu Asn Ser Ala Val Asp His His His His His His
290 295 300

<210> 168
<211> 446
<212> PRT
<213> Artificial Sequence

<220>
<223> SteA-Mad2-MycHis

<400> 168

Met Pro Tyr Thr Ser Val Ser Thr Tyr Ala Arg Ala Leu Ser Gly Asn
1 5 10 15

Lys Leu Pro His Val Ala Ala Gly Asp Tyr Glu Asn Lys Leu Ser Thr
20 25 30

Lys Ile Met Lys Gly Ile Leu Tyr Val Leu Thr Ala Gly Leu Ala Tyr
35 40 45

Gly Phe Thr Arg Val Ile Glu His Tyr Cys Asn Val Thr Pro Lys Val
50 55 60

Ala Glu Phe Cys Ala Asn Ala Gly Asn Ile His Asn His Leu Ala Asp
65 70 75 80

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

Arg Met Leu Thr Phe Glu Gln Leu Ser Leu Ile Ala Glu Gly Lys Pro

```
            100                 105                 110

Ile Val Arg Ile Ser Asp Gly Glu His Thr Val Glu Val Glu Gly Thr
        115                 120                 125

Phe Glu Glu Ile Cys Met Arg Leu Glu Glu Gly Phe Phe Glu Ala Pro
    130                 135                 140

Ala Tyr Tyr Asp Tyr Asp Ile Asp Glu Lys Tyr Lys Thr Val Arg Glu
145                 150                 155                 160

Arg Met Ala Ala Tyr Asn Ala Leu Pro Gln Ala Leu Gly Ala Ile Pro
                165                 170                 175

Cys Leu Glu Tyr Tyr Ile Ala Arg Ala Ser Asn Met Gln Glu Ala Lys
            180                 185                 190

Ala Gln Trp Ala Ala Asp Ile Lys Ala Arg Tyr His Asn Tyr Leu Asp
        195                 200                 205

Asn Tyr Gly Thr Ile Trp Glu Phe Met Ala Leu Gln Leu Ser Arg Glu
    210                 215                 220

Gln Gly Ile Thr Leu Arg Gly Ser Ala Glu Ile Val Ala Glu Phe Phe
225                 230                 235                 240

Ser Phe Gly Ile Asn Ser Ile Leu Tyr Gln Arg Gly Ile Tyr Pro Ser
                245                 250                 255

Glu Thr Phe Thr Arg Val Gln Lys Tyr Gly Leu Thr Leu Leu Val Thr
            260                 265                 270

Thr Asp Leu Glu Leu Ile Lys Tyr Leu Asn Asn Val Val Glu Gln Leu
        275                 280                 285

Lys Asp Trp Leu Tyr Lys Cys Ser Val Gln Lys Leu Val Val Val Ile
    290                 295                 300
```

```
Ser Asn Ile Glu Ser Gly Glu Val Leu Glu Arg Trp Gln Phe Asp Ile
305                 310                 315                 320


Glu Cys Asp Lys Thr Ala Lys Asp Asp Ser Ala Pro Arg Glu Lys Ser
                325                 330                 335


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


Ala Thr Val Thr Phe Leu Pro Leu Leu Glu Val Ser Cys Ser Phe Asp
        355                 360                 365


Leu Leu Ile Tyr Thr Asp Lys Asp Leu Val Val Pro Glu Lys Trp Glu
    370                 375                 380


Glu Ser Gly Pro Gln Phe Ile Thr Asn Ser Glu Glu Val Arg Leu Arg
385                 390                 395                 400


Ser Phe Thr Thr Thr Ile His Lys Val Asn Ser Met Val Ala Tyr Lys
                405                 410                 415


Ile Pro Val Asn Asp Lys Leu Gly Pro Glu Gln Lys Leu Ile Ser Glu
            420                 425                 430


Glu Asp Leu Asn Ser Ala Val Asp His His His His His His
        435                 440                 445


<210>  169
<211>  341
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  SopE1-105-Mad2-MycHis

<400>  169

