SEQUENCE LISTING

<110> SCHNEEWIND, OLAF
CHENG, ALICE G.
MISSIAKAS, DOMINIQUE M.
KIM, HWAN

<120> COMPOSITIONS AND METHODS RELATED TO PROTEIN A (SpA) VARIANTS

<130> ARCD:482WO

<140> UNKNOWN
<141> 2010-04-05

<150> 61/237,956
<151> 2009-12-18

<160> 63

<170> PatentIn version 3.5

<210> 1
<211> 150
<212> DNA
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<210> 2
<211> 54
<212> PRT
<213> Staphylococcus sp.

<400> 2

Gln Gln Asn Asn Phe Asn Lys Asp Gln Gln Ser Ala Phe Tyr Glu Ile
1 5 10 15

Leu Asn Met Pro Asn Leu Asn Glu Ala Gln Arg Asn Gly Phe Ile Gln
20 25 30

Ser Leu Lys Asp Asp Pro Ser Gln Ser Thr Asn Val Leu Gly Glu Ala
35 40 45

Lys Lys Leu Asn Glu Ser
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<210> 3
<211> 51
<212> PRT
<213> Staphylococcus sp.

<400> 3

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Gln His Asp Glu Ala Gln Gln Asn Ala Phe Tyr Gln Val Leu Asn Met
1               5                   10                  15


Pro Asn Leu Asn Ala Asp Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys
            20                  25                  30


Asp Asp Pro Ser Gln Ser Ala Asn Val Leu Gly Glu Ala Gln Lys Leu
        35                  40                  45


Asn Asp Ser
    50


<210>  4
<211>  52
<212>  PRT
<213>  Staphylococcus sp.

<400>  4

Asn Asn Phe Asn Lys Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu Asn
1               5                   10                  15


Met Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu
            20                  25                  30


Lys Asp Asp Pro Ser Gln Ser Ala Asn Leu Leu Ser Glu Ala Lys Lys
        35                  40                  45


Leu Asn Glu Ser
    50


<210>  5
<211>  52
<212>  PRT
<213>  Staphylococcus sp.

<400>  5

Asn Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu His
1               5                   10                  15


Leu Pro Asn Leu Thr Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu
            20                  25                  30


Lys Asp Asp Pro Ser Val Ser Lys Glu Ile Leu Ala Glu Ala Lys Lys
        35                  40                  45


Leu Asn Asp Ala
    50
```

<210> 6
<211> 52
<212> PRT
<213> Staphylococcus sp.

<400> 6

Asn Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu His
1 5 10 15

Leu Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu
20 25 30

Lys Asp Asp Pro Ser Gln Ser Ala Asn Leu Leu Ala Glu Ala Lys Lys
35 40 45

Leu Asn Asp Ala
50

<210> 7
<211> 52
<212> PRT
<213> Staphylococcus sp.

<220>
<221> misc_feature
<222> (7)..(8)
<223> Xaa can be any naturally occurring amino acid

<220>
<221> misc_feature
<222> (34)..(35)
<223> Xaa can be any naturally occurring amino acid

<400> 7

Asn Asn Phe Asn Lys Asp Xaa Xaa Ser Ala Phe Tyr Glu Ile Leu Asn
1 5 10 15

Met Pro Asn Leu Asn Glu Ala Gln Arg Asn Gly Phe Ile Gln Ser Leu
20 25 30

Lys Xaa Xaa Pro Ser Gln Ser Thr Asn Val Leu Gly Glu Ala Lys Lys
35 40 45

Leu Asn Glu Ser
50

<210> 8
<211> 52
<212> PRT
<213> Staphylococcus sp.

<220>
<221> MISC_FEATURE
<222> (7)..(8)
<223> where X is any amino acid other than Q

<220>
<221> MISC_FEATURE
<222> (12)..(35)
<223> where Y is any amion acid other than D

<400> 8

```
Asn Asn Phe Asn Lys Asp Xaa Xaa Ser Ala Phe Tyr Glu Ile Leu Asn
1               5                   10                  15


Met Pro Asn Leu Asn Glu Ala Gln Arg Asn Gly Phe Ile Gln Ser Leu
            20                  25                  30


Lys Tyr Tyr Pro Ser Gln Ser Thr Asn Val Leu Gly Glu Ala Lys Lys
        35                  40                  45


Leu Asn Glu Ser
    50
```

<210> 9
<211> 450
<212> PRT
<213> Staphylococcus sp.

<400> 9

```
Met Lys Lys Lys Asn Ile Tyr Ser Ile Arg Lys Leu Gly Val Gly Ile
1               5                   10                  15


Ala Ser Val Thr Leu Gly Thr Leu Leu Ile Ser Gly Gly Val Thr Pro
            20                  25                  30


Ala Ala Asn Ala Ala Gln His Asp Glu Ala Gln Gln Asn Ala Phe Tyr
        35                  40                  45


Gln Val Leu Asn Met Pro Asn Leu Asn Ala Asp Gln Arg Asn Gly Phe
    50                  55                  60


Ile Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Val Leu Gly
65                  70                  75                  80


Glu Ala Gln Lys Leu Asn Asp Ser Gln Ala Pro Lys Ala Asp Ala Gln
                85                  90                  95


Gln Asn Asn Phe Asn Lys Asp Gln Gln Ser Ala Phe Tyr Glu Ile Leu
            100                 105                 110
```

```
Asn Met Pro Asn Leu Asn Glu Ala Gln Arg Asn Gly Phe Ile Gln Ser
        115                 120                 125

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

Lys Leu Asn Glu Ser Gln Ala Pro Lys Ala Asp Asn Asn Phe Asn Lys
145                 150                 155                 160

Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu Asn Met Pro Asn Leu Asn
                165                 170                 175

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

Gln Ser Ala Asn Leu Leu Ser Glu Ala Lys Lys Leu Asn Glu Ser Gln
        195                 200                 205

Ala Pro Lys Ala Asp Asn Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe
    210                 215                 220

Tyr Glu Ile Leu His Leu Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly
225                 230                 235                 240

Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser Val Ser Lys Glu Ile Leu
                245                 250                 255

Ala Glu Ala Lys Lys Leu Asn Asp Ala Gln Ala Pro Lys Glu Glu Asp
            260                 265                 270

Asn Lys Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp
        275                 280                 285

Gly Asn Lys Pro Gly Lys Glu Asp Asn Lys Lys Pro Gly Lys Glu Asp
    290                 295                 300

Gly Asn Lys Pro Gly Lys Glu Asp Asn Asn Lys Pro Gly Lys Glu Asp
305                 310                 315                 320

Gly Asn Lys Pro Gly Lys Glu Asp Asn Asn Lys Pro Gly Lys Glu Asp
                325                 330                 335

Gly Asn Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp
            340                 345                 350

Gly Asn Gly Val His Val Val Lys Pro Gly Asp Thr Val Asn Asp Ile
        355                 360                 365
```

```
Ala Lys Ala Asn Gly Thr Thr Ala Asp Lys Ile Ala Ala Asp Asn Lys
    370                 375                 380

Leu Ala Asp Lys Asn Met Ile Lys Pro Gly Gln Glu Leu Val Val Asp
385                 390                 395                 400

Lys Lys Gln Pro Ala Asn His Ala Asp Ala Asn Lys Ala Gln Ala Leu
                405                 410                 415

