Liste de séquences

<110> Centre National De La Recherche Scientifique (CNRS)
BALL, Steven
D'HULST, Christophe
TOMAVO, Stanislas
DAUVILLEE, David

<120> Nouvelles compositions vaccinales anti paludique et ses utilisations

<130> 243138 D24903

<160> 41

<170> PatentIn version 3.3

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<213> Chlamydomonas reinharditii

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Thr Gly Gly Leu Gly Asp Val Thr Gly Gly Leu Pro Ile Glu Leu Val
            20                  25                  30
Lys Arg Gly His Arg Val Met Thr Ile Ala Pro Arg Tyr Asp Gln Tyr
        35                  40                  45
Ala Asp Ala Trp Asp Thr Ser Val Val Val Asp Ile Met Gly Glu Lys
    50                  55                  60
Val Arg Tyr Phe His Ser Ile Lys Lys Gly Val His Arg Val Trp Ile
65                  70                  75                  80
Asp His Pro Trp Phe Leu Ala Lys Val Trp Gly Lys Thr Gly Ser Lys
                85                  90                  95
Leu Tyr Gly Pro Arg Ser Gly Ala Asp Tyr Leu Asp Asn His Lys Arg
            100                 105                 110
Phe Ala Leu Phe Cys Lys Ala Ala Ile Glu Ala Ala Arg Val Leu Pro
        115                 120                 125
Phe Gly Pro Gly Glu Asp Cys Val Phe Val Ala Asn Asp Trp His Ser
    130                 135                 140
Ala Leu Val Pro Val Leu Leu Lys Asp Glu Tyr Gln Pro Lys Gly Gln
145                 150                 155                 160
Phe Thr Lys Ala Lys Ser Val Leu Ala Ile His Asn Ile Ala Phe Gln
                165                 170                 175
Gly Arg Met Trp Glu Glu Ala Phe Lys Asp Thr Lys Leu Pro Gln Ala
            180                 185                 190
Ala Phe Asp Lys Leu Ala Phe Ser Asp Gly Tyr Ala Lys Val Tyr Thr
        195                 200                 205
Glu Ala Thr Pro Met Glu Glu Asp Glu Lys Pro Pro Leu Thr Gly Lys
    210                 215                 220
Thr Tyr Lys Lys Ile Asn Trp Leu Lys Gly Gly Ile Ile Ala Ala Asp
225                 230                 235                 240
Lys Leu Val Thr Val Ser Pro Asn Tyr Ala Thr Glu Ile Ala Ala Asp
                245                 250                 255
Ala Ala Gly Gly Val Glu Leu Asp Thr Val Ile Arg Ala Lys Gly Ile
            260                 265                 270
Glu Gly Ile Val Asn Gly Met Asp Ile Glu Glu Trp Asn Pro Lys Thr
        275                 280                 285
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Asp Lys Phe Leu Ser Val Pro Tyr Asp Gln Asn Ser Val Tyr Ala Gly
    290                 295                 300
Lys Ala Ala Ala Lys Glu Ala Leu Gln Ala Glu Leu Gly Leu Pro Val
305                 310                 315                 320
Asp Pro Thr Ala Pro Leu Phe Ala Phe Ile Gly Arg Leu Glu Glu Gln
                325                 330                 335
Lys Gly Val Asp Ile Ile Leu Ala Ala Leu Pro Lys Ile Leu Ala Thr
            340                 345                 350
Pro Lys Val Gln Ile Ala Ile Leu Gly Thr Gly Lys Ala Ala Tyr Glu
        355                 360                 365
Lys Leu Val Asn Ala Ile Gly Thr Lys Tyr Lys Gly Arg Ala Lys Gly
    370                 375                 380
Val Val Lys Phe Ser Ala Pro Leu Ala His Met Leu Thr Ala Gly Ala
385                 390                 395                 400
Asp Phe Met Leu Val Pro Ser Arg Phe Glu Pro Cys Gly Leu Ile Gln
                405                 410                 415
Leu His Ala Met His Tyr Gly Thr Val Pro Val Val Ala Ser Thr Gly
            420                 425                 430
Gly Leu Val Asp Thr Val Lys Glu Gly Val Thr Gly Phe His Met Gly
        435                 440                 445
Ala Leu Asn Pro Asp Lys Leu Asp Glu Ala Asp Ala Asp Ala Leu Ala
    450                 455                 460
Ala Thr Val Arg Arg Ala Ser Glu Val Phe Ala Gly Gly Arg Tyr Pro
465                 470                 475                 480
Glu Met Val Ala Asn Cys Ile Ser Gln Asp Leu Ser Trp Ser Lys Pro
                485                 490                 495
Ala Gln Lys Trp Glu Gly Leu Leu Glu Glu Val Val Tyr Gly Lys Gly
            500                 505                 510
Gly Val Ala Thr Ala Lys Lys Glu Glu Ile Lys Val Pro Val Ala Glu
        515                 520                 525
Lys Ile Pro Gly Asp Leu Pro Ala Val Ser Tyr Ala Pro Asn Thr Leu
    530                 535                 540
Lys Pro Val Ser Ala Ser Val Glu Gly Asn Gly Ala Ala Ala Pro Lys
545                 550                 555                 560
Val Gly Thr Thr Ala Pro Ala Met Gly Ala Trp Arg Ala Thr Thr Pro
                565                 570                 575
Ser Gly Pro Ser Pro Ala Ala Ala Thr Pro Lys Val Thr Thr Tyr Lys
            580                 585                 590
Pro Ala Leu Pro Ala Thr Ala Lys Pro Lys Thr Ala Gly Leu Lys Leu
        595                 600                 605
Ala Gly Glu Ala Ser Thr Thr Ser Thr Ser Glu Asn Gly Ala Ala Ser
    610                 615                 620
Asn Gly Asn Gly Asn Gly Ala Ser Ala Ser Lys Thr Ser Ala Ala Lys
625                 630                 635                 640
Pro Leu Val Ser Ala Ala Thr Arg Lys Ser Ala
                645                 650
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<212> PRT
<213> triticum aestivum

<400> 2

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1               5                   10                  15
Ala Pro Trp Ser Lys Thr Gly Gly Leu Gly Asp Val Leu Gly Gly Leu
            20                  25                  30
Pro Ala Ala Met Ala Ala Asn Gly His Arg Val Met Val Ile Ser Pro
        35                  40                  45
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Arg Tyr Asp Gln Tyr Lys Asp Ala Trp Asp Thr Ser Val Ile Ser Glu
    50                  55                  60
Ile Lys Val Val Asp Arg Tyr Glu Arg Val Arg Tyr Phe His Cys Tyr
65                  70                  75                  80
Lys Arg Gly Val Asp Arg Val Phe Val Asp His Pro Cys Phe Leu Glu
                85                  90                  95
Lys Val Arg Gly Thr Lys Glu Lys Ile Tyr Gly Pro Asp Ala Gly Thr
            100                 105                 110
Asp Tyr Glu Asp Asn Gln Gln Arg Phe Ser Leu Leu Cys Gln Ala Ala
        115                 120                 125
Leu Glu Val Pro Arg Ile Leu Asp Leu Asn Asn Asn Pro His Phe Ser
    130                 135                 140
Gly Pro Tyr Ala Met Leu Cys Arg Ala Val Pro Arg Arg Ala Gly Glu
145                 150                 155                 160
Asp Val Val Phe Val Cys Asn Asp Trp His Thr Gly Leu Leu Ala Cys
                165                 170                 175
Tyr Leu Lys Ser Asn Tyr Gln Ser Asn Gly Ile Tyr Arg Thr Ala Lys
            180                 185                 190
Val Ala Phe Cys Ile His Asn Ile Ser Tyr Gln Gly Arg Phe Ser Phe
        195                 200                 205
Asp Asp Phe Ala Gln Leu Asn Leu Pro Asp Arg Phe Lys Ser Ser Phe
    210                 215                 220
Asp Phe Ile Asp Gly Tyr Asp Lys Pro Val Glu Gly Arg Lys Ile Asn
225                 230                 235                 240
Trp Met Lys Ala Gly Ile Leu Gln Ala Asp Lys Val Leu Thr Val Ser
                245                 250                 255
Pro Tyr Tyr Ala Glu Glu Leu Ile Ser Gly Glu Ala Arg Gly Cys Glu
            260                 265                 270
Leu Asp Asn Ile Met Arg Leu Thr Gly Ile Thr Gly Ile Val Asn Gly
        275                 280                 285
Met Asp Val Ser Glu Trp Asp Pro Ile Lys Asp Lys Phe Leu Thr Val
    290                 295                 300
Asn Tyr Asp Val Thr Thr Ala Leu Glu Gly Lys Ala Leu Asn Lys Glu
305                 310                 315                 320
Ala Leu Gln Ala Glu Val Gly Leu Pro Val Asp Arg Lys Val Pro Leu
                325                 330                 335
Val Ala Phe Ile Gly Arg Leu Glu Glu Gln Lys Gly Pro Asp Val Met
            340                 345                 350
Ile Ala Ala Ile Pro Glu Ile Val Lys Glu Glu Asp Val Gln Ile Val
        355                 360                 365
Leu Leu Gly Thr Gly Lys Lys Lys Phe Glu Arg Leu Leu Lys Ser Val
    370                 375                 380
Glu Glu Lys Phe Pro Thr Lys Val Arg Ala Val Val Arg Phe Asn Ala
385                 390                 395                 400
Pro Leu Ala His Gln Met Met Ala Gly Ala Asp Val Leu Ala Val Thr
                405                 410                 415
Ser Arg Phe Glu Pro Cys Gly Leu Ile Gln Leu Gln Gly Met Arg Tyr
            420                 425                 430
Gly Thr Pro Cys Ala Cys Ala Ser Thr Gly Gly Leu Val Asp Thr Ile
        435                 440                 445
Val Glu Gly Lys Thr Gly Phe His Met Gly Arg Leu Ser Val Asp Cys
    450                 455                 460
Asn Val Val Glu Pro Ala Asp Val Lys Lys Val Val Thr Thr Leu Lys
465                 470                 475                 480
Arg Ala Val Lys Val Val Gly Thr Pro Ala Tyr His Glu Met Val Lys
                485                 490                 495
Asn Cys Met Ile Gln Asp Leu Ser Trp Lys Gly Pro Ala Lys Asn Trp
            500                 505                 510
Glu Asp Val Leu Leu Glu Leu Gly Val Glu Gly Ser Glu Pro Gly Ile
        515                 520                 525
Val Gly Glu Glu Ile Ala Pro Leu Ala Leu Glu Asn Val Ala Ala Pro
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530 535 540

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<211> 533
<212> PRT
<213> zea mays

<400> 3

Ala Ser Ala Gly Met Asn Val Val Phe Val Gly Ala Glu Met Ala Pro
1 5 10 15
Trp Ser Lys Thr Gly Gly Leu Gly Asp Val Leu Gly Gly Leu Pro Pro
20 25 30
Ala Met Ala Ala Asn Gly His Arg Val Met Val Val Ser Pro Arg Tyr
35 40 45
Asp Gln Tyr Lys Asp Ala Trp Asp Thr Ser Val Val Ser Glu Ile Lys
50 55 60
Met Gly Asp Gly Tyr Glu Thr Val Arg Phe Phe His Cys Tyr Lys Arg
65 70 75 80
Gly Val Asp Arg Val Phe Val Asp His Pro Leu Phe Leu Glu Arg Val
85 90 95
Trp Gly Lys Thr Glu Glu Lys Ile Tyr Gly Pro Val Ala Gly Thr Asp
100 105 110
Tyr Arg Asp Asn Gln Leu Arg Phe Ser Leu Leu Cys Gln Ala Ala Leu
115 120 125
Glu Ala Pro Arg Ile Leu Ser Leu Asn Asn Asn Pro Tyr Phe Ser Gly
130 135 140
Pro Tyr Gly Glu Asp Val Val Phe Val Cys Asn Asp Trp His Thr Gly
145 150 155 160
Pro Leu Ser Cys Tyr Leu Lys Ser Asn Tyr Gln Ser His Gly Ile Tyr
165 170 175
Arg Asp Ala Lys Thr Ala Phe Cys Ile His Asn Ile Ser Tyr Gln Gly
180 185 190
Arg Phe Ala Phe Ser Asp Tyr Pro Glu Leu Asn Leu Pro Glu Arg Phe
195 200 205
Lys Ser Ser Phe Asp Phe Ile Asp Gly Tyr Glu Lys Pro Val Glu Gly
210 215 220
Arg Lys Ile Asn Trp Met Lys Ala Gly Ile Leu Glu Ala Asp Arg Val
225 230 235 240
Leu Thr Val Ser Pro Tyr Tyr Ala Glu Glu Leu Ile Ser Gly Ile Ala
245 250 255
Arg Gly Cys Glu Leu Asp Asn Ile Met Arg Leu Thr Gly Ile Thr Gly
260 265 270
Ile Val Asn Gly Met Asp Val Ser Glu Trp Asp Pro Ser Arg Asp Lys
275 280 285
Tyr Ile Ala Val Lys Tyr Asp Val Ser Thr Ala Val Glu Ala Lys Ala
290 295 300
Leu Asn Lys Glu Ala Leu Gln Ala Glu Val Gly Leu Pro Val Asp Arg
305 310 315 320
Asn Ile Pro Leu Val Ala Phe Ile Gly Arg Leu Glu Glu Gln Lys Gly
325 330 335
Pro Asp Val Met Ala Ala Ala Ile Pro Gln Leu Met Glu Met Val Glu
340 345 350
Asp Val Gln Ile Val Leu Leu Gly Thr Gly Lys Lys Lys Phe Glu Arg
355 360 365
Met Leu Met Ser Ala Glu Glu Lys Phe Pro Gly Lys Val Arg Ala Val
370 375 380
Val Lys Phe Asn Ala Ala Leu Ala His His Ile Met Ala Gly Ala Asp
385 390 395 400
Val Leu Ala Val Thr Ser Arg Phe Glu Pro Cys Gly Leu Ile Gln Leu

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


<210> 4
<211> 528
<212> PRT
<213> pisum savitum

<400> 4

Gly Met Ser Leu Val Phe Val Gly Ala Glu Val Gly Pro Trp Ser Lys
1               5                   10                  15
Thr Gly Gly Leu Gly Asp Val Leu Gly Gly Leu Pro Pro Val Leu Ala
            20                  25                  30
Gly Asn Gly His Arg Val Met Thr Val Ser Pro Arg Tyr Asp Gln Tyr
        35                  40                  45
Lys Asp Ala Trp Asp Thr Asn Val Leu Val Glu Val Lys Val Gly Asp
    50                  55                  60
Lys Ile Glu Thr Val Arg Phe Phe His Cys Tyr Lys Arg Gly Val Asp
65                  70                  75                  80
Arg Val Phe Val Asp His Pro Leu Phe Leu Glu Arg Val Trp Gly Lys
                85                  90                  95
Thr Gly Ser Lys Leu Tyr Gly Pro Lys Thr Gly Ile Asp Tyr Arg Asp
            100                 105                 110
Asn Gln Leu Arg Phe Ser Leu Leu Cys Gln Ala Ala Leu Glu Ala Pro
        115                 120                 125
Arg Val Leu Asn Leu Asn Ser Ser Lys Tyr Phe Ser Gly Pro Tyr Gly
    130                 135                 140
Glu Asp Val Ile Phe Val Ala Asn Asp Trp His Ser Ala Leu Ile Pro
145                 150                 155                 160
Cys Tyr Leu Lys Ser Met Tyr Lys Ser Arg Gly Leu Tyr Lys Asn Ala
                165                 170                 175
Lys Val Ala Phe Cys Ile His Asn Ile Ala Tyr Gln Gly Arg Asn Ala
            180                 185                 190
Phe Ser Asp Phe Ser Leu Leu Asn Leu Pro Asp Glu Phe Arg Ser Ser
        195                 200                 205
Phe Asp Phe Ile Asp Gly Tyr Asn Lys Pro Cys Glu Gly Lys Lys Ile
    210                 215                 220
Asn Trp Met Lys Ala Gly Ile Leu Glu Ser Asp Gln Val Phe Thr Val
225                 230                 235                 240
Ser Pro His Tyr Ala Lys Glu Leu Ile Ser Gly Glu Asp Arg Gly Val
                245                 250                 255
Glu Leu Asp Asn Ile Ile Arg Ser Thr Gly Ile Ile Gly Ile Val Asn
            260                 265                 270
Gly Met Asp Asn Arg Glu Trp Ser Pro Gln Thr Asp Arg Tyr Ile Asp
```

```
        275                 280                 285
Val His Tyr Asn Glu Thr Thr Val Thr Glu Ala Lys Pro Leu Leu Lys
    290                 295                 300
Gly Thr Leu Gln Ala Glu Ile Gly Leu Pro Val Asp Ser Ser Ile Pro
305                 310                 315                 320
Leu Ile Gly Phe Ile Gly Arg Leu Glu Glu Gln Lys Gly Ser Asp Ile
                325                 330                 335
Leu Val Glu Ala Ile Ala Lys Phe Ala Asp Glu Asn Val Gln Ile Val
            340                 345                 350
Val Leu Gly Thr Gly Lys Lys Ile Met Glu Lys Gln Ile Glu Val Leu
        355                 360                 365
Glu Glu Lys Tyr Pro Gly Lys Ala Ile Gly Ile Thr Lys Phe Asn Ser
    370                 375                 380
Pro Leu Ala His Lys Ile Ile Ala Gly Ala Asp Phe Ile Val Ile Pro
385                 390                 395                 400
Ser Arg Phe Glu Pro Cys Gly Leu Val Gln Leu His Ala Met Pro Tyr
                405                 410                 415
Gly Thr Val Pro Ile Val Ser Ser Thr Gly Gly Leu Val Asp Thr Val
            420                 425                 430
Lys Glu Gly Tyr Thr Gly Phe His Ala Gly Pro Phe Asp Val Glu Cys
        435                 440                 445
Glu Asp Val Asp Pro Asp Asp Val Asp Lys Leu Ala Ala Thr Val Lys
    450                 455                 460
Arg Ala Leu Lys Thr Tyr Gly Thr Gln Ala Met Lys Gln Ile Ile Leu
465                 470                 475                 480
Asn Cys Met Ala Gln Asn Phe Ser Trp Lys Lys Pro Ala Lys Leu Trp
                485                 490                 495
Glu Lys Ala Leu Leu Asn Leu Glu Val Thr Gly Asn Val Ala Gly Ile
            500                 505                 510
Asp Gly Asp Glu Ile Ala Pro Leu Ala Lys Glu Asn Val Ala Thr Pro
        515                 520                 525
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<210> 5
<211> 532
<212> PRT
<213> oriza sativa

<400> 5

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Ala Thr Gly Ala Gly Met Asn Val Val Phe Val Gly Ala Glu Met Ala
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Pro Trp Ser Lys Thr Gly Gly Leu Gly Asp Val Leu Gly Gly Leu Pro
            20                  25                  30
Pro Ala Met Ala Ala Asn Gly His Arg Val Met Val Ile Ser Pro Arg
        35                  40                  45
Tyr Asp Gln Tyr Lys Asp Ala Trp Asp Thr Ser Val Val Ala Glu Ile
    50                  55                  60
Lys Val Ala Asp Arg Tyr Glu Arg Val Arg Phe Phe His Cys Tyr Lys
65                  70                  75                  80
Arg Gly Val Asp Arg Val Phe Ile Asp His Pro Ser Phe Leu Glu Lys
                85                  90                  95
Val Trp Gly Lys Thr Gly Glu Lys Ile Tyr Gly Pro Asp Thr Gly Val
            100                 105                 110
Asp Tyr Lys Asp Asn Gln Met Arg Phe Ser Leu Leu Cys Gln Ala Ala
        115                 120                 125
Leu Glu Ala Pro Arg Ile Leu Asn Leu Asn Asn Asn Pro Tyr Phe Lys
    130                 135                 140
Gly Thr Tyr Gly Glu Asp Val Val Phe Val Cys Asn Asp Trp His Thr
145                 150                 155                 160
Gly Pro Leu Ala Ser Tyr Leu Lys Asn Asn Tyr Gln Pro Asn Gly Ile
```