Val Thr Lys Ile Thr Leu Ser Pro Gln Asn Phe Arg Ile Gln Lys Gln
1               5                   10                  15
```

```
Glu Thr Thr Leu Leu Lys Glu Lys Ser Thr Glu Lys Asn Ser Leu Ala
            20                  25                  30

Lys Ser Ile Leu Ala Val Lys Asn His Phe Ile Glu Leu Arg Ser Lys
        35                  40                  45

Leu Ser Glu Arg Phe Ile Ser His Lys Asn Thr Glu Ser Ser Ala Thr
    50                  55                  60

His Phe His Arg Gly Ser Ala Ser Glu Gly Arg Ala Val Leu Thr Asn
65                  70                  75                  80

Lys Val Val Lys Asp Phe Met Leu Gln Thr Leu Asn Asp Ile Asp Ile
                85                  90                  95

Arg Gly Ser Ala Ser Lys Asp Pro Ala Gly Thr Ile Trp Glu Phe Met
            100                 105                 110

Ala Leu Gln Leu Ser Arg Glu Gln Gly Ile Thr Leu Arg Gly Ser Ala
        115                 120                 125

Glu Ile Val Ala Glu Phe Phe Ser Phe Gly Ile Asn Ser Ile Leu Tyr
    130                 135                 140

Gln Arg Gly Ile Tyr Pro Ser Glu Thr Phe Thr Arg Val Gln Lys Tyr
145                 150                 155                 160

Gly Leu Thr Leu Leu Val Thr Thr Asp Leu Glu Leu Ile Lys Tyr Leu
                165                 170                 175

Asn Asn Val Val Glu Gln Leu Lys Asp Trp Leu Tyr Lys Cys Ser Val
            180                 185                 190

Gln Lys Leu Val Val Val Ile Ser Asn Ile Glu Ser Gly Glu Val Leu
        195                 200                 205

Glu Arg Trp Gln Phe Asp Ile Glu Cys Asp Lys Thr Ala Lys Asp Asp
```

```
    210                 215                 220

Ser Ala Pro Arg Glu Lys Ser Gln Lys Ala Ile Gln Asp Glu Ile Arg
225                 230                 235                 240

Ser Val Ile Arg Gln Ile Thr Ala Thr Val Thr Phe Leu Pro Leu Leu
                245                 250                 255

Glu Val Ser Cys Ser Phe Asp Leu Leu Ile Tyr Thr Asp Lys Asp Leu
            260                 265                 270

Val Val Pro Glu Lys Trp Glu Glu Ser Gly Pro Gln Phe Ile Thr Asn
        275                 280                 285

Ser Glu Glu Val Arg Leu Arg Ser Phe Thr Thr Thr Ile His Lys Val
    290                 295                 300

Asn Ser Met Val Ala Tyr Lys Ile Pro Val Asn Asp Lys Leu Gly Pro
305                 310                 315                 320

Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu Asn Ser Ala Val Asp His
                325                 330                 335

His His His His His
            340


<210>  170
<211>  538
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  SteA-Cdk1-MycHis

<400>  170

Met Pro Tyr Thr Ser Val Ser Thr Tyr Ala Arg Ala Leu Ser Gly Asn
1               5                   10                  15

Lys Leu Pro His Val Ala Ala Gly Asp Tyr Glu Asn Lys Leu Ser Thr
```

```
            20                  25                  30

Lys Ile Met Lys Gly Ile Leu Tyr Val Leu Thr Ala Gly Leu Ala Tyr
        35                  40                  45

Gly Phe Thr Arg Val Ile Glu His Tyr Cys Asn Val Thr Pro Lys Val
    50                  55                  60

Ala Glu Phe Cys Ala Asn Ala Gly Asn Ile His Asn His Leu Ala Asp
65                  70                  75                  80