Pro Glu Thr Gly Glu Glu Asn Pro Phe Ile Gly Thr Thr Val Phe Gly
            420                 425                 430

Gly Leu Ser Leu Ala Leu Gly Ala Ala Leu Leu Ala Gly Arg Arg Arg
        435                 440                 445

Glu Leu
    450
```

<210> 10
<211> 450
<212> PRT
<213> Staphylococcus sp.

<400> 10

```
Met Lys Lys Lys Asn Ile Tyr Ser Ile Arg Lys Leu Gly Val Gly Ile
1               5                   10                  15

Ala Ser Val Thr Leu Gly Thr Leu Leu Ile Ser Gly Gly Val Thr Pro
            20                  25                  30

Ala Ala Asn Ala Ala Gln His Asp Glu Ala Gln Gln Asn Ala Phe Tyr
        35                  40                  45

Gln Val Leu Asn Met Pro Asn Leu Asn Ala Asp Gln Arg Asn Gly Phe
    50                  55                  60

Ile Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Val Leu Gly
65                  70                  75                  80

Glu Ala Gln Lys Leu Asn Asp Ser Gln Ala Pro Lys Ala Asp Ala Gln
                85                  90                  95

Gln Asn Asn Phe Asn Lys Asp Gln Gln Ser Ala Phe Tyr Glu Ile Leu
            100                 105                 110

Asn Met Pro Asn Leu Asn Glu Ala Gln Arg Asn Gly Phe Ile Gln Ser
        115                 120                 125
```

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

Lys Leu Asn Glu Ser Gln Ala Pro Lys Ala Asp Asn Asn Phe Asn Lys
145                 150                 155                 160

Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu Asn Met Pro Asn Leu Asn
                165                 170                 175

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

Gln Ser Ala Asn Leu Leu Ser Glu Ala Lys Lys Leu Asn Glu Ser Gln
        195                 200                 205

Ala Pro Lys Ala Asp Asn Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe
    210                 215                 220

Tyr Glu Ile Leu His Leu Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly
225                 230                 235                 240

Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser Val Ser Lys Glu Ile Leu
                245                 250                 255

Ala Glu Ala Lys Lys Leu Asn Asp Ala Gln Ala Pro Lys Glu Glu Asp
            260                 265                 270

Asn Lys Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp
        275                 280                 285

Gly Asn Lys Pro Gly Lys Glu Asp Asn Lys Lys Pro Gly Lys Glu Asp
    290                 295                 300

Gly Asn Lys Pro Gly Lys Glu Asp Asn Asn Lys Pro Gly Lys Glu Asp
305                 310                 315                 320

Gly Asn Lys Pro Gly Lys Glu Asp Asn Asn Lys Pro Gly Lys Glu Asp
                325                 330                 335

Gly Asn Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp
            340                 345                 350

Gly Asn Gly Val His Val Val Lys Pro Gly Asp Thr Val Asn Asp Ile
        355                 360                 365

Ala Lys Ala Asn Gly Thr Thr Ala Asp Lys Ile Ala Ala Asp Asn Lys
    370                 375                 380
```

```
Leu Ala Asp Lys Asn Met Ile Lys Pro Gly Gln Glu Leu Val Val Asp
385                 390                 395                 400

Lys Lys Gln Pro Ala Asn His Ala Asp Ala Asn Lys Ala Gln Ala Leu
                405                 410                 415

Pro Glu Thr Gly Glu Glu Asn Pro Phe Ile Gly Thr Thr Val Phe Gly
            420                 425                 430

Gly Leu Ser Leu Ala Leu Gly Ala Ala Leu Leu Ala Gly Arg Arg Arg
        435                 440                 445

Glu Leu
    450
```

<210> 11
<211> 97
<212> PRT
<213> Staphylococcus sp.

<400> 11

```
Met Ala Met Ile Lys Met Ser Pro Glu Glu Ile Arg Ala Lys Ser Gln
1               5                   10                  15

Ser Tyr Gly Gln Gly Ser Asp Gln Ile Arg Gln Ile Leu Ser Asp Leu
            20                  25                  30

Thr Arg Ala Gln Gly Glu Ile Ala Ala Asn Trp Glu Gly Gln Ala Phe
        35                  40                  45

Ser Arg Phe Glu Glu Gln Phe Gln Gln Leu Ser Pro Lys Val Glu Lys
    50                  55                  60

Phe Ala Gln Leu Leu Glu Glu Ile Lys Gln Gln Leu Asn Ser Thr Ala
65                  70                  75                  80

Asp Ala Val Gln Glu Gln Asp Gln Gln Leu Ser Asn Asn Phe Gly Leu
                85                  90                  95

Gln
```

<210> 12
<211> 102
<212> PRT
<213> Staphylococcus sp.

<400> 12

```
Met Gly Gly Tyr Lys Gly Ile Lys Ala Asp Gly Gly Lys Val Asn Gln
1               5                   10                  15

Ala Lys Gln Leu Ala Ala Lys Ile Ala Lys Asp Ile Glu Ala Cys Gln
            20                  25                  30

Lys Gln Thr Gln Gln Leu Ala Glu Tyr Ile Glu Gly Ser Asp Trp Glu
        35                  40                  45

Gly Gln Phe Ala Asn Lys Val Lys Asp Val Leu Leu Ile Met Ala Lys
    50                  55                  60

Phe Gln Glu Glu Leu Val Gln Pro Met Ala Asp His Gln Lys Ala Ile
65                  70                  75                  80

Asp Asn Leu Ser Gln Asn Leu Ala Lys Tyr Asp Thr Leu Ser Ile Lys
                85                  90                  95

Gln Gly Leu Asp Arg Val
            100
```

<210> 13
<211> 1385
<212> PRT
<213> Staphylococcus sp.