```
                165                 170                 175
Tyr Arg Asn Ala Lys Val Ala Phe Cys Ile His Asn Ile Ser Tyr Gln
            180                 185                 190
Gly Arg Phe Ala Phe Glu Asp Tyr Pro Glu Leu Asn Leu Ser Glu Arg
        195                 200                 205
Phe Arg Ser Ser Phe Asp Phe Ile Asp Gly Tyr Asp Thr Pro Val Glu
    210                 215                 220
Gly Arg Lys Ile Asn Trp Met Lys Ala Gly Ile Leu Glu Ala Asp Arg
225                 230                 235                 240
Val Leu Thr Val Ser Pro Tyr Tyr Ala Glu Glu Leu Ile Ser Gly Ile
                245                 250                 255
Ala Arg Gly Cys Glu Leu Asp Asn Ile Met Arg Leu Thr Gly Ile Thr
            260                 265                 270
Gly Ile Val Asn Gly Met Asp Val Ser Glu Trp Asp Pro Ser Lys Asp
        275                 280                 285
Lys Tyr Ile Thr Ala Lys Tyr Asp Ala Thr Thr Ala Ile Glu Ala Lys
    290                 295                 300
Ala Leu Asn Lys Glu Ala Leu Gln Ala Glu Ala Gly Leu Pro Val Asp
305                 310                 315                 320
Arg Lys Ile Pro Leu Ile Ala Phe Ile Gly Arg Leu Glu Glu Gln Lys
                325                 330                 335
Gly Pro Asp Val Met Ala Ala Ala Ile Pro Glu Leu Met Gln Glu Asp
            340                 345                 350
Val Gln Ile Val Leu Leu Gly Thr Gly Lys Lys Lys Phe Glu Lys Leu
        355                 360                 365
Leu Lys Ser Met Glu Glu Lys Tyr Pro Gly Lys Val Arg Ala Val Val
    370                 375                 380
Lys Phe Asn Ala Pro Leu Ala His Leu Ile Met Ala Gly Ala Asp Val
385                 390                 395                 400
Leu Ala Val Pro Ser Arg Phe Glu Pro Cys Gly Leu Ile Gln Leu Gln
                405                 410                 415
Gly Met Arg Tyr Gly Thr Pro Cys Ala Cys Ala Ser Thr Gly Gly Leu
            420                 425                 430
Val Asp Thr Val Ile Glu Gly Lys Thr Gly Phe His Met Gly Arg Leu
        435                 440                 445
Ser Val Asp Cys Lys Val Val Glu Pro Ser Asp Val Lys Lys Val Ala
    450                 455                 460
Ala Thr Leu Lys Arg Ala Ile Lys Val Val Gly Thr Pro Ala Tyr Glu
465                 470                 475                 480
Glu Met Val Arg Asn Cys Met Asn Gln Asp Leu Ser Trp Lys Gly Pro
                485                 490                 495
Ala Lys Asn Trp Glu Asn Val Leu Leu Gly Leu Gly Val Ala Gly Ser
            500                 505                 510
Ala Pro Gly Ile Glu Gly Asp Glu Ile Ala Pro Leu Ala Lys Glu Asn
        515                 520                 525
Val Ala Ala Pro
    530
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<210> 6
<211> 533
<212> PRT
<213> hordeum vulgare

<400> 6

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Ala Thr Gly Ser Gly Met Asn Leu Val Phe Val Gly Ala Glu Met Ala
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Pro Trp Ser Lys Thr Gly Gly Leu Gly Asp Val Leu Gly Gly Leu Pro
            20                  25                  30
Pro Ala Met Ala Ala Asn Gly His Arg Val Met Val Val Ser Pro Arg
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        35                  40                  45
Tyr Asp Gln Tyr Lys Asp Ala Trp Asp Thr Ser Val Ile Ser Glu Ile
    50                  55                  60
Lys Val Ala Asp Glu Tyr Glu Arg Val Arg Phe Phe His Cys Tyr Lys
65                  70                  75                  80
Arg Gly Val Asp Arg Val Phe Ile Asp His Pro Trp Phe Leu Glu Lys
                85                  90                  95
Val Arg Gly Lys Thr Lys Glu Lys Ile Tyr Gly Pro Asp Ala Gly Thr
            100                 105                 110
Asp Tyr Glu Asp Asn Gln Gln Arg Phe Ser Leu Leu Cys Gln Ala Ala
        115                 120                 125
Leu Glu Ala Pro Arg Ile Leu Asn Leu Asn Asn Asn Pro Tyr Phe Ser
    130                 135                 140
Gly Pro Tyr Gly Glu Asp Val Val Phe Val Cys Asn Asp Trp His Thr
145                 150                 155                 160
Gly Leu Leu Ala Cys Tyr Leu Lys Ser Asn Tyr Gln Ser Asn Gly Ile
                165                 170                 175
Tyr Arg Thr Ala Lys Val Ala Phe Cys Ile His Asn Ile Ser Tyr Gln
            180                 185                 190
Gly Arg Phe Ser Phe Asp Asp Phe Ala Gln Leu Asn Leu Pro Asp Arg
        195                 200                 205
Phe Lys Ser Ser Phe Asp Phe Ile Asp Gly Tyr Asp Lys Pro Val Glu
    210                 215                 220
Gly Arg Lys Ile Asn Trp Met Lys Ala Gly Ile Leu Gln Ala Asp Lys
225                 230                 235                 240
Val Leu Thr Val Ser Pro Tyr Tyr Ala Glu Glu Leu Ile Ser Gly Glu
                245                 250                 255
Ala Arg Gly Cys Glu Leu Asp Asn Ile Met Arg Leu Thr Gly Ile Thr
            260                 265                 270
Gly Ile Val Asn Gly Met Asp Val Ser Glu Trp Asp Pro Thr Lys Asp
        275                 280                 285
Lys Phe Leu Ala Val Asn Tyr Asp Ile Thr Thr Ala Leu Glu Ala Lys
    290                 295                 300
Ala Leu Asn Lys Glu Ala Leu Gln Ala Glu Val Gly Leu Pro Val Asp
305                 310                 315                 320
Arg Lys Val Pro Leu Val Ala Phe Ile Gly Arg Leu Glu Glu Gln Lys
                325                 330                 335
Gly Pro Asp Val Met Ile Ala Ala Ile Pro Glu Ile Leu Lys Glu Glu
            340                 345                 350
Asp Val Gln Ile Ile Leu Leu Gly Thr Gly Lys Lys Lys Phe Glu Lys
        355                 360                 365
Leu Leu Lys Ser Met Glu Glu Lys Phe Pro Gly Lys Val Arg Ala Val
    370                 375                 380
Val Arg Phe Asn Ala Pro Leu Ala His Gln Met Met Ala Gly Ala Asp
385                 390                 395                 400
Leu Leu Ala Val Thr Ser Arg Phe Glu Pro Cys Gly Leu Ile Gln Leu
                405                 410                 415
Gln Gly Met Arg Tyr Gly Thr Pro Cys Val Cys Ala Ser Thr Gly Gly
            420                 425                 430
Leu Val Asp Thr Ile Val Glu Gly Lys Thr Gly Phe His Met Gly Arg
        435                 440                 445
Leu Ser Val Asp Cys Asn Val Val Glu Pro Ala Asp Val Lys Lys Val
    450                 455                 460
Ala Thr Thr Leu Lys Arg Ala Val Lys Val Val Gly Thr Pro Ala Tyr
465                 470                 475                 480
Gln Glu Met Val Lys Asn Cys Met Ile Gln Asp Leu Ser Trp Lys Gly
                485                 490                 495
Pro Ala Lys Asn Trp Glu Asp Val Leu Leu Glu Leu Gly Val Glu Gly
            500                 505                 510
Ser Glu Pro Gly Ile Val Gly Glu Glu Ile Ala Pro Leu Ala Met Glu
        515                 520                 525
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Asn Val Ala Ala Pro
    530


<210> 7
<211> 530
<212> PRT
<213> Solanum tuberosum

<400> 7

Gly Lys Gly Met Asn Leu Ile Phe Val Gly Thr Glu Val Gly Pro Trp
1               5                  10                  15
Ser Lys Thr Gly Gly Leu Gly Asp Val Leu Gly Gly Leu Pro Pro Ala
            20                  25                  30
Leu Ala Ala Arg Gly His Arg Val Met Thr Ile Ser Pro Arg Tyr Asp
        35                  40                  45
Gln Tyr Lys Asp Ala Trp Asp Thr Ser Val Ala Val Glu Val Lys Val
    50                  55                  60
Gly Asp Ser Ile Glu Ile Val Arg Phe Phe His Cys Tyr Lys Arg Gly
65                  70                  75                  80
Val Asp Arg Val Phe Val Asp His Pro Met Phe Leu Glu Lys Val Trp
                85                  90                  95
Gly Lys Thr Gly Ser Lys Ile Tyr Gly Pro Lys Ala Gly Leu Asp Tyr
            100                 105                 110
Leu Asp Asn Glu Leu Arg Phe Ser Leu Leu Cys Gln Ala Ala Leu Glu
        115                 120                 125
Ala Pro Lys Val Leu Asn Leu Asn Ser Ser Asn Tyr Phe Ser Gly Pro
    130                 135                 140
Tyr Gly Glu Asp Val Leu Phe Ile Ala Asn Asp Trp His Thr Ala Leu
145                 150                 155                 160
Ile Pro Cys Tyr Leu Lys Ser Met Tyr Gln Ser Arg Gly Ile Tyr Leu
                165                 170                 175
Asn Ala Lys Val Ala Phe Cys Ile His Asn Ile Ala Tyr Gln Gly Arg
            180                 185                 190
Phe Ser Phe Ser Asp Phe Pro Leu Leu Asn Leu Pro Asp Glu Phe Arg
        195                 200                 205
Gly Ser Phe Asp Phe Ile Asp Gly Tyr Glu Lys Pro Val Lys Gly Arg
    210                 215                 220
Lys Ile Asn Trp Met Lys Ala Gly Ile Leu Glu Ser His Arg Val Val
225                 230                 235                 240
Thr Val Ser Pro Tyr Tyr Ala Gln Glu Leu Val Ser Ala Val Asp Lys
                245                 250                 255
Gly Val Glu Leu Asp Ser Val Leu Arg Lys Thr Cys Ile Thr Gly Ile
            260                 265                 270
Val Asn Gly Met Asp Thr Gln Glu Trp Asn Pro Ala Thr Asp Lys Tyr
        275                 280                 285
Thr Asp Val Lys Tyr Asp Ile Thr Thr Val Met Asp Ala Lys Pro Leu
    290                 295                 300
Leu Lys Glu Ala Leu Gln Ala Ala Val Gly Leu Pro Val Asp Lys Lys
305                 310                 315                 320
Ile Pro Leu Ile Gly Phe Ile Gly Arg Leu Glu Glu Gln Lys Gly Ser
                325                 330                 335
Asp Ile Leu Val Ala Ala Ile His Lys Phe Ile Gly Leu Asp Val Gln
            340                 345                 350
Ile Val Val Leu Gly Thr Gly Lys Lys Glu Phe Glu Gln Glu Ile Glu
        355                 360                 365
Gln Leu Glu Val Leu Tyr Pro Asn Lys Ala Lys Gly Val Ala Lys Phe
    370                 375                 380
Asn Val Pro Leu Ala His Met Ile Thr Ala Gly Ala Asp Phe Met Leu
385                 390                 395                 400
```

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


<210> 8
<211> 531
<212> PRT
<213> glycine max

<400> 8

Met Thr Phe Ile Ile Ile Gly Thr Glu Val Ala Pro Trp Cys Lys Thr
1               5                   10                  15
Gly Gly Leu Gly Asp Val Leu Gly Gly Leu Pro Pro Ala Leu Ala Gly
            20                  25                  30
Phe Gly His Arg Val Met Thr Ile Val Pro Arg Tyr Asp Gln Tyr Lys
        35                  40                  45
Asp Ala Trp Asp Thr Ser Val Val Ile Glu Val Lys Val Gly Asp Arg
    50                  55                  60
Thr Glu Lys Val Arg Phe Phe His Cys Tyr Lys Arg Gly Val Asp Arg
65                  70                  75                  80
Val Phe Val Asp His Pro Trp Phe Leu Glu Lys Val Trp Gly Lys Thr
                85                  90                  95
Gly Gln Lys Leu Tyr Gly Pro Thr Thr Gly Asn Asp Tyr Glu Asp Asn
            100                 105                 110
Gln Leu Arg Phe Ser Leu Phe Cys Gln Ala Ala Leu Glu Ala Pro Arg
        115                 120                 125
Val Leu Ser Leu Asn Ser Ser Lys Tyr Phe Ser Gly Pro Tyr Gly Glu
    130                 135                 140
Asp Val Ile Phe Val Ala Asn Asp Trp His Thr Ala Leu Ile Pro Cys
145                 150                 155                 160
Tyr Leu Lys Ser Met Tyr Gln Ser Arg Gly Ile Tyr Thr Asn Ala Arg
                165                 170                 175
Val Val Phe Cys Ile His Asn Ile Ala Tyr Gln Gly Arg Phe Ala Phe
            180                 185                 190
Ala Asp Phe Ser Leu Leu Asn Leu Pro Asp Gln Phe Lys Ser Ser Phe
        195                 200                 205
Asp Phe Ile Asp Gly His Val Lys Pro Val Val Gly Arg Lys Ile Asn
    210                 215                 220
Trp Leu Lys Ala Gly Leu Ile Glu Ser Trp Phe Val Ile Thr Val Ser
225                 230                 235                 240
Pro Asn Tyr Ala Lys Glu Leu Val Ser Gly Pro Asp Lys Gly Val Glu
                245                 250                 255
Leu Asp Asn Ile Ile Arg Lys Ile Asp Asp Asp Gly Arg Leu Val Gly
            260                 265                 270
```

```
Ile Val Asn Gly Met Asp Val Gln Glu Trp Asn Pro Thr Thr Asp Lys
        275                 280                 285
Tyr Ile Ala Val Lys Tyr Asp Val Ser Thr Val Leu Glu Ala Lys Ala
    290                 295                 300
Leu Leu Lys Glu Ala Leu Gln Ala Glu Val Gly Leu Pro Val Asp Arg
305                 310                 315                 320
Asn Ile Pro Leu Ile Gly Phe Ile Gly Arg Leu Glu Glu Gln Lys Gly
                325                 330                 335
Ser Asp Ile Leu Ala Glu Ala Ile Pro Gln Phe Ile Lys Gln Asn Val
            340                 345                 350
Gln Leu Val Ala Leu Gly Thr Gly Lys Lys Gln Met Glu Lys Gln Leu
        355                 360                 365
Glu Glu Leu Glu Ile Ser Tyr Pro Asp Lys Ala Arg Gly Val Ala Lys
    370                 375                 380
Phe Asn Val Pro Leu Ala His Met Ile Ile Ala Gly Ala Asp Phe Ile
385                 390                 395                 400
Leu Val Pro Ser Arg Phe Glu Pro Cys Gly Leu Ile Gln Leu Gln Ala
                405                 410                 415
Met Arg Tyr Gly Ser Val Pro Ile Val Ala Ser Thr Gly Gly Leu Val
            420                 425                 430
Asp Thr Val Lys Glu Gly Phe Thr Gly Phe Gln Met Gly Ala Phe Asn
        435                 440                 445
Val Glu Cys Asp Ala Val Asp Pro Ala Asp Val Asp Ala Ile Ser Lys
    450                 455                 460
Thr Val Lys Arg Ala Leu Ala Val Tyr Gly Thr Pro Ala Phe Thr Glu
465                 470                 475                 480
Ile Ile Lys Asn Cys Met Ala Gln Asp Leu Ser Trp Lys Gly Pro Ala
                485                 490                 495
Lys Glu Trp Glu Glu Val Leu Leu Ser Leu Gly Val Pro Gly Ser Glu
            500                 505                 510
Pro Gly Ser Asp Gly Glu Glu Ile Ala Pro Gln Ala Lys Glu Asn Val
        515                 520                 525
Ala Thr Pro
    530
```

<210> 9
<211> 527
<212> PRT
<213> phaseolus vulgaris

<400> 9

```
Met Asn Leu Ile Phe Val Gly Ala Glu Val Ala Pro Trp Ser Lys Thr
1               5                   10                  15
Gly Gly Leu Gly Asp Val Leu Gly Gly Leu Pro Ser Ala Leu Ala Glu
            20                  25                  30
His Gly His Arg Val Met Thr Val Ser Pro Arg Tyr Asp Gln Tyr Lys
        35                  40                  45
Asp Ala Trp Asp Thr Asn Val Thr Val Glu Val Lys Val Ala Asp Arg
    50                  55                  60
Ile Glu Thr Val Arg Phe Phe His Cys Tyr Lys Gln Gly Val Asp Arg
65                  70                  75                  80
Val Phe Val Asp His Pro Cys Phe Leu Glu Lys Val Trp Gly Lys Thr
                85                  90                  95
Gly Ser Lys Leu Tyr Gly Pro Ser Ala Gly Val Asp Tyr Glu Asp Asn
            100                 105                 110
Gln Leu Arg Tyr Ser Leu Leu Cys Gln Ala Ala Leu Glu Ala Pro Arg
        115                 120                 125
Val Leu Asn Leu Asn Ser Asn Lys Tyr Phe Ser Gly Pro Tyr Gly Glu
    130                 135                 140
```

```
Asp Val Ile Phe Val Ala Asn Asp Trp His Thr Ala Leu Leu Pro Cys
145                 150                 155                 160
Tyr Leu Lys Ser Met Tyr Gln Thr Arg Gly Val Tyr Arg Asn Thr Lys
                165                 170                 175
Val Ala Phe Cys Ile His Asn Ile Ser Tyr Gln Gly Arg His Pro Phe
            180                 185                 190
Glu Asp Phe Pro Leu Leu Asn Leu Pro Asn Glu Tyr Arg Ser Ala Phe
        195                 200                 205
Asp Phe Thr Asp Gly His Leu Lys Pro Val Arg Gly Arg Lys Ile Asn
    210                 215                 220
Trp Met Lys Ala Ala Ile Leu Glu Ser Asp Leu Val Leu Thr Val Ser
225                 230                 235                 240
Pro Tyr Tyr Ala Lys Glu Leu Val Ser Gly Glu Asp Arg Gly Val Glu
                245                 250                 255
Leu Asp Asn Ile Ile Arg Lys Thr Gly Val Ala Gly Ile Val Asn Gly
            260                 265                 270
Met Asp Ile Arg Glu Trp Ser Pro Lys Thr Asp Lys Phe Ile Asp Ile
        275                 280                 285
His Phe Asp Thr Thr Ser Val Lys Glu Ala Lys Phe Leu Leu Lys Glu
    290                 295                 300
Ala Leu Gln Ala Glu Val Gly Leu Pro Val Asn Arg Asp Ile Pro Leu
305                 310                 315                 320
Ile Gly Phe Ile Gly Arg Leu Glu Glu Gln Lys Gly Ser Asp Ile Leu
                325                 330                 335
Val Glu Ala Ile Pro Lys Phe Ile Asp Gln Asn Val Gln Ile Ile Ile
            340                 345                 350
Leu Gly Thr Gly Lys Lys Ser Met Glu Lys Gln Ile Glu Gln Leu Glu
        355                 360                 365
Glu Ile Tyr Pro Glu Lys Ala Arg Gly Ile Ala Lys Phe Asp Gly Pro
    370                 375                 380
Leu Ala His Lys Ile Ile Ala Gly Ser Asp Phe Ile Met Ile Pro Ser
385                 390                 395                 400
Arg Phe Glu Pro Cys Gly Leu Val Gln Leu His Ser Met Pro Tyr Gly
                405                 410                 415
Thr Val Pro Ile Val Ser Ser Thr Gly Gly Leu Val Asp Thr Val Gln
            420                 425                 430
Glu Gly Phe Thr Gly Phe His Met Gly Ala Phe Asn Val Asp Cys Glu
        435                 440                 445
Ala Ile Asp Pro Ala Asp Val Glu Lys Ile Ala Thr Thr Val Arg Arg
    450                 455                 460
Ala Leu Gly Thr Tyr Gly Thr Val Ala Met Glu Lys Ile Ile Gln Asn
465                 470                 475                 480
Cys Met Ala Gln Asp Phe Ser Trp Lys Gly Pro Ala Lys Gln Trp Glu
                485                 490                 495
Lys Val Leu Phe Ser Leu Asp Val Gly Arg Ser Glu Ala Gly Ile Glu
            500                 505                 510
Gly Asp Glu Ile Ala Pro Leu Ala Lys Glu Asn Val Ala Thr Pro
        515                 520                 525


<210> 10
<211> 217
<212> PRT
<213> plasmodium falciparum

<400> 10
Met Ser Lys Val Gln Lys Asp Ser Ala Lys Pro Leu Asp Lys Phe Gly
1               5                   10                  15
Asn Ile Tyr Asp Tyr His Tyr Glu His Glu Thr His Ala Pro Leu Ser
            20                  25                  30
Pro Arg Ile Arg Lys Val Gly Asp Ile Glu Phe His Ala Cys Ser Asp
```