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

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

Ile Val Arg Ile Ser Asp Gly Glu His Thr Val Glu Val Glu Gly Thr
        115                 120                 125

Phe Glu Glu Ile Cys Met Arg Leu Glu Glu Gly Phe Phe Glu Ala Pro
    130                 135                 140

Ala Tyr Tyr Asp Tyr Asp Ile Asp Glu Lys Tyr Lys Thr Val Arg Glu
145                 150                 155                 160

Arg Met Ala Ala Tyr Asn Ala Leu Pro Gln Ala Leu Gly Ala Ile Pro
                165                 170                 175

Cys Leu Glu Tyr Tyr Ile Ala Arg Ala Ser Asn Met Gln Glu Ala Lys
            180                 185                 190

Ala Gln Trp Ala Ala Asp Ile Lys Ala Arg Tyr His Asn Tyr Leu Asp
        195                 200                 205

Asn Tyr Gly Thr Ile Trp Glu Phe Met Glu Asp Tyr Thr Lys Ile Glu
    210                 215                 220
```

```
Lys Ile Gly Glu Gly Thr Tyr Gly Val Val Tyr Lys Gly Arg His Lys
225                 230                 235                 240

Thr Thr Gly Gln Val Val Ala Met Lys Lys Ile Arg Leu Glu Ser Glu
                245                 250                 255

Glu Glu Gly Val Pro Ser Thr Ala Ile Arg Glu Ile Ser Leu Leu Lys
            260                 265                 270

Glu Leu Arg His Pro Asn Ile Val Ser Leu Gln Asp Val Leu Met Gln
        275                 280                 285

Asp Ser Arg Leu Tyr Leu Ile Phe Glu Phe Leu Ser Met Asp Leu Lys
    290                 295                 300

Lys Tyr Leu Asp Ser Ile Pro Pro Gly Gln Tyr Met Asp Ser Ser Leu
305                 310                 315                 320

Val Lys Ser Tyr Leu Tyr Gln Ile Leu Gln Gly Ile Val Phe Cys His
                325                 330                 335

Ser Arg Arg Val Leu His Arg Asp Leu Lys Pro Gln Asn Leu Leu Ile
            340                 345                 350

Asp Asp Lys Gly Thr Ile Lys Leu Ala Asp Phe Gly Leu Ala Arg Ala
        355                 360                 365

Phe Gly Ile Pro Ile Arg Val Tyr Thr His Glu Val Val Thr Leu Trp
    370                 375                 380

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

Val Asp Ile Trp Ser Ile Gly Thr Ile Phe Ala Glu Leu Ala Thr Lys
                405                 410                 415

Lys Pro Leu Phe His Gly Asp Ser Glu Ile Asp Gln Leu Phe Arg Ile
```

```
            420                 425                 430

Phe Arg Ala Leu Gly Thr Pro Asn Asn Glu Val Trp Pro Glu Val Glu
        435                 440                 445

Ser Leu Gln Asp Tyr Lys Asn Thr Phe Pro Lys Trp Lys Pro Gly Ser
    450                 455                 460

Leu Ala Ser His Val Lys Asn Leu Asp Glu Asn Gly Leu Asp Leu Leu
465                 470                 475                 480

Ser Lys Met Leu Ile Tyr Asp Pro Ala Lys Arg Ile Ser Gly Lys Met
                485                 490                 495

Ala Leu Asn His Pro Tyr Phe Asn Asp Leu Asp Asn Gln Ile Lys Lys
            500                 505                 510

Met Lys Leu Gly Pro Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu Asn
        515                 520                 525

Ser Ala Val Asp His His His His His His
    530                 535
```