<400> 13

```
Met Leu Asn Arg Glu Asn Lys Thr Ala Ile Thr Arg Lys Gly Met Val
1               5                   10                  15

Ser Asn Arg Leu Asn Lys Phe Ser Ile Arg Lys Tyr Thr Val Gly Thr
            20                  25                  30

Ala Ser Ile Leu Val Gly Thr Thr Leu Ile Phe Gly Leu Gly Asn Gln
        35                  40                  45

Glu Ala Lys Ala Ala Glu Ser Thr Asn Lys Glu Leu Asn Glu Ala Thr
    50                  55                  60

Thr Ser Ala Ser Asp Asn Gln Ser Ser Asp Lys Val Asp Met Gln Gln
65                  70                  75                  80

Leu Asn Gln Glu Asp Asn Thr Lys Asn Asp Asn Gln Lys Glu Met Val
                85                  90                  95

Ser Ser Gln Gly Asn Glu Thr Thr Ser Asn Gly Asn Lys Ser Ile Glu
            100                 105                 110
```

```
Lys Glu Ser Val Gln Ser Thr Thr Gly Asn Lys Val Glu Val Ser Thr
        115                 120                 125

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

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

Leu Glu Asn Lys Ser Val Val Asn Val Gln Pro Thr Asn Glu Glu Asn
                165                 170                 175

Lys Lys Val Asp Ala Lys Thr Glu Ser Thr Thr Leu Asn Val Lys Ser
            180                 185                 190

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

Ser Asn Asn Glu Asn Asn Ala Asp Ile Ile Leu Pro Lys Ser Thr Ala
    210                 215                 220

Pro Lys Ser Leu Asn Thr Arg Met Arg Met Ala Ala Ile Gln Pro Asn
225                 230                 235                 240

Ser Thr Asp Ser Lys Asn Val Asn Asp Leu Ile Thr Ser Asn Thr Thr
                245                 250                 255

Leu Thr Val Val Asp Ala Asp Asn Ser Lys Thr Ile Val Pro Ala Gln
            260                 265                 270

Asp Tyr Leu Ser Leu Lys Ser Gln Ile Thr Val Asp Asp Lys Val Lys
        275                 280                 285

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

Gly Leu Asn Pro Glu Asp Ile Lys Asn Ile Gly Asp Ile Lys Asp Pro
305                 310                 315                 320

Asn Asn Gly Glu Thr Ile Ala Thr Ala Lys His Asp Thr Ala Asn Asn
                325                 330                 335

Leu Ile Thr Tyr Thr Phe Thr Asp Tyr Val Asp Arg Phe Asn Ser Val
            340                 345                 350

Lys Met Gly Ile Asn Tyr Ser Ile Tyr Met Asp Ala Asp Thr Ile Pro
        355                 360                 365
```

```
Val Asp Lys Lys Asp Val Pro Phe Ser Val Thr Ile Gly Asn Gln Ile
    370                 375                 380

Thr Thr Thr Thr Ala Asp Ile Thr Tyr Pro Ala Tyr Lys Glu Ala Asp
385                 390                 395                 400

Asn Asn Ser Ile Gly Ser Ala Phe Thr Glu Thr Val Ser His Val Gly
                405                 410                 415

Asn Val Glu Asp Pro Gly Tyr Tyr Asn Gln Val Val Tyr Val Asn Pro
            420                 425                 430

Met Asp Lys Asp Leu Lys Gly Ala Lys Leu Lys Val Glu Ala Tyr His
        435                 440                 445

Pro Lys Tyr Pro Thr Asn Ile Gly Gln Ile Asn Gln Asn Val Thr Asn
    450                 455                 460

Ile Lys Ile Tyr Arg Val Pro Glu Gly Tyr Thr Leu Asn Lys Gly Tyr
465                 470                 475                 480

Asp Val Asn Thr Asn Asp Leu Val Asp Val Thr Asp Glu Phe Lys Asn
                485                 490                 495

Lys Met Thr Tyr Gly Ser Asn Gln Ser Val Asn Leu Asp Phe Gly Asp
            500                 505                 510

Ile Thr Ser Ala Tyr Val Val Met Val Asn Thr Lys Phe Gln Tyr Thr
        515                 520                 525

Asn Ser Glu Ser Pro Thr Leu Val Gln Met Ala Thr Leu Ser Ser Thr
    530                 535                 540

Gly Asn Lys Ser Val Ser Thr Gly Asn Ala Leu Gly Phe Thr Asn Asn
545                 550                 555                 560

Gln Ser Gly Gly Ala Gly Gln Glu Val Tyr Lys Ile Gly Asn Tyr Val
                565                 570                 575

Trp Glu Asp Thr Asn Lys Asn Gly Val Gln Glu Leu Gly Glu Lys Gly
            580                 585                 590

Val Gly Asn Val Thr Val Thr Val Phe Asp Asn Asn Thr Asn Thr Lys
        595                 600                 605

Val Gly Glu Ala Val Thr Lys Glu Asp Gly Ser Tyr Leu Ile Pro Asn
```