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

<210> 11
<211> 159
<212> PRT
<213> plasmodium falciparum

<400> 11

```
Met Asn Ile Arg Lys Phe Ile Pro Ser Leu Ala Leu Met Leu Ile Phe
1               5                   10                  15
Phe Ala Phe Ala Asn Leu Val Leu Ser Asp Ala Asn Asp Lys Ala Lys
            20                  25                  30
Lys Pro Ala Gly Lys Gly Ser Pro Ser Thr Leu Gln Thr Pro Gly Ser
        35                  40                  45
Ser Ser Gly Ala Ser Leu His Ala Val Gly Pro Asn Leu Gly Gly Leu
    50                  55                  60
Ser Gln Gly Leu Ser Gly Lys Asp Ser Ala Asp Lys Met Pro Leu Glu
65                  70                  75                  80
Thr Gln Leu Ala Ile Glu Glu Ile Lys Ser Leu Ser Asn Met Leu Asp
                85                  90                  95
Lys Lys Thr Thr Val Asn Arg Asn Leu Ile Ile Ser Thr Ala Val Thr
            100                 105                 110
Asn Met Ile Met Ile Lys Leu Ile Ile Leu Ser Gly Ile Val Gly Phe
        115                 120                 125
Lys Val Lys Lys Thr Lys Asn Ala Asp Asp Asp Lys Gly Asp Lys Asp
    130                 135                 140
Lys Asp Lys Asp Asn Thr Asp Glu Gly Asp Glu Gly Asp Asp Ser
145                 150                 155
```

<210> 12
<211> 217
<212> PRT
<213> plasmodium falciparum

<400> 12

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

<210> 13
<211> 218
<212> PRT
<213> plasmodium falciparum

<400> 13

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

```
Thr Ser Tyr Ser Val Ile Asn Gly Val Thr Leu Thr His Val Leu Ile
        195                 200                 205
Val Cys Ser Ile Phe Ile Lys Leu Leu Ile
    210                 215


<210> 14
<211> 448
<212> PRT
<213> plasmodium falciparum

<400> 14

Met Met Leu Tyr Ile Ser Ala Lys Lys Ala Gln Val Ala Phe Ile Leu
1               5                  10                  15
Tyr Ile Val Leu Val Leu Arg Ile Ile Ser Gly Asn Asn Asp Phe Cys
            20                  25                  30
Lys Pro Ser Ser Leu Asn Ser Glu Ile Ser Gly Phe Ile Gly Tyr Lys
        35                  40                  45
Cys Asn Phe Ser Asn Glu Gly Val His Asn Leu Lys Pro Asp Met Arg
    50                  55                  60
Glu Arg Arg Ser Ile Phe Cys Thr Ile His Ser Tyr Phe Ile Tyr Asp
65                  70                  75                  80
Lys Ile Arg Leu Ile Ile Pro Lys Lys Ser Ser Ser Pro Glu Phe Lys
                85                  90                  95
Ile Leu Pro Glu Lys Cys Phe Gln Lys Val Tyr Thr Asp Tyr Glu Asn
            100                 105                 110
Arg Val Glu Thr Asp Ile Ser Glu Leu Gly Leu Ile Glu Tyr Glu Ile
        115                 120                 125
Glu Glu Asn Asp Thr Asn Pro Asn Tyr Asn Glu Arg Thr Ile Thr Ile
    130                 135                 140
Ser Pro Phe Ser Pro Lys Asp Ile Glu Phe Phe Cys Phe Cys Asp Asn
145                 150                 155                 160
Thr Glu Lys Val Ile Ser Ser Ile Glu Gly Arg Ser Ala Met Val His
                165                 170                 175
Val Arg Val Leu Lys Tyr Pro His Asn Ile Leu Phe Thr Asn Leu Thr
            180                 185                 190
Asn Asp Leu Phe Thr Tyr Leu Pro Lys Thr Tyr Asn Glu Ser Asn Phe
        195                 200                 205
Val Ser Asn Val Leu Glu Val Glu Leu Asn Asp Gly Glu Leu Phe Val
    210                 215                 220
Leu Ala Cys Glu Leu Ile Asn Lys Lys Cys Phe Gln Glu Gly Lys Glu
225                 230                 235                 240
Lys Ala Leu Tyr Lys Ser Asn Lys Ile Ile Tyr His Lys Asn Leu Thr
                245                 250                 255
Ile Phe Lys Ala Pro Phe Tyr Val Thr Ser Lys Asp Val Asn Thr Glu
            260                 265                 270
Cys Thr Cys Lys Phe Lys Asn Asn Asn Tyr Lys Ile Val Leu Lys Pro
        275                 280                 285
Lys Tyr Glu Lys Lys Val Ile His Gly Cys Asn Phe Ser Ser Asn Val
    290                 295                 300
Ser Ser Lys His Thr Phe Thr Asp Ser Leu Asp Ile Ser Leu Val Asp
305                 310                 315                 320
Asp Ser Ala His Ile Ser Cys Asn Val His Leu Ser Glu Pro Lys Tyr
                325                 330                 335
Asn His Leu Val Gly Leu Asn Cys Pro Gly Asp Ile Ile Pro Asp Cys
            340                 345                 350
Phe Phe Gln Val Tyr Gln Pro Glu Ser Glu Glu Leu Glu Pro Ser Asn
        355                 360                 365
Ile Val Tyr Leu Asp Ser Gln Ile Asn Ile Gly Asp Ile Glu Tyr Tyr
    370                 375                 380
```

```
Glu Asp Ala Glu Gly Asp Asp Lys Ile Lys Leu Phe Gly Ile Val Gly
385                 390                 395                 400
Ser Ile Pro Lys Thr Thr Ser Phe Thr Cys Ile Cys Lys Lys Asp Lys
                405                 410                 415
Lys Ser Ala Tyr Met Thr Val Thr Ile Asp Ser Ala Tyr Tyr Gly Phe
            420                 425                 430
Leu Ala Lys Thr Phe Ile Phe Leu Ile Val Ala Ile Leu Leu Tyr Ile
        435                 440                 445


<210> 15
<211> 3135
<212> PRT
<213> plasmodium falciparum

<400> 15

Met Lys Lys Ile Ile Thr Leu Lys Asn Leu Phe Leu Ile Ile Leu Val
1               5                   10                  15
Tyr Ile Phe Ser Glu Lys Lys Asp Leu Arg Cys Asn Val Ile Lys Gly
            20                  25                  30
Asn Asn Ile Lys Asp Asp Glu Asp Lys Arg Phe His Leu Phe Tyr Tyr
        35                  40                  45
Ser His Asn Leu Phe Lys Thr Pro Glu Thr Lys Glu Lys Lys Asn Lys
    50                  55                  60
Lys Glu Cys Phe Tyr Lys Asn Gly Gly Ile Tyr Asn Leu Ser Lys Glu
65                  70                  75                  80
Ile Arg Met Arg Lys Asp Thr Ser Val Lys Ile Lys Gln Arg Thr Cys
                85                  90                  95
Pro Phe His Lys Glu Gly Ser Ser Phe Glu Met Gly Ser Lys Asn Ile
            100                 105                 110
Thr Cys Phe Tyr Pro Ile Val Gly Lys Lys Glu Arg Lys Thr Leu Asp
        115                 120                 125
Thr Ile Ile Ile Lys Lys Asn Val Thr Asn Asp His Val Val Ser Ser
    130                 135                 140
Asp Met His Ser Asn Val Gln Glu Lys Asn Met Ile Leu Ile Arg Asn
145                 150                 155                 160
Ile Asp Lys Glu Asn Lys Asn Asp Ile Gln Asn Val Glu Glu Lys Ile
                165                 170                 175
Gln Arg Asp Thr Tyr Glu Asn Lys Asp Tyr Glu Ser Asp Asp Thr Leu
            180                 185                 190
Ile Glu Trp Phe Asp Asp Asn Thr Asn Glu Glu Asn Phe Leu Leu Thr
        195                 200                 205
Phe Leu Lys Arg Cys Leu Met Lys Ile Phe Ser Ser Pro Lys Arg Lys
    210                 215                 220
Lys Thr Val Val Gln Lys Lys His Lys Ser Asn Phe Phe Ile Asn Ser
225                 230                 235                 240
Ser Leu Lys Tyr Ile Tyr Met Tyr Leu Thr Pro Ser Asp Ser Phe Asn
                245                 250                 255
Leu Val Arg Arg Asn Arg Asn Leu Asp Glu Glu Asp Met Ser Pro Arg
            260                 265                 270
Asp Asn Phe Val Ile Asp Asp Glu Glu Glu Glu Glu Glu Glu Glu Glu
        275                 280                 285
Glu Glu Glu Glu Glu Glu Glu Glu Glu Glu Glu Glu Glu Glu Glu Glu
    290                 295                 300
Tyr Asp Asp Tyr Val Tyr Glu Glu Ser Gly Asp Glu Thr Glu Glu Gln
305                 310                 315                 320
Leu Gln Glu Glu His Gln Glu Glu Val Gly Ala Glu Ser Ser Glu Glu
                325                 330                 335
Ser Phe Asn Asp Glu Asp Glu Asp Ser Val Glu Ala Arg Asp Gly Asp
            340                 345                 350
```

```
Met Ile Arg Val Asp Glu Tyr Tyr Glu Asp Gln Asp Gly Asp Thr Tyr
        355                 360                 365
Asp Ser Thr Ile Lys Asn Glu Asp Val Asp Glu Glu Val Gly Glu Glu
    370                 375                 380
Val Gly Glu Glu Val Gly Glu Glu Val Gly Glu Glu Val Gly Glu Glu
385                 390                 395                 400
Val Gly Glu Glu Val Gly Glu Glu Val Gly Glu Glu Val Gly Glu Glu
                405                 410                 415
Glu Gly Glu Glu Val Gly Glu Gly Val Gly Glu Glu Val Gly Glu Glu
            420                 425                 430
Glu Gly Glu Glu Val Gly Glu Glu Glu Gly Glu Tyr Val Asp Glu Lys
        435                 440                 445
Glu Arg Gln Gly Glu Ile Tyr Pro Phe Gly Asp Glu Glu Glu Lys Asp
    450                 455                 460
Glu Gly Gly Glu Ser Phe Thr Tyr Glu Lys Ser Glu Val Asp Lys Thr
465                 470                 475                 480
Asp Leu Phe Lys Phe Ile Glu Gly Gly Glu Gly Asp Asp Val Tyr Lys
                485                 490                 495
Val Asp Gly Ser Lys Val Leu Leu Asp Asp Asp Thr Ile Ser Arg Val
            500                 505                 510
Ser Lys Lys His Thr Ala Arg Asp Gly Glu Tyr Gly Glu Tyr Gly Glu
        515                 520                 525
Ala Val Glu Asp Gly Glu Asn Val Ile Lys Ile Ile Arg Ser Val Leu
    530                 535                 540
Gln Ser Gly Ala Leu Pro Ser Val Gly Val Asp Glu Leu Asp Lys Ile
545                 550                 555                 560
Asp Leu Ser Tyr Glu Thr Thr Glu Ser Gly Asp Thr Ala Val Ser Glu
                565                 570                 575
Asp Ser Tyr Asp Lys Tyr Ala Ser Asn Asn Thr Asn Lys Glu Tyr Val
            580                 585                 590
Cys Asp Phe Thr Asp Gln Leu Lys Pro Thr Glu Ser Gly Pro Lys Val
        595                 600                 605
Lys Lys Cys Glu Val Lys Val Asn Glu Pro Leu Ile Lys Val Lys Ile
    610                 615                 620
Ile Cys Pro Leu Lys Gly Ser Val Glu Lys Leu Tyr Asp Asn Ile Glu
625                 630                 635                 640
Tyr Val Pro Lys Lys Ser Pro Tyr Val Val Leu Thr Lys Glu Glu Thr
                645                 650                 655
Lys Leu Lys Glu Lys Leu Leu Ser Lys Leu Ile Tyr Gly Leu Leu Ile
            660                 665                 670
Ser Pro Thr Val Asn Glu Lys Glu Asn Asn Phe Lys Glu Gly Val Ile
        675                 680                 685
Glu Phe Thr Leu Pro Pro Val Val His Lys Ala Thr Val Phe Tyr Phe
    690                 695                 700
Ile Cys Asp Asn Ser Lys Thr Glu Asp Asp Asn Lys Lys Gly Asn Arg
705                 710                 715                 720
Gly Ile Val Glu Val Tyr Val Glu Pro Tyr Gly Asn Lys Ile Asn Gly
                725                 730                 735
Cys Ala Phe Leu Asp Glu Asp Glu Glu Glu Glu Lys Tyr Gly Asn Gln
            740                 745                 750
Ile Glu Glu Asp Glu His Asn Glu Lys Ile Lys Met Lys Thr Phe Phe
        755                 760                 765
Thr Gln Asn Ile Tyr Lys Lys Asn Asn Ile Tyr Pro Cys Tyr Met Lys
    770                 775                 780
Leu Tyr Ser Gly Asp Ile Gly Gly Ile Leu Phe Pro Lys Asn Ile Lys
785                 790                 795                 800
Ser Thr Thr Cys Phe Glu Glu Met Ile Pro Tyr Asn Lys Glu Ile Lys
                805                 810                 815
Trp Asn Lys Glu Asn Lys Ser Leu Gly Asn Leu Val Asn Asn Ser Val
            820                 825                 830
Val Tyr Asn Lys Glu Met Asn Ala Lys Tyr Phe Asn Val Gln Tyr Val
```

```
        835                 840                 845
His Ile Pro Thr Ser Tyr Lys Asp Thr Leu Asn Leu Phe Cys Ser Ile
    850                 855                 860
Ile Leu Lys Glu Glu Glu Ser Asn Leu Ile Ser Thr Ser Tyr Leu Val
865                 870                 875                 880
Tyr Val Ser Ile Asn Glu Glu Leu Asn Phe Ser Leu Phe Asp Phe Tyr
                885                 890                 895
Glu Ser Phe Val Pro Ile Lys Lys Thr Ile Gln Val Ala Gln Lys Asn
            900                 905                 910
Val Asn Asn Lys Glu His Asp Tyr Thr Cys Asp Phe Thr Asp Lys Leu
        915                 920                 925
Asp Lys Thr Val Pro Ser Thr Ala Asn Gly Lys Lys Leu Phe Ile Cys
    930                 935                 940
Arg Lys His Leu Lys Glu Phe Asp Thr Phe Thr Leu Lys Cys Asn Val
945                 950                 955                 960
Asn Lys Thr Gln Tyr Pro Asn Ile Glu Ile Phe Pro Lys Thr Leu Lys
                965                 970                 975
Asp Lys Lys Glu Val Leu Lys Leu Asp Leu Asp Ile Gln Tyr Gln Met
            980                 985                 990
Phe Ser Lys Phe Phe Lys Phe Asn  Thr Gln Asn Ala Lys  Tyr Leu Asn
        995                 1000                1005
Leu Tyr  Pro Tyr Tyr Leu Ile  Phe Pro Phe Asn His  Ile Gly Lys
    1010                1015                1020
Lys Glu  Leu Lys Asn Asn Pro  Thr Tyr Lys Asn His  Lys Asp Val
    1025                1030                1035
Lys Tyr  Phe Glu Gln Ser Ser  Val Leu Ser Pro Leu  Ser Ser Ala
    1040                1045                1050
Asp Ser  Leu Gly Lys Leu Leu  Asn Phe Leu Asp Thr  Gln Glu Thr
    1055                1060                1065
Val Cys  Leu Thr Glu Lys Ile  Arg Tyr Leu Asn Leu  Ser Ile Asn
    1070                1075                1080
Glu Leu  Gly Ser Asp Asn Asn  Thr Phe Ser Val Thr  Phe Gln Val
    1085                1090                1095
Pro Pro  Tyr Ile Asp Ile Lys  Glu Pro Phe Tyr Phe  Met Phe Gly
    1100                1105                1110
Cys Asn  Asn Asn Lys Gly Glu  Gly Asn Ile Gly Ile  Val Glu Leu
    1115                1120                1125
Leu Ile  Ser Lys Gln Glu Glu  Lys Ile Lys Gly Cys  Asn Phe His
    1130                1135                1140
Glu Ser  Lys Leu Asp Tyr Phe  Asn Glu Asn Ile Ser  Ser Asp Thr
    1145                1150                1155
His Glu  Cys Thr Leu His Ala  Tyr Glu Asn Asp Ile  Ile Gly Phe
    1160                1165                1170
Asn Cys  Leu Glu Thr Thr His  Pro Asn Glu Val Glu  Val Glu Val
    1175                1180                1185
Glu Asp  Ala Glu Ile Tyr Leu  Gln Pro Glu Asn Cys  Phe Asn Asn
    1190                1195                1200
Val Tyr  Lys Gly Leu Asn Ser  Val Asp Ile Thr Thr  Ile Leu Lys
    1205                1210                1215
Asn Ala  Gln Thr Tyr Asn Ile  Asn Asn Lys Lys Thr  Pro Thr Phe
    1220                1225                1230
Leu Lys  Ile Pro Pro Tyr Asn  Leu Leu Glu Asp Val  Glu Ile Ser
    1235                1240                1245
Cys Gln  Cys Thr Ile Lys Gln  Val Val Lys Lys Ile  Lys Val Ile
    1250                1255                1260
Ile Thr  Lys Asn Asp Thr Val  Leu Leu Lys Arg Glu  Val Gln Ser
    1265                1270                1275
Glu Ser  Thr Leu Asp Asp Lys  Ile Tyr Lys Cys Glu  His Glu Asn
    1280                1285                1290
Phe Ile  Asn Pro Arg Val Asn  Lys Thr Phe Asp Glu  Asn Val Glu
    1295                1300                1305
```

```
Tyr Thr  Cys Asn Ile Lys Ile  Glu Asn Phe Phe Asn  Tyr Ile Gln
    1310                1315                1320
Ile Phe  Cys Pro Ala Lys Asp  Leu Gly Ile Tyr Lys  Asn Ile Gln
    1325                1330                1335
Met Tyr  Tyr Asp Ile Val Lys  Pro Thr Arg Val Pro  Gln Phe Lys
    1340                1345                1350
Lys Phe  Asn Asn Glu Glu Leu  His Lys Leu Ile Pro  Asn Ser Glu
    1355                1360                1365
Met Leu  His Lys Thr Lys Glu  Met Leu Ile Leu Tyr  Asn Glu Glu
    1370                1375                1380
Lys Val  Asp Leu Leu His Phe  Tyr Val Phe Leu Pro  Ile Tyr Ile
    1385                1390                1395
Lys Asp  Ile Tyr Glu Phe Asn  Ile Val Cys Asp Asn  Ser Lys Thr
    1400                1405                1410
Met Trp  Lys Asn Gln Leu Gly  Gly Lys Val Ile Tyr  His Ile Thr
    1415                1420                1425
Val Ser  Lys Arg Glu Gln Lys  Val Lys Gly Cys Ser  Phe Asp Asn
    1430                1435                1440
Glu His  Ala His Met Phe Ser  Tyr Asn Lys Thr Asn  Val Lys Asn
    1445                1450                1455
Cys Ile  Ile Asp Ala Lys Pro  Lys Asp Leu Ile Gly  Phe Val Cys
    1460                1465                1470
Pro Ser  Gly Thr Leu Lys Leu  Thr Asn Cys Phe Lys  Asp Ala Ile
    1475                1480                1485
Val His  Thr Asn Leu Thr Asn  Ile Asn Gly Ile Leu  Tyr Leu Lys
    1490                1495                1500
Asn Asn  Leu Ala Asn Phe Thr  Tyr Lys His Gln Phe  Asn Tyr Met
    1505                1510                1515
Glu Ile  Pro Ala Leu Met Asp  Asn Asp Ile Ser Phe  Lys Cys Ile
    1520                1525                1530
Cys Val  Asp Leu Lys Lys Lys  Lys Tyr Asn Val Lys  Ser Pro Leu
    1535                1540                1545
Gly Pro  Lys Val Leu Arg Ala  Leu Tyr Lys Lys Leu  Asn Ile Lys
    1550                1555                1560
Phe Asp  Asn Tyr Val Thr Gly  Thr Asp Gln Asn Lys  Tyr Leu Met
    1565                1570                1575
Thr Tyr  Met Asp Leu His Leu  Ser His Lys Arg Asn  Tyr Leu Lys
    1580                1585                1590
Glu Leu  Phe His Asp Leu Gly  Lys Lys Lys Pro Ala  Asp Thr Asp
    1595                1600                1605
Ala Asn  Pro Glu Ser Ile Ile  Glu Ser Leu Ser Ile  Asn Glu Ser
    1610                1615                1620
Asn Glu  Ser Gly Pro Phe Pro  Thr Gly Asp Val Asp  Ala Glu His
    1625                1630                1635
Leu Ile  Leu Glu Gly Tyr Asp  Thr Trp Glu Ser Leu  Tyr Asp Glu
    1640                1645                1650
Gln Leu  Glu Glu Val Ile Tyr  Asn Asp Ile Glu Ser  Leu Glu Leu
    1655                1660                1665
Lys Asp  Ile Glu Gln Tyr Val  Leu Gln Val Asn Leu  Lys Ala Pro
    1670                1675                1680
Lys Leu  Met Met Ser Ala Gln  Ile His Asn Asn Arg  His Val Cys
    1685                1690                1695
Asp Phe  Ser Lys Asn Asn Leu  Ile Val Pro Glu Ser  Leu Lys Lys
    1700                1705                1710
Lys Glu  Glu Leu Gly Gly Asn  Pro Val Asn Ile His  Cys Tyr Ala
    1715                1720                1725
Leu Leu  Lys Pro Leu Asp Thr  Leu Tyr Val Lys Cys  Pro Thr Ser
    1730                1735                1740
Lys Asp  Asn Tyr Glu Ala Ala  Lys Val Asn Ile Ser  Glu Asn Asp
    1745                1750                1755
Asn Glu  Tyr Glu Leu Gln Val  Ile Ser Leu Ile Glu  Lys Arg Phe
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    1760                1765                1770
His Asn  Phe Glu Thr Leu Glu  Ser Lys Lys Pro Gly  Asn Gly Asp
    1775                1780                1785
Val Val  Val His Asn Gly Val  Val Asp Thr Gly Pro  Val Leu Asp
    1790                1795                1800
Asn Ser  Thr Phe Glu Lys Tyr  Phe Lys Asn Ile Lys  Ile Lys Pro
    1805                1810                1815
Asp Lys  Phe Phe Glu Lys Val  Ile Asn Glu Tyr Asp  Asp Thr Glu
    1820                1825                1830
Glu Glu  Lys Asp Leu Glu Ser  Ile Leu Pro Gly Ala  Ile Val Ser
    1835                1840                1845
Pro Met  Lys Val Leu Lys Lys  Lys Asp Pro Phe Thr  Ser Tyr Ala
    1850                1855                1860
Ala Phe  Val Val Pro Pro Ile  Val Pro Lys Asp Leu  His Phe Lys
    1865                1870                1875
Val Glu  Cys Asn Asn Thr Glu  Tyr Lys Asp Glu Asn  Gln Tyr Ile
    1880                1885                1890
Ser Gly  Tyr Asn Gly Ile Ile  His Ile Asp Ile Ser  Asn Ser Asn
    1895                1900                1905
Arg Lys  Ile Asn Gly Cys Asp  Phe Ser Thr Asn Asn  Ser Ser Ile
    1910                1915                1920
Leu Thr  Ser Ser Val Lys Leu  Val Asn Gly Glu Thr  Lys Asn Cys
    1925                1930                1935
Glu Ile  Asn Ile Asn Asn Asn  Glu Val Phe Gly Ile  Ile Cys Asp
    1940                1945                1950
Asn Glu  Thr Asn Leu Asp Pro  Glu Lys Cys Phe His  Glu Ile Tyr
    1955                1960                1965
Ser Lys  Asp Asn Lys Thr Val  Lys Lys Phe Arg Glu  Val Ile Pro
    1970                1975                1980
Asn Ile  Asp Ile Phe Ser Leu  His Asn Ser Asn Lys  Lys Lys Val
    1985                1990                1995
Ala Tyr  Ala Lys Val Pro Leu  Asp Tyr Ile Asn Lys  Leu Leu Phe
    2000                2005                2010
Ser Cys  Ser Cys Lys Thr Ser  His Thr Asn Thr Ile  Gly Thr Met
    2015                2020                2025
Lys Val  Thr Leu Asn Lys Asp  Glu Lys Glu Glu Glu  Asp Phe Lys
    2030                2035                2040
Thr Ala  Gln Gly Ile Lys His  Asn Asn Val His Leu  Cys Asn Phe
    2045                2050                2055
Phe Asp  Asn Pro Glu Leu Thr  Phe Asp Asn Asn Lys  Ile Val Leu
    2060                2065                2070
Cys Lys  Ile Asp Ala Glu Leu  Phe Ser Glu Val Ile  Ile Gln Leu
    2075                2080                2085
Pro Ile  Phe Gly Thr Lys Asn  Val Glu Glu Gly Val  Gln Asn Glu
    2090                2095                2100
Glu Tyr  Lys Lys Phe Ser Leu  Lys Pro Ser Leu Val  Phe Asp Asp
    2105                2110                2115
Asn Asn  Asn Asp Ile Lys Val  Ile Gly Lys Glu Lys  Asn Glu Val
    2120                2125                2130
Ser Ile  Ser Leu Ala Leu Lys  Gly Val Tyr Gly Asn  Arg Ile Phe
    2135                2140                2145
Thr Phe  Asp Lys Asn Gly Lys  Lys Gly Glu Gly Ile  Ser Phe Phe
    2150                2155                2160
Ile Pro  Pro Ile Lys Gln Asp  Thr Asp Leu Lys Phe  Ile Ile Asn
    2165                2170                2175
Glu Thr  Ile Asp Asn Ser Asn  Ile Lys Gln Arg Gly  Leu Ile Tyr
    2180                2185                2190
Ile Phe  Val Arg Lys Asn Val  Ser Glu Asn Ser Phe  Lys Leu Cys
    2195                2200                2205
Asp Phe  Thr Thr Gly Ser Thr  Ser Leu Met Glu Leu  Asn Ser Gln
    2210                2215                2220
```