<210> 171
<211> 433
<212> PRT
<213> Artificial Sequence

<220>
<223> SopE1-105-Cdk1-MycHis

<400> 171

```
Val Thr Lys Ile Thr Leu Ser Pro Gln Asn Phe Arg Ile Gln Lys Gln
1               5                   10                  15

Glu Thr Thr Leu Leu Lys Glu Lys Ser Thr Glu Lys Asn Ser Leu Ala
            20                  25                  30

Lys Ser Ile Leu Ala Val Lys Asn His Phe Ile Glu Leu Arg Ser Lys
```

```
        35                  40                  45

Leu Ser Glu Arg Phe Ile Ser His Lys Asn Thr Glu Ser Ser Ala Thr
    50                  55                  60

His Phe His Arg Gly Ser Ala Ser Glu Gly Arg Ala Val Leu Thr Asn
65                  70                  75                  80

Lys Val Val Lys Asp Phe Met Leu Gln Thr Leu Asn Asp Ile Asp Ile
                85                  90                  95

Arg Gly Ser Ala Ser Lys Asp Pro Ala Gly Thr Ile Trp Glu Phe Met
            100                 105                 110

Glu Asp Tyr Thr Lys Ile Glu Lys Ile Gly Glu Gly Thr Tyr Gly Val
        115                 120                 125

Val Tyr Lys Gly Arg His Lys Thr Thr Gly Gln Val Val Ala Met Lys
    130                 135                 140

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

Arg Glu Ile Ser Leu Leu Lys Glu Leu Arg His Pro Asn Ile Val Ser
                165                 170                 175

Leu Gln Asp Val Leu Met Gln Asp Ser Arg Leu Tyr Leu Ile Phe Glu
            180                 185                 190

Phe Leu Ser Met Asp Leu Lys Lys Tyr Leu Asp Ser Ile Pro Pro Gly
        195                 200                 205

Gln Tyr Met Asp Ser Ser Leu Val Lys Ser Tyr Leu Tyr Gln Ile Leu
    210                 215                 220

Gln Gly Ile Val Phe Cys His Ser Arg Arg Val Leu His Arg Asp Leu
225                 230                 235                 240
```

```
Lys Pro Gln Asn Leu Leu Ile Asp Asp Lys Gly Thr Ile Lys Leu Ala
                245                 250                 255

Asp Phe Gly Leu Ala Arg Ala Phe Gly Ile Pro Ile Arg Val Tyr Thr
            260                 265                 270

His Glu Val Val Thr Leu Trp Tyr Arg Ser Pro Glu Val Leu Leu Gly
        275                 280                 285

Ser Ala Arg Tyr Ser Thr Pro Val Asp Ile Trp Ser Ile Gly Thr Ile
    290                 295                 300

Phe Ala Glu Leu Ala Thr Lys Lys Pro Leu Phe His Gly Asp Ser Glu
305                 310                 315                 320

Ile Asp Gln Leu Phe Arg Ile Phe Arg Ala Leu Gly Thr Pro Asn Asn
                325                 330                 335

Glu Val Trp Pro Glu Val Glu Ser Leu Gln Asp Tyr Lys Asn Thr Phe
            340                 345                 350

Pro Lys Trp Lys Pro Gly Ser Leu Ala Ser His Val Lys Asn Leu Asp
        355                 360                 365

Glu Asn Gly Leu Asp Leu Leu Ser Lys Met Leu Ile Tyr Asp Pro Ala
    370                 375                 380

Lys Arg Ile Ser Gly Lys Met Ala Leu Asn His Pro Tyr Phe Asn Asp
385                 390                 395                 400

Leu Asp Asn Gln Ile Lys Lys Met Lys Leu Gly Pro Glu Gln Lys Leu
                405                 410                 415

Ile Ser Glu Glu Asp Leu Asn Ser Ala Val Asp His His His His His
            420                 425                 430

His
```