610 615 620

Leu Pro Asn Gly Asp Tyr Arg Val Glu Phe Ser Asn Leu Pro Lys Gly
625 630 635 640

Tyr Glu Val Thr Pro Ser Lys Gln Gly Asn Asn Glu Glu Leu Asp Ser
645 650 655

Asn Gly Leu Ser Ser Val Ile Thr Val Asn Gly Lys Asp Asn Leu Ser
660 665 670

Ala Asp Leu Gly Ile Tyr Lys Pro Lys Tyr Asn Leu Gly Asp Tyr Val
675 680 685

Trp Glu Asp Thr Asn Lys Asn Gly Ile Gln Asp Gln Asp Glu Lys Gly
690 695 700

Ile Ser Gly Val Thr Val Thr Leu Lys Asp Glu Asn Gly Asn Val Leu
705 710 715 720

Lys Thr Val Thr Thr Asp Ala Asp Gly Lys Tyr Lys Phe Thr Asp Leu
725 730 735

Asp Asn Gly Asn Tyr Lys Val Glu Phe Thr Thr Pro Glu Gly Tyr Thr
740 745 750

Pro Thr Thr Val Thr Ser Gly Ser Asp Ile Glu Lys Asp Ser Asn Gly
755 760 765

Leu Thr Thr Thr Gly Val Ile Asn Gly Ala Asp Asn Met Thr Leu Asp
770 775 780

Ser Gly Phe Tyr Lys Thr Pro Lys Tyr Asn Leu Gly Asn Tyr Val Trp
785 790 795 800

Glu Asp Thr Asn Lys Asp Gly Lys Gln Asp Ser Thr Glu Lys Gly Ile
805 810 815

Ser Gly Val Thr Val Thr Leu Lys Asn Glu Asn Gly Glu Val Leu Gln
820 825 830

Thr Thr Lys Thr Asp Lys Asp Gly Lys Tyr Gln Phe Thr Gly Leu Glu
835 840 845

Asn Gly Thr Tyr Lys Val Glu Phe Glu Thr Pro Ser Gly Tyr Thr Pro
850 855 860

```
Thr Gln Val Gly Ser Gly Thr Asp Glu Gly Ile Asp Ser Asn Gly Thr
865                 870                 875                 880

Ser Thr Thr Gly Val Ile Lys Asp Lys Asp Asn Asp Thr Ile Asp Ser
                885                 890                 895

Gly Phe Tyr Lys Pro Thr Tyr Asn Leu Gly Asp Tyr Val Trp Glu Asp
            900                 905                 910

Thr Asn Lys Asn Gly Val Gln Asp Lys Asp Glu Lys Gly Ile Ser Gly
        915                 920                 925

Val Thr Val Thr Leu Lys Asp Glu Asn Asp Lys Val Leu Lys Thr Val
    930                 935                 940

Thr Thr Asp Glu Asn Gly Lys Tyr Gln Phe Thr Asp Leu Asn Asn Gly
945                 950                 955                 960

Thr Tyr Lys Val Glu Phe Glu Thr Pro Ser Gly Tyr Thr Pro Thr Ser
                965                 970                 975

Val Thr Ser Gly Asn Asp Thr Glu Lys Asp Ser Asn Gly Leu Thr Thr
            980                 985                 990

Thr Gly Val Ile Lys Asp Ala Asp  Asn Met Thr Leu Asp  Ser Gly Phe
        995                 1000                1005

Tyr Lys  Thr Pro Lys Tyr Ser  Leu Gly Asp Tyr Val  Trp Tyr Asp
    1010                1015                1020

Ser Asn  Lys Asp Gly Lys Gln  Asp Ser Thr Glu Lys  Gly Ile Lys
    1025                1030                1035

Asp Val  Lys Val Ile Leu Leu  Asn Glu Lys Gly Glu  Val Ile Gly
    1040                1045                1050

Thr Thr  Lys Thr Asp Glu Asn  Gly Lys Tyr Arg Phe  Asp Asn Leu
    1055                1060                1065

Asp Ser  Gly Lys Tyr Lys Val  Ile Phe Glu Lys Pro  Thr Gly Leu
    1070                1075                1080

Thr Gln  Thr Gly Thr Asn Thr  Thr Glu Asp Asp Lys  Asp Ala Asp
    1085                1090                1095

Gly Gly  Glu Val Asp Val Thr  Ile Thr Asp His Asp  Asp Phe Thr
    1100                1105                1110
```

```
Leu Asp  Asn Gly Tyr Tyr Glu  Glu Glu Thr Ser Asp  Ser Asp Ser
    1115                1120                1125

Asp Ser  Asp Ser Asp Ser Asp  Ser Asp Ser Asp Ser  Asp Ser Asp
    1130                1135                1140

Ser Asp  Ser Asp Ser Asp Ser  Asp Ser Asp Ser Asp  Ser Asp Ser
    1145                1150                1155

Asp Ser  Asp Ser Asp Ser Asp  Ser Asp Ser Asp Ser  Asp Ser Asp
    1160                1165                1170

Ser Asp  Ser Asp Ser Asp Ser  Asp Ser Asp Ser Asp  Ser Asp Ser
    1175                1180                1185

Asp Ser  Asp Ser Asp Ser Asp  Ser Asp Ser Asp Ser  Asp Ser Asp
    1190                1195                1200

Ser Asp  Ser Asp Ser Asp Ser  Asp Ser Asp Ser Asp  Ser Asp Ser
    1205                1210                1215

Asp Ser  Asp Ser Asp Ser Asp  Ser Asp Ser Asp Ser  Asp Ser Asp
    1220                1225                1230

Ser Asp  Ser Asp Ser Asp Ser  Asp Ser Asp Ser Asp  Ser Asp Ser
    1235                1240                1245

Asp Ser  Asp Ser Asp Ser Asp  Ser Asp Ser Asp Ser  Asp Ser Asp
    1250                1255                1260

Ser Asp  Ser Asp Ser Asp Ser  Asp Ser Asp Ser Asp  Ser Asp Ser
    1265                1270                1275

Asp Ser  Asp Ser Asp Ser Asp  Ser Asp Ser Asp Ser  Asp Ser Asp
    1280                1285                1290

Ser Asp  Ser Asp Ser Asp Ser  Asp Ser Asp Ser Asp  Ser Asp Ser
    1295                1300                1305

Asp Ser  Asp Ser Asp Ser Asp  Ser Asp Ser Asp Ser  Asp Ser Asp
    1310                1315                1320

Ser Asp  Ala Gly Lys His Thr  Pro Val Lys Pro Met  Ser Thr Thr
    1325                1330                1335

Lys Asp  His His Asn Lys Ala  Lys Ala Leu Pro Glu  Thr Gly Asn
    1340                1345                1350
```

```
Glu Asn  Ser Gly Ser Asn Asn  Ala Thr Leu Phe Gly  Gly Leu Phe
    1355                1360                1365


Ala Ala  Leu Gly Ser Leu Leu  Leu Phe Gly Arg Arg  Lys Lys Gln
    1370                1375                1380


Asn Lys
    1385
```

<210> 14
<211> 1141
<212> PRT
<213> Staphylococcus sp.

<400> 14

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Met Ile Asn Arg Asp Asn Lys Lys Ala Ile Thr Lys Lys Gly Met Ile
1               5                   10                  15


Ser Asn Arg Leu Asn Lys Phe Ser Ile Arg Lys Tyr Thr Val Gly Thr
            20                  25                  30


Ala Ser Ile Leu Val Gly Thr Thr Leu Ile Phe Gly Leu Gly Asn Gln
        35                  40                  45


Glu Ala Lys Ala Ala Glu Asn Thr Ser Thr Glu Asn Ala Lys Gln Asp
    50                  55                  60


Asp Ala Thr Thr Ser Asp Asn Lys Glu Val Val Ser Glu Thr Glu Asn
65                  70                  75                  80


Asn Ser Thr Thr Glu Asn Asp Ser Thr Asn Pro Ile Lys Lys Glu Thr
                85                  90                  95


Asn Thr Asp Ser Gln Pro Glu Ala Lys Glu Glu Ser Thr Thr Ser Ser
            100                 105                 110


Thr Gln Gln Gln Gln Asn Asn Val Thr Ala Thr Thr Glu Thr Lys Pro
        115                 120                 125


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


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


Thr Asn Asn Asp Val Thr Thr Lys Pro Ser Thr Ser Glu Ile Gln Thr
                165                 170                 175
```

```
Lys Pro Thr Thr Pro Gln Glu Ser Thr Asn Ile Glu Asn Ser Gln Pro
            180                 185                 190

Gln Pro Thr Pro Ser Lys Val Asp Asn Gln Val Thr Asp Ala Thr Asn
        195                 200                 205

Pro Lys Glu Pro Val Asn Val Ser Lys Glu Glu Leu Lys Asn Asn Pro
    210                 215                 220

Glu Lys Leu Lys Glu Leu Val Arg Asn Asp Asn Asn Thr Asp Arg Ser
225                 230                 235                 240

Thr Lys Pro Val Ala Thr Ala Pro Thr Ser Val Ala Pro Lys Arg Leu
                245                 250                 255

Asn Ala Lys Met Arg Phe Ala Val Ala Gln Pro Ala Ala Val Ala Ser
            260                 265                 270

Asn Asn Val Asn Asp Leu Ile Thr Val Thr Lys Gln Thr Ile Lys Val
        275                 280                 285

Gly Asp Gly Lys Asp Asn Val Ala Ala Ala His Asp Gly Lys Asp Ile
    290                 295                 300

Glu Tyr Asp Thr Glu Phe Thr Ile Asp Asn Lys Val Lys Lys Gly Asp
305                 310                 315                 320

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

Asp Lys Asn Asp Pro Ile Asp Ile Thr Asp Pro Ser Gly Glu Val Ile
            340                 345                 350

Ala Lys Gly Thr Phe Asp Lys Ala Thr Lys Gln Ile Thr Tyr Thr Phe
        355                 360                 365

Thr Asp Tyr Val Asp Lys Tyr Glu Asp Ile Lys Ala Arg Leu Thr Leu
    370                 375                 380

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

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

Asp Tyr Gln Asp Pro Met Val His Gly Asp Ser Asn Ile Gln Ser Ile
```

```
            420                 425                 430

Phe Thr Lys Leu Asp Glu Asn Lys Gln Thr Ile Glu Gln Gln Ile Tyr
        435                 440                 445

Val Asn Pro Leu Lys Lys Thr Ala Thr Asn Thr Lys Val Asp Ile Ala
    450                 455                 460

Gly Ser Gln Val Asp Asp Tyr Gly Asn Ile Lys Leu Gly Asn Gly Ser
465                 470                 475                 480

Thr Ile Ile Asp Gln Asn Thr Glu Ile Lys Val Tyr Lys Val Asn Pro
                485                 490                 495

Asn Gln Gln Leu Pro Gln Ser Asn Arg Ile Tyr Asp Phe Ser Gln Tyr
            500                 505                 510

Glu Asp Val Thr Ser Gln Phe Asp Asn Lys Lys Ser Phe Ser Asn Asn
        515                 520                 525