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Val Lys  Glu Lys Lys Cys Thr  Val Lys Ile Lys Lys  Gly Asp Ile
    2225                 2230                 2235
Phe Gly  Leu Lys Cys Pro Lys  Gly Phe Ala Ile Phe  Pro Gln Ala
    2240                 2245                 2250
Cys Phe  Ser Asn Val Leu Leu  Glu Tyr Tyr Lys Ser  Asp Tyr Glu
    2255                 2260                 2265
Asp Ser  Glu His Ile Asn Tyr  Tyr Ile His Lys Asp  Lys Lys Tyr
    2270                 2275                 2280
Asn Leu  Lys Pro Lys Asp Val  Ile Glu Leu Met Asp  Glu Asn Phe
    2285                 2290                 2295
Arg Glu  Leu Gln Asn Ile Gln  Gln Tyr Thr Gly Ile  Ser Asn Ile
    2300                 2305                 2310
Thr Asp  Val Leu His Phe Lys  Asn Phe Asn Leu Gly  Asn Leu Pro
    2315                 2320                 2325
Leu Asn  Phe Lys Asn His Tyr  Ser Thr Ala Tyr Ala  Lys Val Pro
    2330                 2335                 2340
Asp Thr  Phe Asn Ser Ile Ile  Asn Phe Ser Cys Asn  Cys Tyr Asn
    2345                 2350                 2355
Pro Glu  Lys His Val Tyr Gly  Thr Met Gln Val Glu  Ser Asp Asn
    2360                 2365                 2370
Arg Asn  Phe Asp Asn Ile Lys  Lys Asn Glu Asn Val  Ile Lys Asn
    2375                 2380                 2385
Phe Leu  Leu Pro Asn Ile Glu  Lys Tyr Ala Leu Leu  Leu Asp Asp
    2390                 2395                 2400
Glu Glu  Arg Gln Lys Lys Ile  Lys Gln Gln Gln Glu  Glu Glu Gln
    2405                 2410                 2415
Gln Glu  Gln Ile Leu Lys Asp  Gln Asp Asp Arg Leu  Ser Arg His
    2420                 2425                 2430
Asp Asp  Tyr Asn Lys Asn His  Thr Tyr Ile Leu Tyr  Asp Ser Asn
    2435                 2440                 2445
Glu His  Ile Cys Asp Tyr Glu  Lys Asn Glu Ser Leu  Ile Ser Thr
    2450                 2455                 2460
Leu Pro  Asn Asp Thr Lys Lys  Ile Gln Lys Ser Ile  Cys Lys Ile
    2465                 2470                 2475
Asn Ala  Lys Ala Leu Asp Val  Val Thr Ile Lys Cys  Pro His Thr
    2480                 2485                 2490
Lys Asn  Phe Thr Pro Lys Asp  Tyr Phe Pro Asn Ser  Ser Leu Ile
    2495                 2500                 2505
Thr Asn  Asp Lys Lys Ile Val  Ile Thr Phe Asp Lys  Lys Asn Phe
    2510                 2515                 2520
Val Thr  Tyr Ile Asp Pro Thr  Lys Lys Thr Phe Ser  Leu Lys Asp
    2525                 2530                 2535
Ile Tyr  Ile Gln Ser Phe Tyr  Gly Val Ser Leu Asp  His Leu Asn
    2540                 2545                 2550
Gln Ile  Lys Lys Ile His Glu  Glu Trp Asp Asp Val  His Leu Phe
    2555                 2560                 2565
Tyr Pro  Pro His Asn Val Leu  His Asn Val Val Leu  Asn Asn His
    2570                 2575                 2580
Ile Val  Asn Leu Ser Ser Ala  Leu Glu Gly Val Leu  Phe Met Lys
    2585                 2590                 2595
Ser Lys  Val Thr Gly Asp Glu  Thr Ala Thr Lys Lys  Asn Thr Thr
    2600                 2605                 2610
Leu Pro  Thr Asp Gly Val Ser  Ser Ile Leu Ile Pro  Pro Tyr Val
    2615                 2620                 2625
Lys Glu  Asp Ile Thr Phe His  Leu Phe Cys Gly Lys  Ser Thr Thr
    2630                 2635                 2640
Lys Lys  Pro Asn Lys Lys Asn  Thr Ser Leu Ala Leu  Ile His Ile
    2645                 2650                 2655
His Ile  Ser Ser Asn Arg Asn  Ile Ile His Gly Cys  Asp Phe Leu
    2660                 2665                 2670
Tyr Leu  Glu Asn Gln Thr Asn  Asp Ala Ile Ser Asn  Asn Asn Asn
```

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    2675                2680                2685
Asn Ser  Tyr Ser Ile Phe Thr  His Asn Lys Asn Thr  Glu Asn Asn
    2690                2695                2700
Leu Ile  Cys Asp Ile Ser Leu  Ile Pro Lys Thr Val  Ile Gly Ile
    2705                2710                2715
Lys Cys  Pro Asn Lys Lys Leu  Asn Pro Gln Thr Cys  Phe Asp Glu
    2720                2725                2730
Val Tyr  Tyr Val Lys Gln Glu  Asp Val Pro Ser Lys  Thr Ile Thr
    2735                2740                2745
Ala Asp  Lys Tyr Asn Thr Phe  Ser Lys Asp Lys Ile  Gly Asn Ile
    2750                2755                2760
Leu Lys  Asn Ala Ile Ser Ile  Asn Asn Pro Asp Glu  Lys Asp Asn
    2765                2770                2775
Thr Tyr  Thr Tyr Leu Ile Leu  Pro Glu Lys Phe Glu  Glu Glu Leu
    2780                2785                2790
Ile Asp  Thr Lys Lys Val Leu  Ala Cys Thr Cys Asp  Asn Lys Tyr
    2795                2800                2805
Ile Ile  His Met Lys Ile Glu  Lys Ser Thr Met Asp  Lys Ile Lys
    2810                2815                2820
Ile Asp  Glu Lys Lys Thr Ile  Gly Lys Asp Ile Cys  Lys Tyr Asp
    2825                2830                2835
Val Thr  Thr Lys Val Ala Thr  Cys Glu Ile Ile Asp  Thr Ile Asp
    2840                2845                2850
Ser Ser  Val Leu Lys Glu His  His Thr Val His Tyr  Ser Ile Thr
    2855                2860                2865
Leu Ser  Arg Trp Asp Lys Leu  Ile Ile Lys Tyr Pro  Thr Asn Glu
    2870                2875                2880
Lys Thr  His Phe Glu Asn Phe  Phe Val Asn Pro Phe  Asn Leu Lys
    2885                2890                2895
Asp Lys  Val Leu Tyr Asn Tyr  Asn Lys Pro Ile Asn  Ile Glu His
    2900                2905                2910
Ile Leu  Pro Gly Ala Ile Thr  Thr Asp Ile Tyr Asp  Thr Arg Thr
    2915                2920                2925
Lys Ile  Lys Gln Tyr Ile Leu  Arg Ile Pro Pro Tyr  Val His Lys
    2930                2935                2940
Asp Ile  His Phe Ser Leu Glu  Phe Asn Asn Ser Leu  Ser Leu Thr
    2945                2950                2955
Lys Gln  Asn Gln Asn Ile Ile  Tyr Gly Asn Val Ala  Lys Ile Phe
    2960                2965                2970
Ile His  Ile Asn Gln Gly Tyr  Lys Glu Ile His Gly  Cys Asp Phe
    2975                2980                2985
Thr Gly  Lys Tyr Ser His Leu  Phe Thr Tyr Ser Lys  Lys Pro Leu
    2990                2995                3000
Pro Asn  Asp Asp Asp Ile Cys  Asn Val Thr Ile Gly  Asn Asn Thr
    3005                3010                3015
Phe Ser  Gly Phe Ala Cys Leu  Ser His Phe Glu Leu  Lys Pro Asn
    3020                3025                3030
Asn Cys  Phe Ser Ser Val Tyr  Asp Tyr Asn Glu Ala  Asn Lys Val
    3035                3040                3045
Lys Lys  Leu Phe Asp Leu Ser  Thr Lys Val Glu Leu  Asp His Ile
    3050                3055                3060
Lys Gln  Asn Thr Ser Gly Tyr  Thr Leu Ser Tyr Ile  Ile Phe Asn
    3065                3070                3075
Lys Glu  Ser Thr Lys Leu Lys  Phe Ser Cys Thr Cys  Ser Ser Asn
    3080                3085                3090
Tyr Ser  Asn Tyr Thr Ile Arg  Ile Thr Phe Asp Pro  Asn Tyr Ile
    3095                3100                3105
Ile Pro  Glu Pro Gln Ser Arg  Ala Ile Ile Lys Tyr  Val Asp Leu
    3110                3115                3120
Gln Asp  Lys Asn Phe Ala Lys  Tyr Leu Arg Lys Leu
    3125                3130                3135
```

<210> 16
<211> 403
<212> PRT
<213> plasmodium falciparum

<400> 16

```
Ala Leu Phe Gln Glu Tyr Gln Cys Tyr Gly Ser Ser Ser Asn Thr Arg
1               5                  10                  15
Val Leu Asn Glu Leu Asn Tyr Asp Asn Ala Gly Thr Asn Leu Tyr Asn
            20                  25                  30
Glu Leu Glu Met Asn Tyr Tyr Gly Lys Gln Glu Asn Trp Tyr Ser Leu
        35                  40                  45
Lys Lys Asn Ser Arg Ser Leu Gly Glu Asn Asp Asp Gly Asn Asn Asn
    50                  55                  60
Asn Gly Asp Asn Gly Arg Glu Gly Lys Asp Glu Asp Lys Arg Asp Gly
65                  70                  75                  80
Asn Asn Glu Asp Asn Glu Lys Leu Arg Lys Pro Lys His Lys Lys Leu
                85                  90                  95
Lys Gln Pro Gly Gly Asp Asn Pro Asp Pro Asn Ala Asn Pro Asn Val
            100                 105                 110
Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala
        115                 120                 125
Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala
    130                 135                 140
Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala
145                 150                 155                 160
Asn Pro Asn Ala Asn Pro Asn Val Asp Pro Asn Ala Asn Pro Asn Ala
                165                 170                 175
Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala
            180                 185                 190
Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala
        195                 200                 205
Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala
    210                 215                 220
Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala
225                 230                 235                 240
Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala
                245                 250                 255
Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala
            260                 265                 270
Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala
        275                 280                 285
Asn Pro Asn Ala Asn Pro Asn Lys Asn Asn Gln Gly Asn Gly Gln Gly
    290                 295                 300
His Asn Met Pro Asn Asp Pro Asn Arg Asn Val Asp Glu Asn Ala Asn
305                 310                 315                 320
Ala Asn Asn Ala Val Lys Asn Asn Asn Asn Glu Glu Pro Ser Asp Lys
                325                 330                 335
His Ile Glu Gln Tyr Leu Lys Lys Ile Gln Asn Ser Leu Ser Thr Glu
            340                 345                 350
Trp Ser Pro Cys Ser Val Thr Cys Gly Asn Gly Ile Gln Val Arg Ile
        355                 360                 365
Lys Pro Gly Ser Ala Asn Lys Pro Lys Asp Glu Leu Asp Tyr Glu Asn
    370                 375                 380
Asp Ile Glu Lys Lys Ile Cys Lys Met Glu Lys Cys Ser Ser Val Phe
385                 390                 395                 400
Asn Val Val
```