<210> 172
<211> 95
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_745

<400> 172
catgctcgag ggtgccatcg atgatgccgc ccgcgaaggt tttctggata ccctggtggt 60

gctgcatcgc gccggtgccc gctaattcga acatg 95

<210> 173
<211> 95
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_746

<400> 173
catgttcgaa ttagcgggca ccggcgcgat gcagcaccac cagggtatcc agaaaacctt 60

cgcgggcggc atcatcgatg gcaccctcga gcatg 95

<210> 174
<211> 95
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_747

<400> 174
catgctcgag ggtgccatcg attatggtcg caaaaaacgc cgccaacgcc gccgcggtcc 60

ggtgaaacgc cgcctgtttg gttaattcga acatg 95

<210> 175
<211> 95
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_748

<400> 175
catgttcgaa ttaaccaaac aggcggcgtt tcaccggacc gcggcggcgt tggcggcgtt   60

ttttgcgacc ataatcgatg gcaccctcga gcatg   95

<210> 176
<211> 95
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_749

<400> 176
catgctcgag ggtgccatcg ataaacgccg ccaaaccagc atgaccgcct tttatcatag   60

caaacgccgc ctgattttta gctaattcga acatg   95

<210> 177
<211> 95
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_750

<400> 177
catgttcgaa ttagctaaaa atcaggcggc gtttgctatg ataaaaggcg gtcatgctgg   60

tttggcggcg tttatcgatg gcaccctcga gcatg   95

<210> 178
<211> 83
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_753

<400> 178
catgctcgag ggtgccatcg ataccagcat gaccgccttt tatcatagca aacgccgcct   60

gatttttagc taattcgaac atg   83

<210> 179
<211> 83
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_754

<400> 179
catgttcgaa ttagctaaaa atcaggcggc gtttgctatg ataaaaggcg gtcatgctgg 60

tatcgatggc accctcgagc atg 83

<210> 180
<211> 86
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_755

<400> 180
catgctcgag ggtgccatcg atgcctgtcg ccgcctgttt ggtccggtgg atagcgaaca 60

actgagccgc gattaattcg aacatg 86

<210> 181
<211> 86
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_756

<400> 181
catgttcgaa ttaatcgcgg ctcagttgtt cgctatccac cggaccaaac aggcggcgac 60

aggcatcgat ggcaccctcg agcatg 86

<210> 182
<211> 62
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_757

<400> 182
catgctcgag ggtgccatcg attgggaact ggtggtgctg ggtaaactgt aattcgaaca 60

tg 62

<210> 183
<211> 62
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_758

<400> 183
catgttcgaa ttacagttta cccagcacca ccagttccca atcgatggca ccctcgagca 60

tg 62

<210> 184
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_703

<400> 184
gacatggaat tcatggagcc ggcggcg 27

<210> 185
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_704

<400> 185
catgaagctt atcggggatg tctgaggg 28

<210> 186
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_705

<400> 186
gacatggaat tcatggccga gccttgggg 29

<210> 187
<211> 51
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_706

<400> 187
gttaacatca gcttgaaact ccagcaaagt ctgtaaagtg tccaggaaac c 51

<210> 188
<211> 51
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_707

<400> 188
ggtttcctgg acactttaca gactttgctg gagtttcaag ctgatgttaa c 51

<210> 189
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_708

<400> 189
catgaagctt ttgaagattt gtggctcccc 30

<210> 190
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_709

<400> 190
gacatggaat tcatggcgct gcagctctcc 30

<210> 191
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_710

<400> 191
catgaagctt gtcattgaca ggaattttgt agg 33

<210> 192
<211> 38
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_711

<400> 192
gacatggaat tcatggaaga ttataccaaa atagagaa 38

<210> 193
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_712

<400> 193
catgaagctt catcttctta atctgattgt ccaa 34

<210> 194
<211> 276
<212> PRT
<213> Artificial Sequence

<220>
<223> YopE1-138-Y. enterocolitica codon optimized murine tBid

<400> 194

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Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                  10                  15

Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30

Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45

Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60

Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80

Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95

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

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

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Gly Ser Gln Ala
    130                 135                 140

Ser Arg Ser Phe Asn Gln Gly Arg Ile Glu Pro Asp Ser Glu Ser Gln
145                 150                 155                 160

Glu Glu Ile Ile His Asn Ile Ala Arg His Leu Ala Gln Ile Gly Asp
                165                 170                 175

Glu Met Asp His Asn Ile Gln Pro Thr Leu Val Arg Gln Leu Ala Ala
            180                 185                 190

Gln Phe Met Asn Gly Ser Leu Ser Glu Glu Asp Lys Arg Asn Cys Leu
```

```
        195                 200                 205

Ala Lys Ala Leu Asp Glu Val Lys Thr Ala Phe Pro Arg Asp Met Glu
    210                 215                 220

Asn Asp Lys Ala Met Leu Ile Met Thr Met Leu Leu Ala Lys Lys Val
225                 230                 235                 240

Ala Ser His Ala Pro Ser Leu Leu Arg Asp Val Phe His Thr Thr Val
                245                 250                 255

Asn Phe Ile Asn Gln Asn Leu Phe Ser Tyr Val Arg Asn Leu Val Arg
            260                 265                 270

Asn Glu Met Asp
        275


<210>  195
<211>  245
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  YopE1-138-Ubiquitin

<400>  195

Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                   10                  15

Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30

Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45

Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60

Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
```

```
65                  70                  75                  80

Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95

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

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

Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Met Gln Ile Phe
    130                 135                 140

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

Asp Thr Ile Glu Asn Val Lys Ala Lys Ile Gln Asp Lys Glu Gly Ile
                165                 170                 175