Val Ala Thr Leu Asp Phe Gly Asp Ile Asn Ser Ala Tyr Ile Ile Lys
    530                 535                 540

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

Gln Gly Thr Ser Met Arg Thr Thr Asp Lys Tyr Gly Tyr Tyr Asn Tyr
                565                 570                 575

Ala Gly Tyr Ser Asn Phe Ile Val Thr Ser Asn Asp Thr Gly Gly Gly
            580                 585                 590

Asp Gly Thr Val Lys Pro Glu Glu Lys Leu Tyr Lys Ile Gly Asp Tyr
        595                 600                 605

Val Trp Glu Asp Val Asp Lys Asp Gly Val Gln Gly Thr Asp Ser Lys
    610                 615                 620

Glu Lys Pro Met Ala Asn Val Leu Val Thr Leu Thr Tyr Pro Asp Gly
625                 630                 635                 640

Thr Thr Lys Ser Val Arg Thr Asp Ala Asn Gly His Tyr Glu Phe Gly
                645                 650                 655

Gly Leu Lys Asp Gly Glu Thr Tyr Thr Val Lys Phe Glu Thr Pro Ala
            660                 665                 670
```

```
Gly Tyr Leu Pro Thr Lys Val Asn Gly Thr Thr Asp Gly Glu Lys Asp
        675                 680                 685

Ser Asn Gly Ser Ser Ile Thr Val Lys Ile Asn Gly Lys Asp Asp Met
    690                 695                 700

Ser Leu Asp Thr Gly Phe Tyr Lys Glu Pro Lys Tyr Asn Leu Gly Asp
705                 710                 715                 720

Tyr Val Trp Glu Asp Thr Asn Lys Asp Gly Ile Gln Asp Ala Asn Glu
                725                 730                 735

Pro Gly Ile Lys Asp Val Lys Val Thr Leu Lys Asp Ser Thr Gly Lys
            740                 745                 750

Val Ile Gly Thr Thr Thr Thr Asp Ala Ser Gly Lys Tyr Lys Phe Thr
        755                 760                 765

Asp Leu Asp Asn Gly Asn Tyr Thr Val Glu Phe Glu Thr Pro Ala Gly
    770                 775                 780

Tyr Thr Pro Thr Val Lys Asn Thr Thr Ala Glu Asp Lys Asp Ser Asn
785                 790                 795                 800

Gly Leu Thr Thr Thr Gly Val Ile Lys Asp Ala Asp Asn Met Thr Leu
                805                 810                 815

Asp Ser Gly Phe Tyr Lys Thr Pro Lys Tyr Ser Leu Gly Asp Tyr Val
            820                 825                 830

Trp Tyr Asp Ser Asn Lys Asp Gly Lys Gln Asp Ser Thr Glu Lys Gly
        835                 840                 845

Ile Lys Asp Val Lys Val Thr Leu Leu Asn Glu Lys Gly Glu Val Ile
    850                 855                 860

Gly Thr Thr Lys Thr Asp Glu Asn Gly Lys Tyr Arg Phe Asp Asn Leu
865                 870                 875                 880

Asp Ser Gly Lys Tyr Lys Val Ile Phe Glu Lys Pro Ala Gly Leu Thr
                885                 890                 895

Gln Thr Val Thr Asn Thr Thr Glu Asp Asp Lys Asp Ala Asp Gly Gly
            900                 905                 910

Glu Val Asp Val Thr Ile Thr Asp His Asp Asp Phe Thr Leu Asp Asn
        915                 920                 925
```

```
Gly Tyr Phe Glu Glu Asp Thr Ser Asp Ser Asp Ser Asp Ser Asp Ser
    930                 935                 940

Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser
945                 950                 955                 960

Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser
                965                 970                 975

Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser
            980                 985                 990

Asp Ser Asp Ser Asp Ser Asp Ser  Asp Ser Asp Ser Asp  Ser Asp Ser
        995                 1000                1005

Asp Ser  Asp Ser Asp Ser Asp  Ser Asp Ser Asp Ser  Asp Ser Asp
    1010                1015                1020

Ser Asp  Ser Asp Ser Asp Ser  Asp Ser Asp Ser Asp  Ser Asp Ser
    1025                1030                1035

Asp Ser  Asp Ser Asp Ser Asp  Ser Asp Ser Asp Ser  Asp Ser Asp
    1040                1045                1050

Ser Asp  Ser Asp Ser Asp Ser  Asp Ser Asp Ser Asp  Ser Asp Ser
    1055                1060                1065

Asp Ser  Asp Ser Asp Ser Asp  Ser Asp Ser Asp Ser  Asp Ala Gly
    1070                1075                1080

Lys His  Thr Pro Val Lys Pro  Met Ser Thr Thr Lys  Asp His His
    1085                1090                1095

Asn Lys  Ala Lys Ala Leu Pro  Glu Thr Gly Ser Glu  Asn Asn Gly
    1100                1105                1110

Ser Asn  Asn Ala Thr Leu Phe  Gly Gly Leu Phe Ala  Ala Leu Gly
    1115                1120                1125

Ser Leu  Leu Leu Phe Gly Arg  Arg Lys Lys Gln Asn  Lys
    1130                1135                1140
```

<210> 15
<211> 350
<212> PRT
<213> Staphylococcus sp.

<400> 15

```
Met Thr Lys His Tyr Leu Asn Ser Lys Tyr Gln Ser Glu Gln Arg Ser
1               5                  10                  15

Ser Ala Met Lys Lys Ile Thr Met Gly Thr Ala Ser Ile Ile Leu Gly
            20                  25                  30

Ser Leu Val Tyr Ile Gly Ala Asp Ser Gln Gln Val Asn Ala Ala Thr
        35                  40                  45

Glu Ala Thr Asn Ala Thr Asn Asn Gln Ser Thr Gln Val Ser Gln Ala
    50                  55                  60

Thr Ser Gln Pro Ile Asn Phe Gln Val Gln Lys Asp Gly Ser Ser Glu
65                  70                  75                  80

Lys Ser His Met Asp Asp Tyr Met Gln His Pro Gly Lys Val Ile Lys
                85                  90                  95

Gln Asn Asn Lys Tyr Tyr Phe Gln Thr Val Leu Asn Asn Ala Ser Phe
            100                 105                 110

Trp Lys Glu Tyr Lys Phe Tyr Asn Ala Asn Asn Gln Glu Leu Ala Thr
        115                 120                 125

Thr Val Val Asn Asp Asn Lys Lys Ala Asp Thr Arg Thr Ile Asn Val
    130                 135                 140

Ala Val Glu Pro Gly Tyr Lys Ser Leu Thr Thr Lys Val His Ile Val
145                 150                 155                 160

Val Pro Gln Ile Asn Tyr Asn His Arg Tyr Thr Thr His Leu Glu Phe
                165                 170                 175

Glu Lys Ala Ile Pro Thr Leu Ala Asp Ala Ala Lys Pro Asn Asn Val
            180                 185                 190

Lys Pro Val Gln Pro Lys Pro Ala Gln Pro Lys Thr Pro Thr Glu Gln
        195                 200                 205

Thr Lys Pro Val Gln Pro Lys Val Glu Lys Val Lys Pro Thr Val Thr
    210                 215                 220

Thr Thr Ser Lys Val Glu Asp Asn His Ser Thr Lys Val Val Ser Thr
225                 230                 235                 240