<210> 17
<211> 559
<212> PRT
<213> plasmodium falciparum

<400> 17

```
Met Ile His Ile Phe Tyr Lys Thr Ala Ile Phe Thr Leu Ser Ile Trp
1               5                  10                  15
Thr Thr Leu Leu Tyr Ser Asn Lys Asn Leu Lys Cys Asn Phe Tyr Tyr
            20                  25                  30
Asn Asn Asn Asn Leu Ser Thr Tyr Val Ile Lys His Asn Arg Phe Leu
        35                  40                  45
Ser Glu Tyr Gln Ser Asn Phe Leu Gly Gly Gly Tyr Ser Ala Ala Leu
    50                  55                  60
Lys Leu Val Asn Ser Lys Lys Ser Gly Thr Asn Val Asn Thr Lys Tyr
65                  70                  75                  80
Asn Ser Glu Asn Thr Asn Thr Asn Asn Asn Ile Pro Glu Ser Ser Ser
                85                  90                  95
Thr Tyr Thr Asn Thr Arg Leu Pro Ala Asn Asn Ser Thr Thr Thr Ser
            100                 105                 110
Thr Thr Lys Val Thr Asp Asn Asn Lys Thr Asn Ile Lys Leu Thr Gly
        115                 120                 125
Asn Asn Ser Thr Thr Ile Asn Thr Asn Ser Thr Glu Asn Thr Ser Ala
    130                 135                 140
Thr Lys Lys Val Thr Glu Asn Val Ile Thr Asn Gln Ile Leu Thr Gly
145                 150                 155                 160
Asn Asn Asn Thr Thr Thr Asn Thr Ser Thr Thr Glu His Asn Asn Asn
                165                 170                 175
Ile Asn Thr Asn Thr Asn Ser Thr Asp Asn Ser Asn Thr Asn Thr Asn
            180                 185                 190
Leu Thr Asp Asn Thr Ser Thr Thr Lys Lys Leu Thr Asp Asn Ile Asn
        195                 200                 205
Thr Thr Gln Asn Leu Thr Thr Ser Thr Asn Thr Thr Thr Val Ser Thr
    210                 215                 220
Asp Asn Asn Asn Ile Asn Thr Lys Pro Ile Asp Asn Asn Asn Thr Asp
225                 230                 235                 240
Ile Lys Ser Thr Asp Asn Tyr Asn Thr Gly Thr Lys Glu Thr Asp Asn
                245                 250                 255
Lys Asn Thr Asp Ile Lys Ala Thr Asp Asn Asn Asn Ile Thr Thr Thr
            260                 265                 270
Thr Asp Asn Thr Asn Thr Asn Val Ile Ser Thr Asp Asn Ser Lys Thr
        275                 280                 285
Asn Val Ile Ser Thr Asp Asn Ser Lys Thr Asn Thr Ile Ser Thr Asp
    290                 295                 300
Asn Asp Asn Ala Asp Thr Ile Leu Thr Asp Asn Asp Asn Asn Thr Asp
305                 310                 315                 320
Ile Ile Leu Thr Asp Asn Asn Asp Thr Asp Thr Ile Ser Thr Asp Asn
                325                 330                 335
Asp Asn Ala Asp Thr Lys Ala Thr Asp Asn Asn Asn Asn Thr Asn Thr
            340                 345                 350
Lys Ala Thr Asp Asn Asn Asn Thr Lys Ile Ile Ser Pro Asp Asn Asn
        355                 360                 365
Asn Thr Lys Thr Ala Ser Thr Asp Asn Asn Asn Asn Thr Lys Ile Ile
    370                 375                 380
Ser Pro Asp Asn Asn Asn Thr Lys Thr Ile Ser Thr Asp Asn Asn Asn
385                 390                 395                 400
Thr Lys Ala Ile Ser Thr Asp Asn Asn Asn Thr Lys Thr Ile Ser Thr
                405                 410                 415
```

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Asp Asn Asn Asn Thr Lys Thr Ile Ser Asn Asp Asn Asn Asn Thr Asn
            420                 425                 430
Thr Ile Ser Thr Asp Asn Asn Asn Asn Asn Thr Asn Gln Tyr Val Phe
        435                 440                 445
Ala Asn Asn Tyr Asn Glu Thr Thr Ser Asp Asp Glu Leu Asn Lys Asp
    450                 455                 460
Ser Cys Asp Tyr Ser Glu Glu Lys Glu Asn Ile Lys Ser Met Ile Asn
465                 470                 475                 480
Ala Tyr Leu Asp Lys Leu Asp Leu Glu Thr Val Arg Lys Ile His Ser
                485                 490                 495
Asp Ile Ser Thr Cys Ile Glu Lys Lys Asn Asn Pro Arg Asn Gln Ile
            500                 505                 510
Thr His Leu Asn Asn Leu Lys Asn Met Tyr Asn Ile Ile Lys Phe Ile
        515                 520                 525
Val Val Ile Tyr Ile Ala Phe Asn Trp Ser Glu Val Ile His Lys Tyr
    530                 535                 540
Val Gly Lys Leu Ile Leu Ala Phe Ala Leu Tyr Met Leu Ile Asn
545                 550                 555


<210> 18
<211> 83
<212> PRT
<213> plasmodium falciparum

<400> 18

Arg Val Ser Thr Ser Asp Thr Pro Gly Gly Asn Glu Ser Ser Ser Ala
1               5                   10                  15
Phe Pro Gln Phe Ile Trp Ser Ala Glu Lys Lys Asp Glu Lys Glu Ala
            20                  25                  30
Ser Glu Gln Gly Glu Glu Ser His Lys Lys Glu Asn Ser Gln Glu Ser
        35                  40                  45
Ala Asn Gly Lys Asp Asp Val Lys Glu Glu Lys Lys Thr Asn Glu Lys
    50                  55                  60
Lys Asp Asp Gly Lys Thr Asp Lys Val Gln Glu Lys Val Leu Glu Lys
65                  70                  75                  80
Ser Pro Lys



<210> 19
<211> 559
<212> PRT
<213> plasmodium falciparum

<400> 19

Met Asn His Leu Gly Asn Val Lys Tyr Leu Val Ile Val Phe Leu Ile
1               5                   10                  15
Phe Phe Asp Leu Phe Leu Val Asn Gly Arg Asp Val Gln Asn Asn Ile
            20                  25                  30
Val Asp Glu Ile Lys Tyr Arg Glu Glu Val Cys Asn Asp Glu Val Asp
        35                  40                  45
Leu Tyr Leu Leu Met Asp Cys Ser Gly Ser Ile Arg Arg His Asn Trp
    50                  55                  60
Val Asn His Ala Val Pro Leu Ala Met Lys Leu Ile Gln Gln Leu Asn
65                  70                  75                  80
Leu Asn Glu Ser Ala Ile His Leu Tyr Val Asn Ile Phe Ser Asn Asn
                85                  90                  95
Ala Lys Glu Ile Ile Arg Leu His Ser Asp Ala Ser Lys Asn Lys Glu
```

```
            100                 105                 110
Lys Ala Leu Ile Ile Ile Arg Ser Leu Leu Ser Thr Asn Leu Pro Tyr
        115                 120                 125
Gly Arg Thr Asn Leu Ser Asp Ala Leu Leu Gln Val Arg Lys His Leu
    130                 135                 140
Asn Asp Arg Ile Asn Arg Glu Asn Ala Asn Gln Leu Val Val Ile Leu
145                 150                 155                 160
Thr Asp Gly Ile Pro Asp Ser Ile Gln Asp Ser Leu Lys Glu Ser Arg
                165                 170                 175
Lys Leu Asn Asp Arg Gly Val Lys Ile Ala Val Phe Gly Ile Gly Gln
            180                 185                 190
Gly Ile Asn Val Ala Phe Asn Arg Phe Leu Val Gly Cys His Pro Ser
        195                 200                 205
Asp Gly Lys Cys Asn Leu Tyr Ala Asp Ser Ala Trp Glu Asn Val Lys
    210                 215                 220
Asn Val Ile Gly Pro Phe Met Lys Ala Val Cys Val Glu Val Glu Lys
225                 230                 235                 240
Thr Ala Ser Cys Gly Val Trp Asp Glu Trp Ser Pro Cys Ser Val Thr
                245                 250                 255
Cys Gly Lys Gly Thr Arg Ser Arg Lys Arg Glu Ile Leu His Glu Gly
            260                 265                 270
Cys Thr Ser Glu Leu Gln Glu Gln Cys Glu Glu Glu Arg Cys Pro Pro
        275                 280                 285
Lys Arg Glu Pro Leu Asp Val Pro Asp Glu Pro Glu Asp Asp Gln Pro
    290                 295                 300
Arg Pro Arg Gly Asp Asn Phe Ala Val Glu Lys Pro Glu Glu Asn Ile
305                 310                 315                 320
Ile Asp Asn Asn Pro Gln Glu Pro Ser Pro Asn Pro Glu Glu Gly Lys
                325                 330                 335
Gly Glu Asn Pro Asn Gly Phe Asp Leu Asp Glu Asn Pro Glu Asn Pro
            340                 345                 350
Pro Asn Pro Asp Ile Pro Gln Gln Glu Pro Asn Ile Pro Glu Asp Ser
        355                 360                 365
Glu Lys Glu Val Pro Ser Asp Val Pro Lys Asn Pro Glu Asp Asp Arg
    370                 375                 380
Glu Glu Asn Phe Asp Ile Pro Lys Lys Pro Glu Asn Lys His Asp Asn
385                 390                 395                 400
Gln Asn Asn Leu Pro Asn Asp Lys Ser Asp Arg Ser Ile Pro Tyr Ser
                405                 410                 415
Pro Leu Pro Pro Lys Val Leu Asp Asn Glu Arg Lys Gln Ser Asp Pro
            420                 425                 430
Gln Ser Gln Asp Asn Asn Gly Asn Arg His Val Pro Asn Ser Glu Asp
        435                 440                 445
Arg Glu Thr Arg Pro His Gly Arg Asn Asn Glu Asn Arg Ser Tyr Asn
    450                 455                 460
Arg Lys Tyr Asn Asp Thr Pro Lys His Pro Glu Arg Glu Glu His Glu
465                 470                 475                 480
Lys Pro Asp Asn Asn Lys Lys Lys Gly Gly Ser Asp Asn Lys Tyr Lys
                485                 490                 495
Ile Ala Gly Gly Ile Ala Gly Gly Leu Ala Leu Leu Ala Cys Ala Gly
            500                 505                 510
Leu Ala Tyr Lys Phe Val Val Pro Gly Ala Ala Thr Pro Tyr Ala Gly
        515                 520                 525
Glu Pro Ala Pro Phe Asp Glu Thr Leu Gly Glu Glu Asp Lys Asp Leu
    530                 535                 540
Asp Glu Pro Glu Gln Phe Arg Leu Pro Glu Glu Asn Glu Trp Asn
545                 550                 555
```

<210> 20
<211> 493

<212> PRT
<213> plasmodium falciparum

<400> 20
Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala Lys Glu Lys
1 5 10 15
Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Asp Arg Leu Ala Lys Glu
20 25 30
Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Leu Ala Lys
35 40 45
Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala
50 55 60
Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg
65 70 75 80
Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Asp Arg
85 90 95
Leu Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu
100 105 110
Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln
115 120 125
Glu Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu
130 135 140
Gln Glu Arg Leu Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu
145 150 155 160
Glu Gln Glu Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp
165 170 175
Leu Glu Gln Glu Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser
180 185 190
Asp Leu Glu Gln Glu Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln
195 200 205
Arg Asp Leu Glu Gln Arg Lys Ala Asp Thr Lys Lys Asn Leu Glu Arg
210 215 220
Lys Lys Glu His Gly Asp Ile Leu Ala Glu Asp Leu Tyr Gly Arg Leu
225 230 235 240
Glu Ile Pro Ala Ile Glu Leu Pro Ser Glu Asn Glu Arg Gly Tyr Tyr
245 250 255
Ile Pro His Gln Ser Ser Leu Pro Gln Asp Asn Arg Gly Asn Ser Arg
260 265 270
Asp Ser Lys Glu Ile Ser Ile Ile Glu Lys Thr Asn Arg Glu Ser Ile
275 280 285
Thr Thr Asn Val Glu Gly Arg Arg Asp Ile His Lys Gly His Leu Glu
290 295 300
Glu Lys Lys Asp Gly Ser Ile Lys Pro Glu Gln Lys Glu Asp Lys Ser
305 310 315 320
Ala Asp Ile Gln Asn His Thr Leu Glu Thr Val Asn Ile Ser Asp Val
325 330 335
Asn Asp Phe Gln Ile Ser Lys Tyr Glu Asp Glu Ile Ser Ala Glu Tyr
340 345 350
Asp Asp Ser Leu Ile Asp Glu Glu Glu Asp Asp Glu Asp Leu Asp Glu
355 360 365
Phe Lys Pro Ile Val Gln Tyr Asp Asn Phe Gln Asp Glu Glu Asn Ile
370 375 380
Gly Ile Tyr Lys Glu Leu Glu Asp Leu Ile Glu Lys Asn Glu Asn Leu
385 390 395 400
Asp Asp Leu Asp Glu Gly Ile Glu Lys Ser Ser Glu Glu Leu Ser Glu
405 410 415
Glu Lys Ile Lys Lys Gly Lys Lys Tyr Glu Lys Thr Lys Asp Asn Asn
420 425 430
Phe Lys Pro Asn Asp Lys Ser Leu Tyr Asp Glu His Ile Lys Lys Tyr
435 440 445
Lys Asn Asp Lys Gln Val Asn Lys Glu Lys Glu Lys Phe Ile Lys Ser

```
    450                 455                 460
Leu Phe His Ile Phe Asp Gly Asp Asn Glu Ile Leu Gln Ile Val Asp
465                 470                 475                 480
Glu Leu Ser Glu Asp Ile Thr Lys Tyr Phe Met Lys Leu
                485                 490
```

<210> 21
<211> 162
<212> PRT
<213> plasmodium falciparum

<400> 21

```
Met Lys Ile Leu Ser Val Phe Phe Leu Val Leu Phe Phe Ile Ile Phe
1               5                   10                  15
Asn Lys Glu Ser Leu Ala Glu Lys Thr Asn Lys Glu Thr Gly Ser Gly
            20                  25                  30
Val Ser Ser Lys Lys Lys Asn Lys Lys Gly Ser Gly Glu Pro Leu Ile
        35                  40                  45
Asp Val His Asp Leu Ile Ser Asp Met Ile Lys Lys Glu Glu Glu Leu
    50                  55                  60
Val Glu Val Asn Lys Arg Lys Ser Lys Tyr Lys Leu Ala Thr Ser Val
65                  70                  75                  80
Leu Ala Gly Leu Leu Gly Val Val Ser Thr Val Leu Leu Gly Gly Val
                85                  90                  95
Gly Leu Val Leu Tyr Asn Thr Glu Lys Gly Arg His Pro Phe Lys Ile
            100                 105                 110
Gly Ser Ser Asp Pro Ala Asp Asn Ala Asn Pro Asp Ala Asp Ser Glu
        115                 120                 125
Ser Asn Gly Glu Pro Asn Ala Asp Pro Gln Val Thr Ala Gln Asp Val
    130                 135                 140
Thr Pro Glu Gln Pro Gln Gly Asp Asp Asn Asn Leu Val Ser Gly Pro
145                 150                 155                 160
Glu His
```

<210> 22
<211> 393
<212> PRT
<213> plasmodium falciparum

<400> 22

```
Val Glu Glu Lys Val Glu Glu Ser Val Glu Glu Asn Asp Glu Glu Ser
1               5                   10                  15
Val Glu Glu Asn Val Glu Glu Asn Val Glu Glu Asn Asp Asp Gly Ser
            20                  25                  30
Val Ala Ser Ser Val Glu Glu Ser Ile Ala Ser Ser Val Asp Glu Ser
        35                  40                  45
Ile Asp Ser Ser Ile Glu Glu Asn Val Ala Pro Thr Val Glu Glu Ile
    50                  55                  60
Val Ala Pro Thr Val Glu Glu Ile Val Ala Pro Ser Val Val Glu Ser
65                  70                  75                  80
Val Ala Pro Ser Val Glu Glu Ser Val Glu Glu Asn Val Glu Glu Ser
                85                  90                  95
Val Ala Glu Asn Val Glu Glu Ser Val Ala Glu Asn Val Glu Glu Ser
            100                 105                 110
Val Ala Glu Asn Val Glu Glu Ser Val Ala Glu Asn Val Glu Glu Ser
        115                 120                 125
```

```
Val Ala Glu Asn Val Glu Glu Ile Val Ala Pro Thr Val Glu Glu Ile
    130                 135                 140
Val Ala Pro Ser Val Val Glu Ser Val Ala Pro Ser Val Glu Glu Ser
145                 150                 155                 160
Val Glu Glu Asn Val Glu Glu Ser Val Ala Glu Asn Val Glu Glu Ser
                165                 170                 175
Val Ala Glu Asn Val Glu Glu Ser Val Ala Glu Asn Val Glu Glu Ile
            180                 185                 190
Val Ala Pro Ser Val Glu Glu Ser Val Ala Pro Thr Val Glu Glu Ile
        195                 200                 205
Val Ala Pro Ser Val Glu Glu Ser Val Ala Pro Ser Val Glu Glu Ser
    210                 215                 220
Val Ala Pro Ser Val Glu Glu Ser Val Ala Glu Asn Val Glu Glu Ile
225                 230                 235                 240
Val Ala Pro Ser Val Glu Glu Ile Val Ala Pro Ser Val Glu Glu Ser
                245                 250                 255
Val Ala Glu Asn Val Glu Glu Ile Val Ala Pro Ser Val Glu Glu Ile
            260                 265                 270
Val Ala Pro Ser Val Glu Glu Ile Val Ala Pro Ser Val Glu Glu Ile
        275                 280                 285
Val Ala Pro Thr Val Glu Glu Ile Val Val Pro Thr Val Glu Glu Ser
    290                 295                 300
Val Ala Pro Ser Val Glu Glu Ser Val Ala Pro Ser Val Glu Glu Ser
305                 310                 315                 320
Val Ala Glu Asn Val Glu Glu Ser Val Ala Glu Asn Val Glu Glu Ile
                325                 330                 335
Val Ala Pro Ser Val Glu Glu Ile Val Ala Pro Ser Val Glu Glu Ile
            340                 345                 350
Val Ala Pro Ser Val Glu Glu Ile Val Ala Pro Thr Val Glu Glu Ile
        355                 360                 365
Val Ala Pro Ser Val Glu Glu Ile Val Ala Pro Thr Val Glu Glu Ser
    370                 375                 380
Val Ala Glu Asn Val Ala Thr Asn Leu
385                 390