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

Gly Arg Thr Leu Ser Asp Tyr Asn Ile Gln Lys Glu Ser Thr Leu His
        195                 200                 205

Leu Val Leu Arg Leu Arg Gly Gly Phe Glu Ala Ser Lys Leu Gly Pro
    210                 215                 220

Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu Asn Ser Ala Val Asp His
225                 230                 235                 240

His His His His His
                245
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<210> 196
<211> 419
<212> PRT

<213> Artificial Sequence

<220>
<223> YopE1-138-Ubiquitin-Flag-INK4C-MycHis

<400> 196

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Met Lys Ile Ser Ser Phe Ile Ser Thr Ser Leu Pro Leu Pro Ala Ser
1               5                   10                  15


Val Ser Gly Ser Ser Ser Val Gly Glu Met Ser Gly Arg Ser Val Ser
            20                  25                  30


Gln Gln Lys Ser Asp Gln Tyr Ala Asn Asn Leu Ala Gly Arg Thr Glu
        35                  40                  45


Ser Pro Gln Gly Ser Ser Leu Ala Ser Arg Ile Ile Glu Arg Leu Ser
    50                  55                  60


Ser Met Ala His Ser Val Ile Gly Phe Ile Gln Arg Met Phe Ser Glu
65                  70                  75                  80


Gly Ser His Lys Pro Val Val Thr Pro Ala Leu Thr Pro Ala Gln Met
                85                  90                  95


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


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


Leu Gln Lys Asn His Asp Gln Phe Ala Thr Leu Glu Met Gln Ile Phe
    130                 135                 140


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


Asp Thr Ile Glu Asn Val Lys Ala Lys Ile Gln Asp Lys Glu Gly Ile
                165                 170                 175
```

```
Pro Pro Asp Gln Gln Arg Leu Ile Phe Ala Gly Lys Gln Leu Glu Asp
            180                 185                 190

Gly Arg Thr Leu Ser Asp Tyr Asn Ile Gln Lys Glu Ser Thr Leu His
        195                 200                 205

Leu Val Leu Arg Leu Arg Gly Gly Phe Glu Asp Tyr Lys Asp Asp Asp
    210                 215                 220

Asp Lys Met Ala Glu Pro Trp Gly Asn Glu Leu Ala Ser Ala Ala Ala
225                 230                 235                 240

Arg Gly Asp Leu Glu Gln Leu Thr Ser Leu Leu Gln Asn Asn Val Asn
                245                 250                 255

Val Asn Ala Gln Asn Gly Phe Gly Arg Thr Ala Leu Gln Val Met Lys
            260                 265                 270

Leu Gly Asn Pro Glu Ile Ala Arg Arg Leu Leu Leu Arg Gly Ala Asn
        275                 280                 285

Pro Asp Leu Lys Asp Arg Thr Gly Phe Ala Val Ile His Asp Ala Ala
    290                 295                 300

Arg Ala Gly Phe Leu Asp Thr Leu Gln Ala Leu Pro Glu Phe Gln Ala
305                 310                 315                 320

Asp Val Asn Ile Glu Asp Asn Glu Gly Asn Leu Pro Leu His Leu Ala
                325                 330                 335

Ala Lys Glu Gly His Leu Arg Val Val Glu Phe Leu Val Lys His Thr
            340                 345                 350

Ala Ser Asn Val Gly His Arg Asn His Lys Gly Asp Thr Ala Cys Asp
        355                 360                 365

Leu Ala Arg Leu Tyr Gly Arg Asn Glu Val Val Ser Leu Met Gln Ala
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370 375 380

Asn Gly Ala Gly Gly Ala Thr Asn Leu Gln Lys Leu Gly Pro Glu Gln
385 390 395 400

Lys Leu Ile Ser Glu Glu Asp Leu Asn Ser Ala Val Asp His His His
405 410 415

His His His

<210> 197
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_585

<400> 197
cagtctcgag atgcagatct tcgtcaagac 30

<210> 198
<211> 43
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_586

<400> 198
gttaaagctt gctagcttcg aaaccaccac gtagacgtaa gac 43

<210> 199
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer No. : Si_588

<400> 199
cagtttcgaa gattataaag atgatgatga taaaatggcc gagccttg 48