Asp Thr Thr Lys Asp Gln Thr Lys Thr Gln Thr Ala His Thr Val Lys
                245                 250                 255
```

```
Thr Ala Gln Thr Ala Gln Glu Gln Asn Lys Val Gln Thr Pro Val Lys
            260                 265                 270

Asp Val Ala Thr Ala Lys Ser Glu Ser Asn Asn Gln Ala Val Ser Asp
        275                 280                 285

Asn Lys Ser Gln Gln Thr Asn Lys Val Thr Lys His Asn Glu Thr Pro
    290                 295                 300

Lys Gln Ala Ser Lys Ala Lys Glu Leu Pro Lys Thr Gly Leu Thr Ser
305                 310                 315                 320

Val Asp Asn Phe Ile Ser Thr Val Ala Phe Ala Thr Leu Ala Leu Leu
                325                 330                 335

Gly Ser Leu Ser Leu Leu Leu Phe Lys Arg Lys Glu Ser Lys
            340                 345                 350
```

<210> 16
<211> 645
<212> PRT
<213> Staphylococcus sp.

<400> 16

```
Met Asn Lys Gln Gln Lys Glu Phe Lys Ser Phe Tyr Ser Ile Arg Lys
1               5                   10                  15

Ser Ser Leu Gly Val Ala Ser Val Ala Ile Ser Thr Leu Leu Leu Leu
            20                  25                  30

Met Ser Asn Gly Glu Ala Gln Ala Ala Ala Glu Glu Thr Gly Gly Thr
        35                  40                  45

Asn Thr Glu Ala Gln Pro Lys Thr Glu Ala Val Ala Ser Pro Thr Thr
    50                  55                  60

Thr Ser Glu Lys Ala Pro Glu Thr Lys Pro Val Ala Asn Ala Val Ser
65                  70                  75                  80

Val Ser Asn Lys Glu Val Glu Ala Pro Thr Ser Glu Thr Lys Glu Ala
                85                  90                  95

Lys Glu Val Lys Glu Val Lys Ala Pro Lys Glu Thr Lys Ala Val Lys
            100                 105                 110

Pro Ala Ala Lys Ala Thr Asn Asn Thr Tyr Pro Ile Leu Asn Gln Glu
        115                 120                 125
```

```
Leu Arg Glu Ala Ile Lys Asn Pro Ala Ile Lys Asp Lys Asp His Ser
    130                 135                 140

Ala Pro Asn Ser Arg Pro Ile Asp Phe Glu Met Lys Lys Glu Asn Gly
145                 150                 155                 160

Glu Gln Gln Phe Tyr His Tyr Ala Ser Ser Val Lys Pro Ala Arg Val
                165                 170                 175

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

Gln Phe Trp Arg Lys Phe Glu Val Tyr Glu Gly Asp Lys Lys Leu Pro
        195                 200                 205

Ile Lys Leu Val Ser Tyr Asp Thr Val Lys Asp Tyr Ala Tyr Ile Arg
    210                 215                 220

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

His Phe Asn Asn Lys Glu Glu Lys Tyr Asp Tyr Thr Leu Met Glu Phe
                245                 250                 255

Ala Gln Pro Ile Tyr Asn Ser Ala Asp Lys Phe Lys Thr Glu Glu Asp
            260                 265                 270

Tyr Lys Ala Glu Lys Leu Leu Ala Pro Tyr Lys Lys Ala Lys Thr Leu
        275                 280                 285

Glu Arg Gln Val Tyr Glu Leu Asn Lys Ile Gln Asp Lys Leu Pro Glu
    290                 295                 300

Lys Leu Lys Ala Glu Tyr Lys Lys Lys Leu Glu Asp Thr Lys Lys Ala
305                 310                 315                 320

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

Pro Thr Asn Glu Lys Met Thr Asp Leu Gln Asp Thr Lys Tyr Val Val
            340                 345                 350

Tyr Glu Ser Val Glu Asn Asn Glu Ser Met Met Asp Thr Phe Val Lys
        355                 360                 365

His Pro Ile Lys Thr Gly Met Leu Asn Gly Lys Lys Tyr Met Val Met
```

370 375 380

Glu Thr Thr Asn Asp Asp Tyr Trp Lys Asp Phe Met Val Glu Gly Gln
385 390 395 400

Arg Val Arg Thr Ile Ser Lys Asp Ala Lys Asn Asn Thr Arg Thr Ile
405 410 415

Ile Phe Pro Tyr Val Glu Gly Lys Thr Leu Tyr Asp Ala Ile Val Lys
420 425 430

Val His Val Lys Thr Ile Asp Tyr Asp Gly Gln Tyr His Val Arg Ile
435 440 445

Val Asp Lys Glu Ala Phe Thr Lys Ala Asn Thr Asp Lys Ser Asn Lys
450 455 460

Lys Glu Gln Gln Asp Asn Ser Ala Lys Lys Glu Ala Thr Pro Ala Thr
465 470 475 480

Pro Ser Lys Pro Thr Pro Ser Pro Val Glu Lys Glu Ser Gln Lys Gln
485 490 495

Asp Ser Gln Lys Asp Asp Asn Lys Gln Leu Pro Ser Val Glu Lys Glu
500 505 510

Asn Asp Ala Ser Ser Glu Ser Gly Lys Asp Lys Thr Pro Ala Thr Lys
515 520 525

Pro Thr Lys Gly Glu Val Glu Ser Ser Ser Thr Thr Pro Thr Lys Val
530 535 540

Val Ser Thr Thr Gln Asn Val Ala Lys Pro Thr Thr Ala Ser Ser Lys
545 550 555 560

Thr Thr Lys Asp Val Val Gln Thr Ser Ala Gly Ser Ser Glu Ala Lys
565 570 575

Asp Ser Ala Pro Leu Gln Lys Ala Asn Ile Lys Asn Thr Asn Asp Gly
580 585 590

His Thr Gln Ser Gln Asn Asn Lys Asn Thr Gln Glu Asn Lys Ala Lys
595 600 605

Ser Leu Pro Gln Thr Gly Glu Glu Ser Asn Lys Asp Met Thr Leu Pro
610 615 620

Leu Met Ala Leu Leu Ala Leu Ser Ser Ile Val Ala Phe Val Leu Pro
625 630 635 640

Arg Lys Arg Lys Asn
645

<210> 17
<211> 80
<212> PRT
<213> Staphylococcus sp.

<400> 17

Met Asn Gln His Val Lys Val Thr Phe Asp Phe Thr Asn Tyr Asn Tyr
1 5 10 15

Gly Thr Tyr Asp Leu Ala Val Pro Ala Tyr Leu Pro Ile Lys Asn Leu
20 25 30

Ile Ala Leu Val Leu Asp Ser Leu Asp Ile Ser Ile Phe Asp Val Asn
35 40 45

Thr Gln Ile Lys Val Met Thr Lys Gly Gln Leu Leu Val Glu Asn Asp
50 55 60

Arg Leu Ile Asp Tyr Gln Ile Ala Asp Gly Asp Ile Leu Lys Leu Leu
65 70 75 80

<210> 18
<211> 877
<212> PRT
<213> Staphylococcus sp.

<400> 18

Met Lys Lys Arg Ile Asp Tyr Leu Ser Asn Lys Gln Asn Lys Tyr Ser
1 5 10 15

Ile Arg Arg Phe Thr Val Gly Thr Thr Ser Val Ile Val Gly Ala Thr
20 25 30

Ile Leu Phe Gly Ile Gly Asn His Gln Ala Gln Ala Ser Glu Gln Ser
35 40 45

Asn Asp Thr Thr Gln Ser Ser Lys Asn Asn Ala Ser Ala Asp Ser Glu
50 55 60

Lys Asn Asn Met Ile Glu Thr Pro Gln Leu Asn Thr Thr Ala Asn Asp
65 70 75 80

Thr Ser Asp Ile Ser Ala Asn Thr Asn Ser Ala Asn Val Asp Ser Thr

85 90 95

Thr Lys Pro Met Ser Thr Gln Thr Ser Asn Thr Thr Thr Thr Glu Pro
100 105 110

Ala Ser Thr Asn Glu Thr Pro Gln Pro Thr Ala Ile Lys Asn Gln Ala
115 120 125

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

Gln Val Asp Asn Lys Thr Thr Asn Asp Ala Asn Ser Ile Ala Thr Asn
145 150 155 160

Ser Glu Leu Lys Asn Ser Gln Thr Leu Asp Leu Pro Gln Ser Ser Pro
165 170 175

Gln Thr Ile Ser Asn Ala Gln Gly Thr Ser Lys Pro Ser Val Arg Thr
180 185 190

Arg Ala Val Arg Ser Leu Ala Val Ala Glu Pro Val Val Asn Ala Ala
195 200 205

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

Lys Leu Glu Lys Thr Thr Phe Asp Pro Asn Gln Ser Gly Asn Thr Phe
225 230 235 240

Met Ala Ala Asn Phe Thr Val Thr Asp Lys Val Lys Ser Gly Asp Tyr
245 250 255

Phe Thr Ala Lys Leu Pro Asp Ser Leu Thr Gly Asn Gly Asp Val Asp
260 265 270

Tyr Ser Asn Ser Asn Asn Thr Met Pro Ile Ala Asp Ile Lys Ser Thr
275 280 285

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

Tyr Thr Phe Val Phe Thr Asp Tyr Val Asn Asn Lys Glu Asn Ile Asn
305 310 315 320

Gly Gln Phe Ser Leu Pro Leu Phe Thr Asp Arg Ala Lys Ala Pro Lys
325 330 335