<210> 23
<211> 782
<212> PRT
<213> plasmodium falciparum

<400> 23

Met Ser Phe Tyr Leu Gly Ser Leu Val Ile Ile Phe His Val Leu Phe
1               5                   10                  15
Arg Asn Val Ala Asp Gly Ile Asn Val Asn Gly Asp Asn Asn Tyr Gly
            20                  25                  30
Lys Thr Ile Ile Asn Asn Asp Phe Asn Phe Asp Asp Tyr Asn Tyr Trp
        35                  40                  45
Thr Pro Ile Asn Lys Lys Glu Phe Leu Asn Ser Tyr Glu Asp Glu Phe
    50                  55                  60
Ser Ser Glu Ser Phe Leu Glu Asn Lys Ser Ser Val Asp Asp Gly Asn
65                  70                  75                  80
Ile Asn Leu Thr Asp Thr Ser Thr Ser Asn Lys Ser Ser Lys Lys Gly
                85                  90                  95
His Gly Arg Ser Arg Val Arg Ser Ala Ser Ala Ala Ala Ile Leu Glu
            100                 105                 110
Glu Asp Asp Ser Lys Asp Asp Met Glu Phe Lys Ala Ser Pro Ser Val
        115                 120                 125
Val Lys Thr Ser Thr Pro Ser Gly Thr Gln Thr Ser Gly Leu Lys Ser
    130                 135                 140
```

```
Ser Ser Pro Ser Ser Thr Lys Ser Ser Ser Pro Ser Asn Val Lys Ser
145                 150                 155                 160
Ala Ser Pro His Gly Glu Ser Asn Ser Ser Glu Glu Ser Thr Thr Lys
                165                 170                 175
Ser Ser Lys Arg Ser Ala Ser Val Ala Gly Ile Val Gly Ala Asp Glu
            180                 185                 190
Glu Ala Pro Pro Ala Pro Lys Asn Thr Leu Thr Pro Leu Glu Glu Leu
        195                 200                 205
Tyr Pro Thr Asn Val Asn Leu Phe Asn Tyr Lys Tyr Ser Leu Asn Asn
    210                 215                 220
Met Glu Glu Asn Ile Asn Ile Leu Lys Asn Glu Gly Asp Leu Val Ala
225                 230                 235                 240
Gln Lys Glu Glu Phe Glu Tyr Asp Glu Asn Met Glu Lys Ala Lys Gln
                245                 250                 255
Asp Lys Lys Lys Ala Leu Glu Lys Ile Gly Lys Glu Ser Asp Glu Ala
            260                 265                 270
Pro Phe Met Phe Ser Glu Asn Lys Phe Leu Glu Asn Gln Val Lys Glu
        275                 280                 285
Arg Asn Val Ala Gly Ser Phe Ser Arg Phe Phe Ser Lys Leu Asn Pro
    290                 295                 300
Phe Lys Lys Asp Glu Val Ile Glu Lys Thr Glu Val Ser Lys Lys Thr
305                 310                 315                 320
Phe Ser Gly Ile Gly Phe Asn Leu Thr Asp Lys Glu Ala Lys Val Leu
                325                 330                 335
Gly Val Gly Ala Thr Tyr Gln Glu Tyr Pro Glu Thr Met Leu Tyr Asn
            340                 345                 350
Cys Pro Asn Asn Ser Asn Leu Phe Asp Thr Ile Glu Ser Leu Gln Gly
        355                 360                 365
Arg Ile Ile Asp Ile Lys Lys Arg Glu Ser Met Ile Ser Thr Thr Phe
    370                 375                 380
Glu Gln Gln Lys Glu Cys Leu Lys Asn Met Gly Val Leu Asp Leu Glu
385                 390                 395                 400
Leu Asn Asp Thr Gln Cys Lys Phe Gly Thr Cys Ile Gly Ser Phe Gly
                405                 410                 415
Glu His His Leu Arg Leu Tyr Glu Phe Glu Asn Asp Leu Phe Lys Phe
            420                 425                 430
His Pro Asn Ile Asp Tyr Leu Thr Leu Ala Asp Gly Tyr Lys Leu Gln
        435                 440                 445
Lys Asn His Ile Tyr Glu Leu Ser His Val Asn Phe Cys Leu Leu Asn
    450                 455                 460
Pro Lys Thr Leu Glu Glu Phe Leu Lys Lys Lys Glu Ile Lys Asp Leu
465                 470                 475                 480
Met Gly Gly Asp Asp Leu Ile Lys Tyr Lys Glu Asn Phe Asp Asn Phe
                485                 490                 495
Met Ser Ile Ser Ile Thr Cys His Ile Glu Ser Leu Ile Tyr Asp Asp
            500                 505                 510
Ile Glu Ala Ser Gln Asp Ile Ala Ala Val Leu Lys Ile Ala Lys Ser
        515                 520                 525
Lys Leu His Val Ile Thr Ser Gly Leu Ser Tyr Lys Ala Arg Lys Leu
    530                 535                 540
Val Tyr Lys Ile Tyr Ser Glu Ile Gln Lys Asn Pro Asp Glu Leu Tyr
545                 550                 555                 560
Glu Lys Leu Thr Trp Ile Tyr Asp Asn Ile Tyr Met Ile Lys Arg Tyr
                565                 570                 575
Tyr Thr Ala Tyr Ala Leu Glu Gly Val Cys Ser Tyr Leu Glu His Asp
            580                 585                 590
Lys Ser Gln Met Tyr Thr Glu Leu His Ile Tyr Asn Lys Ile Val Asp
        595                 600                 605
Ser Val Arg Tyr Tyr Ser Ser Cys Phe Lys Asn Val Ile Val Tyr Asn
    610                 615                 620
Ala Ile Ile Ser Gly Ile His Glu Lys Ile Lys His Phe Leu Lys Leu
```

625 630 635 640
Val Pro Arg His Asn Phe Leu Leu Asp Tyr His Phe Asn Ser Ile Phe
645 650 655
Glu Lys Glu Ile Lys Pro Ala Lys Lys Tyr Ser Thr Ser His Ile Tyr
660 665 670
Phe Asp Pro Thr Val Ala Ser Tyr Ala Tyr Tyr Asn Leu Asp Arg Arg
675 680 685
Thr Met Val Thr Ile Ile Asn Asp Tyr Phe Glu Ala Lys Lys Lys Glu
690 695 700
Leu Thr Val Ile Val Ser Arg Met Lys Thr Asp Met Leu Ser Ile Gln
705 710 715 720
Asn Glu Glu Ser Lys Ile Pro Asn Asp Lys Ser Ala Asn Ser Lys Leu
725 730 735
Ala Thr Arg Leu Met Lys Lys Phe Lys Ala Glu Ile Arg Asp Phe Phe
740 745 750
Lys Glu Met Arg Ile Gln Tyr Ala Lys Leu Ile Asn Ile Arg Tyr Arg
755 760 765
Ser His Leu Lys Lys Asn Tyr Phe Ala Phe Lys Arg Leu Asp
770 775 780

<210> 24
<211> 398
<212> PRT
<213> plasmodium falciparum

<400> 24

Met Gly Leu Lys Phe Tyr Val Leu Val Phe Leu Ile Leu Cys Leu Lys
1 5 10 15
Asn Val Val Lys Gly Asp Lys Cys Glu Thr Glu Phe Ser Lys Leu Tyr
20 25 30
Pro Glu Ser Asn Ser Leu Thr Gly Leu Ile Tyr Ala His Thr Ala His
35 40 45
Val His Lys Leu Ser Met Trp Val Tyr Phe Ile Tyr Asn His Phe Ser
50 55 60
Ser Ala Asp Glu Leu Ile Lys Tyr Leu Glu Lys Thr Asn Ile Asn Thr
65 70 75 80
Leu Glu Asn Ser Asp His Thr Cys Phe Ala Arg Ala Val Thr Leu Tyr
85 90 95
Leu Phe Tyr Tyr Tyr Leu Lys Asp Ile Lys Ser Met Leu Ser Thr Asp
100 105 110
Asp Tyr Gln Ser Phe Phe Lys Asn Lys Phe Lys Asp Ile Asn Pro Leu
115 120 125
Phe Ile Asn Asp Phe Ile Leu Ile Leu Asn Asp Lys Lys Phe Met Glu
130 135 140
Asn Leu Asp Leu Tyr Ile Met Lys Glu Ser Glu Arg Glu His Leu Val
145 150 155 160
Ile Lys Lys Asn Pro Phe Leu Arg Val Leu Asn Lys Ala Ser Thr Thr
165 170 175
Thr His Ala Thr Tyr Lys Tyr Asn Arg Tyr Phe Ile Val Gly Ser Arg
180 185 190
Val His Thr Pro Tyr Lys Asp Tyr Phe Gly Asp Phe Asn Lys Tyr Thr
195 200 205
Glu Ile Ser Val Leu Asn Tyr Val Arg Asp Tyr Asn Phe Leu Ile Tyr
210 215 220
Ala Gly Ser Arg Glu Asn Tyr Tyr Asn Ser Asp Ile Ala Gly Pro Ala
225 230 235 240
Arg Ser Val Asn Asn Val Ile Ser Lys Asn Lys Thr Leu Gly Leu Arg
245 250 255
Lys Arg Ser Ser Ser Leu Ala Leu Val Gly Thr Asn Asn Asn Asp Pro

```
            260                 265                 270
Ile Phe Ala Tyr Cys Glu Lys Asp Asn Lys Ser Glu Tyr Tyr Gly Thr
        275                 280                 285
Pro Asp Asp Leu Ile Thr Ser Phe Phe Ser Ile Ile Lys Thr Lys Met
    290                 295                 300
Leu Asn Ser His Lys Thr Phe Leu Arg Gln Phe Asp Tyr Ala Leu Phe
305                 310                 315                 320
His Lys Thr Tyr Ser Ile Pro Asn Leu Lys Gly Phe Arg Phe Leu Lys
                325                 330                 335
His Leu Phe Gln Lys Lys Asn Leu Val Asn Phe Val Gly Met Tyr Glu
            340                 345                 350
Asn His Val Ser Thr Glu Ile Asn Phe Leu Ala Glu Asp Phe Val Glu
        355                 360                 365
Leu Phe Asp Val Thr Met Asp Cys Tyr Ser Arg Gln Tyr Ser Asn Arg
    370                 375                 380
Ala Ala Glu Asn Phe Lys Ala Ile Arg Glu Leu Asn Val Leu
385                 390                 395


<210> 25
<211> 995
<212> PRT
<213> plasmodium falciparum

<400> 25

Met Lys Ser Tyr Ile Ser Leu Phe Phe Ile Leu Arg Val Ile Phe Asn
1               5                   10                  15
Lys Asn Val Ile Lys Cys Thr Gly Glu Ser Gln Thr Gly Asn Thr Gly
            20                  25                  30
Gly Gly Gln Val Gly Asn Thr Val Gly Gly Gln Ala Gly Asn Thr Val
        35                  40                  45
Gly Asp Gln Ala Gly Ser Thr Gly Gly Ser Pro Gln Gly Ser Thr Gly
    50                  55                  60
Ala Ser Gln Pro Gly Ser Ser Glu Pro Ser Asn Pro Val Ser Ser Gly
65                  70                  75                  80
His Ser Val Ser Thr Val Ser Val Ser Gln Thr Ser Thr Ser Ser Glu
                85                  90                  95
Lys Gln Asp Thr Ile Gln Val Lys Ser Ala Leu Leu Lys Asp Tyr Met
            100                 105                 110
Gly Leu Lys Val Thr Gly Pro Cys Asn Glu Asn Phe Ile Met Phe Leu
        115                 120                 125
Val Pro His Ile Tyr Ile Asp Val Asp Thr Glu Asp Thr Asn Ile Glu
    130                 135                 140
Leu Arg Thr Thr Leu Lys Glu Thr Asn Asn Ala Ile Ser Phe Glu Ser
145                 150                 155                 160
Asn Ser Gly Ser Leu Glu Lys Lys Lys Tyr Val Lys Leu Pro Ser Asn
                165                 170                 175
Gly Thr Thr Gly Glu Gln Gly Ser Ser Thr Gly Thr Val Arg Gly Asp
            180                 185                 190
Thr Glu Pro Ile Ser Gly Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser
        195                 200                 205
Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Pro Ser Ser Ser
    210                 215                 220
Ser Ser Ser Ser Ser Ser Ser Glu Ser Leu Pro Ala Asn Gly Pro Asp
225                 230                 235                 240
Ser Pro Thr Val Lys Pro Pro Arg Asn Leu Gln Asn Ile Cys Glu Thr
                245                 250                 255
Gly Lys Ser Phe Lys Leu Val Val Tyr Ile Lys Glu Asn Thr Leu Ile
            260                 265                 270
Ile Lys Trp Lys Val Tyr Gly Glu Thr Lys Asp Thr Thr Glu Asn Asn
```

```
        275                 280                 285
Lys Val Asp Val Arg Lys Tyr Leu Ile Asn Glu Lys Glu Thr Pro Phe
    290                 295                 300
Thr Asn Ile Leu Ile His Ala Tyr Lys Glu His Asn Gly Thr Asn Leu
305                 310                 315                 320
Ile Glu Ser Lys Asn Tyr Ser Leu Gly Ser Asp Ile Pro Glu Lys Cys
                325                 330                 335
Asp Thr Leu Ala Ser Asn Cys Phe Leu Ser Gly Asn Phe Asn Ile Glu
            340                 345                 350
Lys Cys Phe Gln Cys Ala Leu Leu Val Glu Lys Glu Asn Lys Asn Asp
        355                 360                 365
Val Cys Tyr Lys Tyr Leu Ser Glu Asp Ile Val Ser Lys Phe Lys Glu
    370                 375                 380
Ile Lys Ala Glu Thr Glu Asp Asp Asp Glu Asp Asp Tyr Thr Glu Tyr
385                 390                 395                 400
Lys Leu Thr Glu Ser Ile Asp Asn Ile Leu Val Lys Met Phe Lys Thr
                405                 410                 415
Asn Glu Asn Asn Asp Lys Ser Glu Leu Ile Lys Leu Glu Glu Val Asp
            420                 425                 430
Asp Ser Leu Lys Leu Glu Leu Met Asn Tyr Cys Ser Leu Leu Lys Asp
        435                 440                 445
Val Asp Thr Thr Gly Thr Leu Asp Asn Tyr Gly Met Gly Asn Glu Met
    450                 455                 460
Asp Ile Phe Asn Asn Leu Lys Arg Leu Leu Ile Tyr His Ser Glu Glu
465                 470                 475                 480
Asn Ile Asn Thr Leu Lys Asn Lys Phe Arg Asn Ala Ala Val Cys Leu
                485                 490                 495
Lys Asn Val Asp Asp Trp Ile Val Asn Lys Arg Gly Leu Val Leu Pro
            500                 505                 510
Glu Leu Asn Tyr Asp Leu Glu Tyr Phe Asn Glu His Leu Tyr Asn Asp
        515                 520                 525
Lys Asn Ser Pro Glu Asp Lys Asp Asn Lys Gly Lys Gly Val Val His
    530                 535                 540
Val Asp Thr Thr Leu Glu Lys Glu Asp Thr Leu Ser Tyr Asp Asn Ser
545                 550                 555                 560
Asp Asn Met Phe Cys Asn Lys Glu Tyr Cys Asn Arg Leu Lys Asp Glu
                565                 570                 575
Asn Asn Cys Ile Ser Asn Leu Gln Val Glu Asp Gln Gly Asn Cys Asp
            580                 585                 590
Thr Ser Trp Ile Phe Ala Ser Lys Tyr His Leu Glu Thr Ile Arg Cys
        595                 600                 605
Met Lys Gly Tyr Glu Pro Thr Lys Ile Ser Ala Leu Tyr Val Ala Asn
    610                 615                 620
Cys Tyr Lys Gly Glu His Lys Asp Arg Cys Asp Glu Gly Ser Ser Pro
625                 630                 635                 640
Met Glu Phe Leu Gln Ile Ile Glu Asp Tyr Gly Phe Leu Pro Ala Glu
                645                 650                 655
Ser Asn Tyr Pro Tyr Asn Tyr Val Lys Val Gly Glu Gln Cys Pro Lys
            660                 665                 670
Val Glu Asp His Trp Met Asn Leu Trp Asp Asn Gly Lys Ile Leu His
        675                 680                 685
Asn Lys Asn Glu Pro Asn Ser Leu Asp Gly Lys Gly Tyr Thr Ala Tyr
    690                 695                 700
Glu Ser Glu Arg Phe His Asp Asn Met Asp Ala Phe Val Lys Ile Ile
705                 710                 715                 720
Lys Thr Glu Val Met Asn Lys Gly Ser Val Ile Ala Tyr Ile Lys Ala
                725                 730                 735
Glu Asn Val Met Gly Tyr Glu Phe Ser Gly Lys Lys Val Gln Asn Leu
            740                 745                 750
Cys Gly Asp Asp Thr Ala Asp His Ala Val Asn Ile Val Gly Tyr Gly
        755                 760                 765
```

```
Asn Tyr Val Asn Ser Glu Gly Glu Lys Lys Ser Tyr Trp Ile Val Arg
    770                 775                 780
Asn Ser Trp Gly Pro Tyr Trp Gly Asp Glu Gly Tyr Phe Lys Val Asp
785                 790                 795                 800
Met Tyr Gly Pro Thr His Cys His Phe Asn Phe Ile His Ser Val Val
                805                 810                 815
Ile Phe Asn Val Asp Leu Pro Met Asn Asn Lys Thr Thr Lys Lys Glu
            820                 825                 830
Ser Lys Ile Tyr Asp Tyr Tyr Leu Lys Ala Ser Pro Glu Phe Tyr His
        835                 840                 845
Asn Leu Tyr Phe Lys Asn Phe Asn Val Gly Lys Lys Asn Leu Phe Ser
    850                 855                 860
Glu Lys Glu Asp Asn Glu Asn Asn Lys Lys Leu Gly Asn Asn Tyr Ile
865                 870                 875                 880
Ile Phe Gly Gln Asp Thr Ala Gly Ser Gly Gln Ser Gly Lys Glu Ser
                885                 890                 895
Asn Thr Ala Leu Glu Ser Ala Gly Thr Ser Asn Glu Val Ser Glu Arg
            900                 905                 910
Val His Val Tyr His Ile Leu Lys His Ile Lys Asp Gly Lys Ile Arg
        915                 920                 925
Met Gly Met Arg Lys Tyr Ile Asp Thr Gln Asp Val Asn Lys Lys His
    930                 935                 940
Ser Cys Thr Arg Ser Tyr Ala Phe Asn Pro Glu Asn Tyr Glu Lys Cys
945                 950                 955                 960
Val Asn Leu Cys Asn Val Asn Trp Lys Thr Cys Glu Glu Lys Thr Ser
                965                 970                 975
Pro Gly Leu Cys Leu Ser Lys Leu Asp Thr Asn Asn Glu Cys Tyr Phe
            980                 985                 990
Cys Tyr Val
        995
```

<210> 26
<211> 393
<212> PRT
<213> plasmodium falciparum

<400> 26

```
Ala Ile Ser Val Thr Met Asp Asn Ile Leu Ser Gly Phe Glu Asn Glu
1               5                   10                  15
Tyr Asp Val Ile Tyr Leu Lys Pro Leu Ala Gly Val Tyr Arg Ser Leu
            20                  25                  30
Lys Lys Gln Ile Glu Lys Asn Ile Phe Thr Phe Asn Leu Asn Leu Asn
        35                  40                  45
Asp Ile Leu Asn Ser Arg Leu Lys Lys Arg Lys Tyr Phe Leu Asp Val
    50                  55                  60
Leu Glu Ser Asp Leu Met Gln Phe Lys His Ile Ser Ser Asn Glu Tyr
65                  70                  75                  80
Ile Ile Glu Asp Ser Phe Lys Leu Leu Asn Ser Glu Gln Lys Asn Thr
                85                  90                  95
Leu Leu Lys Ser Tyr Lys Tyr Ile Lys Glu Ser Val Glu Asn Asp Ile
            100                 105                 110
Lys Phe Ala Gln Glu Gly Ile Ser Tyr Tyr Glu Lys Val Leu Ala Lys
        115                 120                 125
Tyr Lys Asp Asp Leu Glu Ser Ile Lys Lys Val Ile Lys Glu Glu Lys
    130                 135                 140
Glu Phe Pro Ser Ser Pro Pro Thr Thr Pro Pro Ser Pro Ala Lys Thr
145                 150                 155                 160
Asp Glu Gln Lys Lys Glu Ser Lys Phe Leu Pro Phe Leu Thr Asn Ile
                165                 170                 175
```

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

<210> 27
<211> 108
<212> PRT
<213> plasmodium falciparum

<400> 27

```
Met Ser Ile Arg Arg Ser Met Ala Asn Glu Gly Ser Ser Thr Asn Ser
1               5                   10                  15
Val Gly Ala Asn Ala Pro Lys Ala Asp Thr Ile Ala Ser Gly Ser Gln
            20                  25                  30
Ser Ser Thr Asn Ser Ala Ser Thr Ser Thr Thr Asn Asn Arg Glu Ser
        35                  40                  45
Gln Thr Thr Thr Pro Thr Ala Ala Asp Thr Pro Thr Ala Thr Glu Ser
    50                  55                  60
Asn Ser Pro Ser Pro Pro Ile Ala Thr Thr Glu Ser Asn Ser Pro Ser
65                  70                  75                  80
Pro Pro Ile Thr Thr Thr Glu Ser Asn Ser Pro Ser Pro Pro Ile Thr
                85                  90                  95
Thr Thr Glu Ser Ser Lys Phe Trp Gln Cys Thr Asn
            100                 105
```

<210> 28
<211> 379
<212> PRT
<213> plasmodium falciparum

<400> 28

```
Met Lys Ser Phe Ile Asn Ile Thr Leu Ser Leu Phe Leu Leu His Leu
```

```
1               5                   10                  15
Tyr Ile Tyr Ile Asn Asn Val Ala Ser Lys Glu Ile Val Lys Lys Tyr
            20                  25                  30
Asn Leu Asn Leu Arg Asn Ala Ile Leu Asn Asn Asn Ser Gln Ile Glu
        35                  40                  45
Asn Glu Glu Lys Asp Ile Lys Tyr Glu Leu Asn Glu Gln Asn Asp Glu
    50                  55                  60
Asn Val Asn Thr Thr Ile Val Ala Asn Ser Met Glu Phe Gly Glu Gly
65                  70                  75                  80
Phe Ser Ala Asp Asp Gln Lys Asp Ile Glu Ala Tyr Lys Lys Ala Lys
                85                  90                  95
Gln Ala Ser Gln Asp Ala Glu Gln Ala Ala Lys Asp Ala Glu Gln Ala
            100                 105                 110
Ala Lys Asp Ala Glu Gln Ala Ser Lys Asp Ala Glu Lys Leu Lys Glu
        115                 120                 125
Ser Asp Glu Ser Tyr Thr Lys Ala Lys Glu Ala Cys Thr Ala Ala Ser
    130                 135                 140
Lys Ala Lys Lys Ala Phe Glu Thr Ala Ser Asn Ala Lys Lys Ala Ala
145                 150                 155                 160
Glu Ser Ala Leu Lys Thr Asn Ala Asp Glu Lys Pro Ser Arg Ile Asn
                165                 170                 175
Leu Phe Ser Arg Lys Thr Lys Glu Tyr Ala Glu Gln Val Glu Lys Asp
            180                 185                 190
Tyr Glu Arg Ala Lys Asn Ala Tyr Gln Lys Ala Asn Gln Ala Val Leu
        195                 200                 205
Lys Ala Lys Glu Ala Ser Ser Tyr Asp Tyr Ile Leu Gly Trp Glu Phe
    210                 215                 220
Gly Gly Gly Val Pro Glu His Lys Lys Glu Glu Asn Met Leu Ser His
225                 230                 235                 240
Leu Tyr Val Ser Ser Lys Asp Lys Glu Asn Ile Ser Lys Glu Asn Asp
                245                 250                 255
Asp Val Leu Asp Glu Lys Glu Glu Glu Ala Glu Glu Thr Glu Glu Glu
            260                 265                 270
Glu Leu Glu Glu Lys Asn Glu Glu Glu Thr Glu Ser Glu Ile Ser Glu
        275                 280                 285
Asp Glu Glu Glu Glu Glu Glu Glu Glu Lys Glu Glu Glu Asn Asp Lys
    290                 295                 300
Lys Lys Glu Gln Glu Lys Glu Gln Ser Asn Glu Asn Asn Asp Gln Lys
305                 310                 315                 320
Lys Asp Met Glu Ala Gln Asn Leu Ile Ser Lys Asn Gln Asn Asn Asn
                325                 330                 335
Glu Lys Asn Val Lys Glu Ala Ala Glu Ser Ile Met Lys Thr Leu Ala
            340                 345                 350
Gly Leu Ile Lys Gly Asn Asn Gln Ile Asp Ser Thr Leu Lys Asp Leu
        355                 360                 365
Val Glu Glu Leu Ser Lys Tyr Phe Lys Asn His
    370                 375


<210> 29
<211> 271
<212> PRT
<213> plasmodium falciparum

<400> 29

Met Trp Ile Val Lys Phe Leu Ile Val Val His Phe Phe Ile Ile Cys
1               5                   10                  15
Thr Ile Asn Phe Asp Lys Leu Tyr Ile Ser Tyr Ser Tyr Asn Ile Val
            20                  25                  30
Pro Glu Asn Gly Arg Met Leu Asn Met Arg Ile Leu Gly Gly Glu Lys
```

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


<210> 30
<211> 272
<212> PRT
<213> plasmodium falciparum

<400> 30
Met Asn Ile Leu Cys Ile Leu Ser Tyr Ile Tyr Phe Phe Val Ile Phe
1               5                   10                  15
Tyr Ser Leu Asn Leu Asn Asn Lys Asn Glu Asn Phe Leu Val Val Arg
            20                  25                  30
Arg Leu Met Asn Asp Glu Lys Gly Glu Gly Gly Phe Thr Ser Lys Asn
        35                  40                  45
Lys Glu Asn Gly Asn Asn Asn Arg Asn Asn Glu Asn Glu Leu Lys Glu
    50                  55                  60
Glu Gly Ser Leu Pro Thr Lys Met Asn Glu Lys Asn Ser Asn Ser Ser
65                  70                  75                  80
Asp Lys Gln Pro Asn Asp Ile Ser His Asp Glu Ser Lys Ser Asn Ser
                85                  90                  95
Asn Asn Ser Gln Asn Ile Gln Lys Glu Pro Glu Glu Lys Glu Asn Ser
            100                 105                 110
Asn Pro Asn Leu Asp Ser Ser Glu Asn Ser Ser Glu Ser Ala Thr Arg
        115                 120                 125
Ser Val Asp Ile Ser Glu His Asn Ser Asn Asn Pro Glu Thr Lys Glu
    130                 135                 140
Glu Asn Gly Glu Glu Pro Leu Asp Leu Glu Ile Asn Glu Asn Ala Glu
145                 150                 155                 160
Ile Gly Gln Glu Pro Pro Asn Arg Leu His Phe Asp Asn Val Asp Asp
                165                 170                 175
Glu Val Pro His Tyr Ser Ala Leu Arg Tyr Asn Lys Val Glu Lys Asn
            180                 185                 190
```

```
Val Thr Asp Glu Met Leu Leu Tyr Asn Met Met Ser Asp Gln Asn Arg
        195                 200                 205
Lys Ser Cys Ala Ile Asn Asn Gly Gly Cys Ser Asp Asp Gln Ile Cys
    210                 215                 220
Ile Asn Ile Asn Asn Ile Gly Val Lys Cys Ile Cys Lys Asp Gly Tyr
225                 230                 235                 240
Leu Leu Gly Thr Lys Cys Ile Ile Leu Asn Ser Tyr Ser Cys His Pro
                245                 250                 255
Phe Phe Ser Ile Leu Ile Tyr Ile Thr Leu Phe Leu Leu Leu Phe Val
            260                 265                 270


<210> 31
<211> 556
<212> PRT
<213> plasmodium falciparum

<400> 31

Met Lys Glu Ile Tyr Tyr Ile Leu Ile Leu Cys Ser Ile Tyr Leu Ile
1               5                   10                  15
Asn Leu Ser Asn Cys Ser Glu Gly Pro Asn Asn Val Ile Ser Glu Asn
            20                  25                  30
Gly His Ile Asn Tyr Asp Met Ile Gln Lys Glu Asn Thr Glu Arg Ser
        35                  40                  45
Thr Lys Leu Ile Asn Pro Trp Glu Lys Tyr Thr Glu Lys Tyr Asp Ile
    50                  55                  60
Glu Arg Met His Gly Ser Gly Ile Arg Val Asp Leu Gly Glu Asp Ala
65                  70                  75                  80
Arg Val Glu Asn Arg Asp Tyr Arg Ile Pro Ser Gly Lys Cys Pro Val
                85                  90                  95
Ile Gly Lys Gly Ile Thr Ile Gln Asn Ser Glu Val Ser Phe Leu Thr
            100                 105                 110
Pro Val Ala Thr Gly Asp Gln Ser Val Arg Ser Gly Gly Leu Ala Leu
        115                 120                 125
Pro Lys Thr Asp Val His Leu Ser Pro Ile Thr Ile Asp Asn Leu Lys
    130                 135                 140
Thr Met Tyr Lys Glu His Thr Glu Ile Val Lys Leu Asn Asn Met Ser
145                 150                 155                 160
Leu Cys Ala Lys His Thr Ser Phe Tyr Val Pro Gly Asn Asn Ala Asn
                165                 170                 175
Ser Ala Tyr Arg His Pro Ala Val Tyr Asp Lys Ser Asn Ser Thr Cys
            180                 185                 190
Tyr Met Leu Tyr Val Ala Ala Gln Glu Asn Met Gly Pro Arg Tyr Cys
        195                 200                 205
Ser Asn Asn Ala Asn Asn Asp Asn Gln Pro Phe Cys Phe Thr Pro Glu
    210                 215                 220
Lys Ile Glu Lys Tyr Lys Asn Leu Ser Tyr Leu Thr Lys Asn Leu Arg
225                 230                 235                 240
Asp Asp Trp Glu Thr Ser Cys Pro Asn Lys Ser Ile Lys Asn Ala Lys
                245                 250                 255
Phe Gly Ile Trp Val Asp Gly Tyr Cys Lys Asp Tyr Gln Lys His Thr
            260                 265                 270
Val His Asp Ser Asp Ser Leu Leu Lys Cys Asn Gln Ile Ile Phe Asn
        275                 280                 285
Glu Ser Ala Ser Asp Gln Pro Lys Gln Tyr Glu Lys His Leu Glu Asp
    290                 295                 300
Thr Thr Lys Phe Arg Gln Gly Val Ala Glu Arg Asn Gly Lys Leu Ile
305                 310                 315                 320
Gly Glu Ala Leu Leu Pro Ile Gly Ser Tyr Lys Ser Asp Gln Ile Lys
                325                 330                 335
```

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


<210> 32
<211> 118
<212> PRT
<213> plasmodium falciparum

<400> 32

Ala Asp Ile Gly Asp Ile Val Arg Gly Lys Asp Met Phe Lys Pro Asn
1               5                   10                  15
Asp Ala Asp Lys Val Glu Lys Gly Leu Gln Val Val Phe Lys Lys Ile
            20                  25                  30
Tyr Glu Gly Phe Leu Asp Lys Gly Val Lys Val His Tyr Lys Glu Asn
        35                  40                  45
Lys Asp Gly Asn Tyr Val Lys Leu Arg Glu Asp Trp Trp Met Ala Asn
    50                  55                  60
Arg Asp Gln Val Trp Arg Ala Ile Thr Cys Lys Ala Pro Gly Asp Val
65                  70                  75                  80
Asn Tyr Phe Arg Lys Ile Ser Glu Asp Thr Arg Lys Phe Glu Asn Ala
                85                  90                  95
Gly Lys Cys Arg Arg His Asp Asn Ser Val Pro Thr Asn Leu Asp Tyr
            100                 105                 110
Val Pro Gln Phe Leu Arg
        115


<210> 33
<211> 579
<212> PRT
<213> plasmodium falciparum

<400> 33
```

```
Gly Arg Asn Thr Ser Ser Asn Asn Glu Val Leu Ser Asn Cys Arg Glu
1               5                  10                  15
Lys Arg Lys Gly Met Lys Trp Asp Cys Lys Lys Lys Asn Asp Arg Ser
            20                  25                  30
Asn Tyr Val Cys Ile Pro Asp Arg Arg Ile Gln Leu Cys Ile Val Asn
        35                  40                  45
Leu Ser Ile Ile Lys Thr Tyr Thr Lys Glu Thr Met Lys Asp His Phe
    50                  55                  60
Ile Glu Ala Ser Lys Lys Glu Ser Gln Leu Leu Leu Lys Lys Asn Asp
65                  70                  75                  80
Asn Lys Tyr Asn Ser Lys Phe Cys Asn Asp Leu Lys Asn Ser Phe Leu
                85                  90                  95
Asp Tyr Gly His Leu Ala Met Gly Asn Asp Met Asp Phe Gly Gly Tyr
            100                 105                 110
Ser Thr Lys Ala Glu Asn Lys Ile Gln Glu Val Phe Lys Gly Ala His
        115                 120                 125
Gly Lys Ile Ser Glu His Glu Ile Lys Asn Phe Arg Lys Glu Trp Trp
    130                 135                 140
Asn Glu Phe Arg Glu Lys Leu Trp Glu Ala Met Leu Ser Glu His Lys
145                 150                 155                 160
Asn Asn Ile Asn Asn Cys Lys Asn Ile Pro Gln Glu Glu Leu Gln Ile
                165                 170                 175
Thr Gln Trp Ile Lys Glu Trp His Gly Glu Phe Leu Leu Glu Arg Asp
            180                 185                 190
Asn Arg Ser Lys Leu Pro Lys Ser Lys Cys Lys Asn Asn Thr Leu Tyr
        195                 200                 205
Glu Ala Cys Glu Lys Glu Cys Ile Asp Pro Cys Met Lys Tyr Arg Asp
    210                 215                 220
Trp Ile Ile Arg Ser Lys Phe Glu Trp His Thr Leu Ser Lys Glu Tyr
225                 230                 235                 240
Glu Thr Gln Lys Val Pro Lys Glu Asn Ala Glu Asn Tyr Leu Ile Lys
                245                 250                 255
Ile Ser Glu Asn Lys Asn Asp Ala Lys Val Ser Leu Leu Leu Asn Asn
            260                 265                 270
Cys Asp Ala Glu Tyr Ser Lys Tyr Cys Asp Cys Lys His Thr Thr Thr
        275                 280                 285
Leu Val Lys Ser Val Leu Asn Gly Asn Asp Asn Thr Ile Lys Glu Lys
    290                 295                 300
Arg Glu His Ile Asp Leu Asp Asp Phe Ser Lys Phe Gly Cys Asp Lys
305                 310                 315                 320
Asn Ser Val Asp Thr Asn Thr Lys Val Trp Glu Cys Lys Lys Pro Tyr
                325                 330                 335
Lys Leu Ser Thr Lys Asp Val Cys Val Pro Pro Arg Arg Gln Glu Leu
            340                 345                 350
Cys Leu Gly Asn Ile Asp Arg Ile Tyr Asp Lys Asn Leu Leu Met Ile
        355                 360                 365
Lys Glu His Ile Leu Ala Ile Ala Ile Tyr Glu Ser Arg Ile Leu Lys
    370                 375                 380
Arg Lys Tyr Lys Asn Lys Asp Asp Lys Glu Val Cys Lys Ile Ile Asn
385                 390                 395                 400
Lys Thr Phe Ala Asp Ile Arg Asp Ile Ile Gly Gly Thr Asp Tyr Trp
                405                 410                 415
Asn Asp Leu Ser Asn Arg Lys Leu Val Gly Lys Ile Asn Thr Asn Ser
            420                 425                 430
Asn Tyr Val His Arg Asn Lys Glu Asn Asp Lys Leu Phe Arg Asp Ala
        435                 440                 445
Trp Trp Lys Val Ile Lys Lys Asp Val Trp Asn Val Ile Ser Trp Val
    450                 455                 460
Phe Lys Asp Lys Thr Val Cys Lys Glu Asp Asp Ile Glu Asn Ile Pro
465                 470                 475                 480
```

```
Gln Phe Phe Arg Trp Phe Ser Glu Trp Gly Asp Asp Tyr Cys Gln Asp
                485                 490                 495
Lys Thr Lys Met Ile Glu Thr Leu Lys Val Glu Cys Lys Glu Lys Pro
            500                 505                 510
Cys Glu Asp Asp Asn Cys Lys Ser Lys Cys Asn Ser Tyr Lys Glu Trp
        515                 520                 525
Ile Ser Lys Lys Lys Glu Glu Tyr Asn Lys Gln Ala Lys Gln Tyr Gln
    530                 535                 540
Glu Tyr Gln Lys Gly Asn Asn Tyr Lys Met Tyr Ser Glu Phe Lys Ser
545                 550                 555                 560
Ile Lys Pro Glu Val Tyr Leu Lys Lys Tyr Ser Lys Lys Cys Ser Asn
                565                 570                 575
Leu Asn Phe
```

<210> 34
<211> 114
<212> PRT
<213> Séquence artificielle

<220>
<223> Fragment de MSP1

<400> 34

```
Leu Glu Lys His Val Cys Ile Asn Thr Arg Asp Ile Pro Ala Asn Ala
1               5                   10                  15
Gly Cys Phe Arg Tyr Asp Asn Gly Asn Glu Glu Trp Arg Cys Leu Leu
            20                  25                  30
Gly Tyr Lys Lys Asn Asn Asn Thr Cys Ile Glu Asp Ser Asn Pro Thr
        35                  40                  45
Cys Gly Asn Asn Asn Gly Gly Cys Asp Pro Thr Ala Gly Cys Gln Thr
    50                  55                  60
Ala Glu Asn Arg Glu Asn Ser Lys Lys Ile Ile Cys Thr Cys Lys Glu
65                  70                  75                  80
Pro Thr Pro Asn Ala Tyr Tyr Asp Gly Val Phe Cys Ser Ser Ser Ser
                85                  90                  95
Phe Met Gly Leu Ser Ile Leu Leu Ile Ile Thr Leu Ile Val Phe Asn
            100                 105                 110
Ile Phe
```

<210> 35
<211> 641
<212> PRT
<213> Séquence artificielle

<220>
<223> GBSSI-MSP1

<400> 35