```
Ser Gly Thr Tyr Asp Ala Asn Ile Asn Ile Ala Asp Glu Met Phe Asn
            340                 345                 350

Asn Lys Ile Thr Tyr Asn Tyr Ser Ser Pro Ile Ala Gly Ile Asp Lys
        355                 360                 365

Pro Asn Gly Ala Asn Ile Ser Ser Gln Ile Ile Gly Val Asp Thr Ala
    370                 375                 380

Ser Gly Gln Asn Thr Tyr Lys Gln Thr Val Phe Val Asn Pro Lys Gln
385                 390                 395                 400

Arg Val Leu Gly Asn Thr Trp Val Tyr Ile Lys Gly Tyr Gln Asp Lys
                405                 410                 415

Ile Glu Glu Ser Ser Gly Lys Val Ser Ala Thr Asp Thr Lys Leu Arg
            420                 425                 430

Ile Phe Glu Val Asn Asp Thr Ser Lys Leu Ser Asp Ser Tyr Tyr Ala
        435                 440                 445

Asp Pro Asn Asp Ser Asn Leu Lys Glu Val Thr Asp Gln Phe Lys Asn
    450                 455                 460

Arg Ile Tyr Tyr Glu His Pro Asn Val Ala Ser Ile Lys Phe Gly Asp
465                 470                 475                 480

Ile Thr Lys Thr Tyr Val Val Leu Val Glu Gly His Tyr Asp Asn Thr
                485                 490                 495

Gly Lys Asn Leu Lys Thr Gln Val Ile Gln Glu Asn Val Asp Pro Val
            500                 505                 510

Thr Asn Arg Asp Tyr Ser Ile Phe Gly Trp Asn Asn Glu Asn Val Val
        515                 520                 525

Arg Tyr Gly Gly Gly Ser Ala Asp Gly Asp Ser Ala Val Asn Pro Lys
    530                 535                 540

Asp Pro Thr Pro Gly Pro Pro Val Asp Pro Glu Pro Ser Pro Asp Pro
545                 550                 555                 560

Glu Pro Glu Pro Thr Pro Asp Pro Glu Pro Ser Pro Asp Pro Glu Pro
                565                 570                 575

Glu Pro Ser Pro Asp Pro Asp Pro Asp Ser Asp Ser Asp Ser Asp Ser
            580                 585                 590
```

```
Gly Ser Asp Ser Asp Ser Gly Ser Asp Ser Asp Ser Glu Ser Asp Ser
        595                 600                 605

Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Glu Ser
    610                 615                 620

Asp Ser Asp Ser Glu Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser
625                 630                 635                 640

Asp Ser Asp Ser Asp Ser Glu Ser Asp Ser Asp Ser Asp Ser Asp Ser
                645                 650                 655

Asp Ser Asp Ser Asp Ser Asp Ser Glu Ser Asp Ser Asp Ser Glu Ser
            660                 665                 670

Asp Ser Glu Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser
        675                 680                 685

Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser
    690                 695                 700

Asp Ser Asp Ser Asp Ser Asp Ser Glu Ser Asp Ser Asp Ser Asp Ser
705                 710                 715                 720

Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser
                725                 730                 735

Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser
            740                 745                 750

Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser
        755                 760                 765

Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser
    770                 775                 780

Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser
785                 790                 795                 800

Asp Ser Asp Ser Arg Val Thr Pro Pro Asn Asn Glu Gln Lys Ala Pro
                805                 810                 815

Ser Asn Pro Lys Gly Glu Val Asn His Ser Asn Lys Val Ser Lys Gln
            820                 825                 830

His Lys Thr Asp Ala Leu Pro Glu Thr Gly Asp Lys Ser Glu Asn Thr
        835                 840                 845
```

```
Asn Ala Thr Leu Phe Gly Ala Met Met Ala Leu Leu Gly Ser Leu Leu
    850                 855                 860

Leu Phe Arg Lys Arg Lys Gln Asp His Lys Glu Lys Ala
865                 870                 875
```

<210> 19
<211> 227
<212> PRT
<213> Staphylococcus sp.

<400> 19

```
Met Lys Asn Ile Leu Lys Val Phe Asn Thr Thr Ile Leu Ala Leu Ile
1               5                   10                  15

Ile Ile Ile Ala Thr Phe Ser Asn Ser Ala Asn Ala Ala Asp Ser Gly
            20                  25                  30

Thr Leu Asn Tyr Glu Val Tyr Lys Tyr Asn Thr Asn Asp Thr Ser Ile
        35                  40                  45

Ala Asn Asp Tyr Phe Asn Lys Pro Ala Lys Tyr Ile Lys Lys Asn Gly
    50                  55                  60

Lys Leu Tyr Val Gln Ile Thr Val Asn His Ser His Trp Ile Thr Gly
65                  70                  75                  80

Met Ser Ile Glu Gly His Lys Glu Asn Ile Ile Ser Lys Asn Thr Ala
                85                  90                  95

Lys Asp Glu Arg Thr Ser Glu Phe Glu Val Ser Lys Leu Asn Gly Lys
            100                 105                 110