```
Ala Leu Asp Ile Val Met Val Ala Ala Glu Val Ala Pro Trp Ser Lys
1               5                   10                  15
Thr Gly Gly Leu Gly Asp Val Thr Gly Gly Leu Pro Ile Glu Leu Val
            20                  25                  30
Lys Arg Gly His Arg Val Met Thr Ile Ala Pro Arg Tyr Asp Gln Tyr
        35                  40                  45
Ala Asp Ala Trp Asp Thr Ser Val Val Val Asp Ile Met Gly Glu Lys
```

```
    50                  55                  60
Val Arg Tyr Phe His Ser Ile Lys Lys Gly Val His Arg Val Trp Ile
65                  70                  75                  80
Asp His Pro Trp Phe Leu Ala Lys Val Trp Gly Lys Thr Gly Ser Lys
                85                  90                  95
Leu Tyr Gly Pro Arg Ser Gly Ala Asp Tyr Leu Asp Asn His Lys Arg
            100                 105                 110
Phe Ala Leu Phe Cys Lys Ala Ala Ile Glu Ala Ala Arg Val Leu Pro
        115                 120                 125
Phe Gly Pro Gly Glu Asp Cys Val Phe Val Ala Asn Asp Trp His Ser
    130                 135                 140
Ala Leu Val Pro Val Leu Leu Lys Asp Glu Tyr Gln Pro Lys Gly Gln
145                 150                 155                 160
Phe Thr Lys Ala Lys Ser Val Leu Ala Ile His Asn Ile Ala Phe Gln
                165                 170                 175
Gly Arg Met Trp Glu Glu Ala Phe Lys Asp Thr Lys Leu Pro Gln Ala
            180                 185                 190
Ala Phe Asp Lys Leu Ala Phe Ser Asp Gly Tyr Ala Lys Val Tyr Thr
        195                 200                 205
Glu Ala Thr Pro Met Glu Glu Asp Glu Lys Pro Pro Leu Thr Gly Lys
    210                 215                 220
Thr Tyr Lys Lys Ile Asn Trp Leu Lys Gly Gly Ile Ile Ala Ala Asp
225                 230                 235                 240
Lys Leu Val Thr Val Ser Pro Asn Tyr Ala Thr Glu Ile Ala Ala Asp
                245                 250                 255
Ala Ala Gly Gly Val Glu Leu Asp Thr Val Ile Arg Ala Lys Gly Ile
            260                 265                 270
Glu Gly Ile Val Asn Gly Met Asp Ile Glu Glu Trp Asn Pro Lys Thr
        275                 280                 285
Asp Lys Phe Leu Ser Val Pro Tyr Asp Gln Asn Ser Val Tyr Ala Gly
    290                 295                 300
Lys Ala Ala Ala Lys Glu Ala Leu Gln Ala Glu Leu Gly Leu Pro Val
305                 310                 315                 320
Asp Pro Thr Ala Pro Leu Phe Ala Phe Ile Gly Arg Leu Glu Glu Gln
                325                 330                 335
Lys Gly Val Asp Ile Ile Leu Ala Ala Leu Pro Lys Ile Leu Ala Thr
            340                 345                 350
Pro Lys Val Gln Ile Ala Ile Leu Gly Thr Gly Lys Ala Ala Tyr Glu
        355                 360                 365
Lys Leu Val Asn Ala Ile Gly Thr Lys Tyr Lys Gly Arg Ala Lys Gly
    370                 375                 380
Val Val Lys Phe Ser Ala Pro Leu Ala His Met Leu Thr Ala Gly Ala
385                 390                 395                 400
Asp Phe Met Leu Val Pro Ser Arg Phe Glu Pro Cys Gly Leu Ile Gln
                405                 410                 415
Leu His Ala Met His Tyr Gly Thr Val Pro Val Val Ala Ser Thr Gly
            420                 425                 430
Gly Leu Val Asp Thr Val Lys Glu Gly Val Thr Gly Phe His Met Gly
        435                 440                 445
Ala Leu Asn Pro Asp Lys Leu Asp Glu Ala Asp Ala Asp Ala Leu Ala
    450                 455                 460
Ala Thr Val Arg Arg Ala Ser Glu Val Phe Ala Gly Gly Arg Tyr Pro
465                 470                 475                 480
Glu Met Val Ala Asn Cys Ile Ser Gln Asp Leu Ser Trp Ser Lys Pro
                485                 490                 495
Ala Gln Lys Trp Glu Gly Leu Leu Glu Glu Val Val Tyr Gly Lys Gly
            500                 505                 510
Gly Val Ala Thr Ala Lys Lys Glu Glu Ile Lys Val Pro Val Ala Leu
        515                 520                 525
Glu Lys His Val Cys Ile Asn Thr Arg Asp Ile Pro Ala Asn Ala Gly
    530                 535                 540
```

```
Cys Phe Arg Tyr Asp Asn Gly Asn Glu Glu Trp Arg Cys Leu Leu Gly
545                 550                 555                 560
Tyr Lys Lys Asn Asn Asn Thr Cys Ile Glu Asp Ser Asn Pro Thr Cys
                565                 570                 575
Gly Asn Asn Asn Gly Gly Cys Asp Pro Thr Ala Gly Cys Gln Thr Ala
            580                 585                 590
Glu Asn Arg Glu Asn Ser Lys Lys Ile Ile Cys Thr Cys Lys Glu Pro
        595                 600                 605
Thr Pro Asn Ala Tyr Tyr Asp Gly Val Phe Cys Ser Ser Ser Ser Phe
    610                 615                 620
Met Gly Leu Ser Ile Leu Leu Ile Ile Thr Leu Ile Val Phe Asn Ile
625                 630                 635                 640
Phe
```

<210> 36
<211> 106
<212> PRT
<213> Séquence artificielle

<220>
<223> Fragment d'AMA1

<400> 36

```
Leu Glu Glu Phe Glu Glu Gln Phe Pro Cys Asp Ile Tyr Lys Asn Lys
1               5                   10                  15
Ile Asn Glu Glu Ile Lys Val Leu Asn Lys Asn Ile Ser Asn Gly Asn
            20                  25                  30
Asn Ser Ile Glu Phe Pro Arg Ile Phe Ile Ser Thr Asp Lys Asn Ser
        35                  40                  45
Leu Asn Cys Pro Cys Glu Pro Thr Gln Leu Thr Glu Ser Ser Cys Asn
    50                  55                  60
Phe Tyr Val Cys Asn Cys Val Glu Lys Arg Gln Tyr Ile Ala Glu Asn
65                  70                  75                  80
Asn Asp Val Glu Ile Lys Glu Glu Leu Glu Val His Met Lys Ala His
                85                  90                  95
Gln Thr Arg Glu Val Ile Val Ile Ile Ile
            100                 105
```

<210> 37
<211> 633
<212> PRT
<213> Séquence artificielle

<220>
<223> GBSSI-AMA1

<400> 37

```
Ala Leu Asp Ile Val Met Val Ala Ala Glu Val Ala Pro Trp Ser Lys
1               5                   10                  15
Thr Gly Gly Leu Gly Asp Val Thr Gly Gly Leu Pro Ile Glu Leu Val
            20                  25                  30
Lys Arg Gly His Arg Val Met Thr Ile Ala Pro Arg Tyr Asp Gln Tyr
        35                  40                  45
Ala Asp Ala Trp Asp Thr Ser Val Val Val Asp Ile Met Gly Glu Lys
    50                  55                  60
Val Arg Tyr Phe His Ser Ile Lys Lys Gly Val His Arg Val Trp Ile
```

```
65                  70                  75                  80
Asp His Pro Trp Phe Leu Ala Lys Val Trp Gly Lys Thr Gly Ser Lys
                85                  90                  95
Leu Tyr Gly Pro Arg Ser Gly Ala Asp Tyr Leu Asp Asn His Lys Arg
            100                 105                 110
Phe Ala Leu Phe Cys Lys Ala Ala Ile Glu Ala Ala Arg Val Leu Pro
        115                 120                 125
Phe Gly Pro Gly Glu Asp Cys Val Phe Val Ala Asn Asp Trp His Ser
    130                 135                 140
Ala Leu Val Pro Val Leu Leu Lys Asp Glu Tyr Gln Pro Lys Gly Gln
145                 150                 155                 160
Phe Thr Lys Ala Lys Ser Val Leu Ala Ile His Asn Ile Ala Phe Gln
                165                 170                 175
Gly Arg Met Trp Glu Glu Ala Phe Lys Asp Thr Lys Leu Pro Gln Ala
            180                 185                 190
Ala Phe Asp Lys Leu Ala Phe Ser Asp Gly Tyr Ala Lys Val Tyr Thr
        195                 200                 205
Glu Ala Thr Pro Met Glu Glu Asp Glu Lys Pro Pro Leu Thr Gly Lys
    210                 215                 220
Thr Tyr Lys Lys Ile Asn Trp Leu Lys Gly Gly Ile Ile Ala Ala Asp
225                 230                 235                 240
Lys Leu Val Thr Val Ser Pro Asn Tyr Ala Thr Glu Ile Ala Ala Asp
                245                 250                 255
Ala Ala Gly Gly Val Glu Leu Asp Thr Val Ile Arg Ala Lys Gly Ile
            260                 265                 270
Glu Gly Ile Val Asn Gly Met Asp Ile Glu Glu Trp Asn Pro Lys Thr
        275                 280                 285
Asp Lys Phe Leu Ser Val Pro Tyr Asp Gln Asn Ser Val Tyr Ala Gly
    290                 295                 300
Lys Ala Ala Ala Lys Glu Ala Leu Gln Ala Glu Leu Gly Leu Pro Val
305                 310                 315                 320
Asp Pro Thr Ala Pro Leu Phe Ala Phe Ile Gly Arg Leu Glu Glu Gln
                325                 330                 335
Lys Gly Val Asp Ile Ile Leu Ala Ala Leu Pro Lys Ile Leu Ala Thr
            340                 345                 350
Pro Lys Val Gln Ile Ala Ile Leu Gly Thr Gly Lys Ala Ala Tyr Glu
        355                 360                 365
Lys Leu Val Asn Ala Ile Gly Thr Lys Tyr Lys Gly Arg Ala Lys Gly
    370                 375                 380
Val Val Lys Phe Ser Ala Pro Leu Ala His Met Leu Thr Ala Gly Ala
385                 390                 395                 400
Asp Phe Met Leu Val Pro Ser Arg Phe Glu Pro Cys Gly Leu Ile Gln
                405                 410                 415
Leu His Ala Met His Tyr Gly Thr Val Pro Val Val Ala Ser Thr Gly
            420                 425                 430
Gly Leu Val Asp Thr Val Lys Glu Gly Val Thr Gly Phe His Met Gly
        435                 440                 445
Ala Leu Asn Pro Asp Lys Leu Asp Glu Ala Asp Ala Asp Ala Leu Ala
    450                 455                 460
Ala Thr Val Arg Arg Ala Ser Glu Val Phe Ala Gly Gly Arg Tyr Pro
465                 470                 475                 480
Glu Met Val Ala Asn Cys Ile Ser Gln Asp Leu Ser Trp Ser Lys Pro
                485                 490                 495
Ala Gln Lys Trp Glu Gly Leu Leu Glu Glu Val Val Tyr Gly Lys Gly
            500                 505                 510
Gly Val Ala Thr Ala Lys Lys Glu Glu Ile Lys Val Pro Val Ala Leu
        515                 520                 525
Glu Glu Phe Glu Glu Gln Phe Pro Cys Asp Ile Tyr Lys Asn Lys Ile
    530                 535                 540
Asn Glu Glu Ile Lys Val Leu Asn Lys Asn Ile Ser Asn Gly Asn Asn
545                 550                 555                 560
```

```
Ser Ile Glu Phe Pro Arg Ile Phe Ile Ser Thr Asp Lys Asn Ser Leu
                565                 570                 575
Asn Cys Pro Cys Glu Pro Thr Gln Leu Thr Glu Ser Ser Cys Asn Phe
            580                 585                 590
Tyr Val Cys Asn Cys Val Glu Lys Arg Gln Tyr Ile Ala Glu Asn Asn
        595                 600                 605
Asp Val Glu Ile Lys Glu Glu Leu Glu Val His Met Lys Ala His Gln
    610                 615                 620
Thr Arg Glu Val Ile Val Ile Ile Ile
625                 630
```

<210> 38
<211> 57
<212> PRT
<213> Séquence artificielle

<220>
<223> Peptide signal

<400> 38

```
Met Ala Val Ala Ser Thr Ser Arg Pro Ser Ser Ala Arg Pro Ile Val
1               5                   10                  15
Ile Asn Ala Ala Ser Phe Gly Val Lys Lys Thr Ala Asn Gln Leu Leu
            20                  25                  30
Arg Glu Leu Ala Arg Gly Ser Ala Arg Lys Ser Thr Ser Arg Ser Ala
        35                  40                  45
Val Thr Gly Ala Thr Gly Ala Thr Cys
    50                  55
```

<210> 39
<211> 351
<212> DNA
<213> Séquence artificielle

<220>
<223> Fragment MSP1

<400> 39

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ctcgagaagc acgtgtgcat caacacgcgc gacattccgg cgaacgctgg ctgtttccgc     60
tacgacaacg gcaacgagga gtggcgctgc ctgctgggct acaagaagaa caacaatact    120
tgcatcgagg atagcaaccc cacctgcggc aacaacaacg gcggttgcga tcccaccgct    180
ggttgccaga ccgccgagaa ccgcgagaac agcaagaaga tcatctgcac ctgcaaggag    240
ccgaccccga acgcctacta cgacggcgtg ttctgcagca gcagcagctt catgggcctg    300
agcatcctcc tcatcattac cctgatcgtg ttcaacatct tctaaggatc c             351
```

<210> 40
<211> 327
<212> DNA
<213> Séquence artificielle

<220>
<223> Fragment AMA1

<400> 40

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ctcgaggagt tcgaggagca gttcccctgc gacatctaca agaacaagat caacgaggag     60
```

atcaaggtgc tgaacaagaa catctccaac ggcaacaaca gcatcgagtt cccccgcatc 120
ttcatcagca ccgacaagaa cagcctgaac tgcccctgcg agcccaccca gctgaccgag 180
agcagctgca acttctacgt gtgcaactgc gtggagaagc gccagtacat cgccgagaac 240
aacgacgtgg agatcaagga ggagctggag gtgcacatga aggcccacca gacccgcgag 300
gtgatcgtga tcatcatcta aggattc 327

<210> 41
<211> 7239
<212> DNA
<213> Séquence artificielle

<220>
<223> Plasmide pKB101

<400> 41

ctagagtcga cagccatatc gccgccgctt tggccacctc caaacagccc cctccccgca 60
aagccgcaca tgctgccggc ggggcgtcac acaccagaca gaccagacca gcccgacatt 120
caacacacac atggtctcat gcggtctgat ggctttccta agccaaccag gccggctccc 180
agtgcagtga cgtgggcgtg acaggccggg tgctcccagc cgcgtgccaa ttgccaaccc 240
caccctacgc gaaggcatta cgcgcctcac cgtgcattgc tcctgctaca gcccccttgca 300
acaccgccga cctcgggaag gtggagttct cagcgcggtg gccgcttgcc ccggccggca 360
gctccgcagg gcacacgtca cgcgaagggc cgcgacggtt cgagaaccga cttgagggcg 420
ccaaacgagc ccgagccgcc gttgcgccag gcgaaaccag aaccgtagat taatgcactt 480
gagctattca ttggagcgat ctgccgggga cagcgggtct ggcgtgcgcg cgattggaga 540
tcgcaaatta catatgtctg cgtgacggcg gggagctcgc tgaggcttga catgattggt 600
gcgtatgttt gtatgaagct acaggactga tttggcgggc tatgagggcg ggggaagctc 660
tggaagggcc gcgatggggc gcgcggcgtc cagaaggcgc catacggccc gctggcggca 720
cccatccggt ataaaagccc gcgaccccga acggtgacct ccactttcag cgacaaacga 780
gcacttatac atacgcgact attctgccgc tatacataac cactcagcta gcgatcccgg 840
gcgcgccaga aggagcgcag ccaaaccagg atgatgtttg atggggtatt tgagcacttg 900
caacccttat ccggaagccc cctggcccac aaaggctagg cgccaatgca agcagttcgc 960
atgcagcccc tggagcggtg ccctcctgat aaaccggcca gggggcctat gttctttact 1020
tttttacaag agaagtcact caacatctta aaatggctgt tgcctctacc agccgcccca 1080
gcagcgcgcg tcctatcgtc atcaatgccg cgtcgttcgg tgtcaagaag accgcgaacc 1140
agctgctgcg tgagcttgct cgtggctccg cacgcaagtc cacctcgcgc tcggctgtta 1200
ctggtgccac tggtgccact tgcgcgctgg acatcgtgat ggttgctgct gaggtcgccc 1260
cttggtccaa gacgggcggt ctgggcgatg tgactggtgg cctgcctatt gagctggtca 1320
agcgcggcca ccgcgtcatg accattgccc ctcggtaacg accaaggaat tcatgcacaa 1380
acgtgggcta gcatcctctg gcctggcgcc atcatgtagc agtcttgagc tgacatcaaa 1440
cattggtaat cctcttgcaa acgtgaaacg atattgctgc actaccaagt aattcaggcg 1500
cgctgcgtaa gcgactagta ctgcacagat gttgcgcgtc tcgcggcctt aacgcctacg 1560
catagtccgt ttcgctccgt tcgccaagct ggggggctgt ctctgtcacg gcctgtgact 1620
tcgctatacg ctgactatcc acgtcgttgc tgaaagcgct gtagagcctg ggtatgtcga 1680
tcactgatgg cgtttcatac ctgcctccgc ttgtttcacg cagctacgac cagtacgctg 1740
acgcctggga cacctcggtg gtcgtggaca tcatgggcga gaaggtccgc tacttccact 1800
ccatcaagaa gggcgtgcac cgcgtgtgga ttgaccaccc ctggttcctg gccaaggtct 1860
ggggcaagac cggctccaag ctgtacggcc cccgctccgg cgctgactac ctggtgcgtg 1920
gaggggcgct ttgcatgaca gtgctggccc atcatttgct cagccttgtc tgcgctccgt 1980
tgtatcatgg catgatgtgg gtcggccctg cgtgtctctg aacctcactg ccccccccttc 2040
catccactcc ccacaggaca accacaagcg cttcgccctg ttctgcaagg ccgctattga 2100
ggctgcccgc gtgctgccct tcggccccgg cgaggactgc gtcttcgtgg ccaacgactg 2160
gcactccgcc ctggtgcccg tcctgctgaa ggtgcgccgc atgaccgagc gccccatgtc 2220
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gctgcccatc atggggttgg cgcgacacgc ctgtcctttc tgcctccgct tgcgcatatg 2340
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gccgcatgtg ggaggaggct ttcaaggaca cgaagctgcc ccaggccgcc tttgacaagc 2520
tggccttctc ggacggctat gccaaggtgc gcacagggtc ttgcggaggt gctgctgcat 2580
gattgggctg ctgacctaag ggtgtgtctg gcgctgtggt ctctgacgga ctgggctgac 2640

```
ctgcggaggc ggcagcagag gtgggcctgt cagctgctga ccacggaaac acgctacgcc   2700
tgcgcacgat gttctgcatt ctgttgtctg acggccacat cctcctgtct gcaagcaggt   2760
ttacactgag gccacccccа tggaggagga cgagaagccc ccgctgacgg gaaagaccta   2820
caagaagatc aactggctga agggtggcat tatcgccgcc gacaagctgg tgactgtgtc   2880
gcccaactac gcgaccgaga tcgctgccga tgccgccggc ggtgtggagc tggacaccgt   2940
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