Ile Asp Gly Lys Ile Asp Val Tyr Ile Asp Glu Lys Val Asn Gly Lys
        115                 120                 125

Pro Phe Lys Tyr Asp His His Tyr Asn Ile Thr Tyr Lys Phe Asn Gly
    130                 135                 140

Pro Thr Asp Val Ala Gly Ala Asn Ala Pro Gly Lys Asp Asp Lys Asn
145                 150                 155                 160

Ser Ala Ser Gly Ser Asp Lys Gly Ser Asp Gly Thr Thr Thr Gly Gln
                165                 170                 175

Ser Glu Ser Asn Ser Ser Asn Lys Asp Lys Val Glu Asn Pro Gln Thr
            180                 185                 190
```

```
Asn Ala Gly Thr Pro Ala Tyr Ile Tyr Ala Ile Pro Val Ala Ser Leu
        195                 200                 205


Ala Leu Leu Ile Ala Ile Thr Leu Phe Val Arg Lys Lys Ser Lys Gly
    210                 215                 220


Asn Val Glu
225


<210>  20
<211>  635
<212>  PRT
<213>  Staphylococcus sp.

<400>  20

Met Ala Lys Tyr Arg Gly Lys Pro Phe Gln Leu Tyr Val Lys Leu Ser
1               5                   10                  15


Cys Ser Thr Met Met Ala Ser Ser Ile Ile Leu Thr Asn Ile Leu Pro
            20                  25                  30


Tyr Asp Ala Gln Ala Ala Ser Glu Lys Asp Thr Glu Ile Ser Lys Glu
        35                  40                  45


Ile Leu Ser Lys Gln Asp Leu Leu Asp Lys Val Asp Lys Ala Ile Arg
    50                  55                  60


Gln Ile Glu Gln Leu Lys Gln Leu Ser Ala Ser Ser Lys Ala His Tyr
65                  70                  75                  80


Lys Ala Gln Leu Asn Glu Ala Lys Thr Ala Ser Gln Ile Asp Glu Ile
                85                  90                  95


Ile Lys Arg Ala Asn Glu Leu Asp Ser Lys Glu Asn Lys Ser Ser His
            100                 105                 110


Thr Glu Met Asn Gly Gln Ser Asp Ile Asp Ser Lys Leu Asp Gln Leu
        115                 120                 125


Leu Lys Asp Leu Asn Glu Val Ser Ser Asn Val Asp Arg Gly Gln Gln
    130                 135                 140


Ser Gly Glu Asp Asp Leu Asn Ala Met Lys Asn Asp Met Ser Gln Thr
145                 150                 155                 160


Ala Thr Thr Lys Tyr Gly Glu Lys Asp Asp Lys Asn Asp Glu Ala Met
                165                 170                 175
```

```
Val Asn Lys Ala Leu Glu Asp Leu Asp His Leu Asn Gln Gln Ile His
            180                 185                 190

Lys Ser Lys Asp Ala Leu Lys Asp Ala Ser Lys Asp Pro Ala Val Ser
        195                 200                 205

Thr Thr Asp Ser Asn His Glu Val Ala Lys Thr Pro Asn Asn Asp Gly
    210                 215                 220

Ser Gly His Val Val Leu Asn Lys Phe Leu Ser Asn Glu Glu Asn Gln
225                 230                 235                 240

Ser His Ser Asn Gln Leu Thr Asp Lys Leu Gln Gly Ser Asp Lys Ile
                245                 250                 255

Asn His Ala Met Ile Glu Lys Leu Ala Lys Ser Asn Ala Ser Thr Gln
            260                 265                 270

His Tyr Thr Tyr His Lys Leu Asn Thr Leu Gln Ser Leu Asp Gln Arg
        275                 280                 285

Ile Ala Asn Thr Gln Leu Pro Lys Asn Gln Lys Ser Asp Leu Met Ser
    290                 295                 300

Glu Val Asn Lys Thr Lys Glu Arg Ile Lys Ser Gln Arg Asn Ile Ile
305                 310                 315                 320

Leu Glu Glu Leu Ala Arg Thr Asp Asp Lys Lys Tyr Ala Thr Gln Ser
                325                 330                 335

Ile Leu Glu Ser Ile Phe Asn Lys Asp Glu Ala Asp Lys Ile Leu Lys
            340                 345                 350

Asp Ile Arg Val Asp Gly Lys Thr Asp Gln Gln Ile Ala Asp Gln Ile
        355                 360                 365

Thr Arg His Ile Asp Gln Leu Ser Leu Thr Thr Ser Asp Asp Leu Leu
    370                 375                 380

Thr Ser Leu Ile Asp Gln Ser Gln Asp Lys Ser Leu Leu Ile Ser Gln
385                 390                 395                 400

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

Asp Trp Thr Asn Lys Gly Leu Ser Asn Arg Gln Ile Val Asp Gln Leu
```

420 425 430

Lys Lys His Phe Ala Ser Thr Gly Asp Thr Ser Ser Asp Asp Ile Leu
435 440 445

Lys Ala Ile Leu Asn Asn Ala Lys Asp Lys Lys Gln Ala Ile Glu Thr
450 455 460

Ile Leu Ala Thr Arg Ile Glu Arg Gln Lys Ala Lys Leu Leu Ala Asp
465 470 475 480

Leu Ile Thr Lys Ile Glu Thr Asp Gln Asn Lys Ile Phe Asn Leu Val
485 490 495

Lys Ser Ala Leu Asn Gly Lys Ala Asp Asp Leu Leu Asn Leu Gln Lys
500 505 510

Arg Leu Asn Gln Thr Lys Lys Asp Ile Asp Tyr Ile Leu Ser Pro Ile
515 520 525

Val Asn Arg Pro Ser Leu Leu Asp Arg Leu Asn Lys Asn Gly Lys Thr
530 535 540

Thr Asp Leu Asn Lys Leu Ala Asn Leu Met Asn Gln Gly Ser Asn Leu
545 550 555 560

Leu Asp Ser Ile Pro Asp Ile Pro Thr Pro Lys Pro Glu Lys Thr Leu
565 570 575

Thr Leu Gly Lys Gly Asn Gly Leu Leu Ser Gly Leu Leu Asn Ala Asp
580 585 590

Gly Asn Val Ser Leu Pro Lys Ala Gly Glu Thr Ile Lys Glu His Trp
595 600 605

Leu Pro Ile Ser Val Ile Val Gly Ala Met Gly Val Leu Met Ile Trp
610 615 620

Leu Ser Arg Arg Asn Lys Leu Lys Asn Lys Ala
625 630 635

<210> 21
<211> 953
<212> PRT
<213> Staphylococcus sp.

<400> 21

Met Asn Asn Lys Lys Thr Ala Thr Asn Arg Lys Gly Met Ile Pro Asn

```
1               5                  10                  15

Arg Leu Asn Lys Phe Ser Ile Arg Lys Tyr Ser Val Gly Thr Ala Ser
            20                  25                  30

Ile Leu Val Gly Thr Thr Leu Ile Phe Gly Leu Ser Gly His Glu Ala
        35                  40                  45

Lys Ala Ala Glu His Thr Asn Gly Glu Leu Asn Gln Ser Lys Asn Glu
    50                  55                  60

Thr Thr Ala Pro Ser Glu Asn Lys Thr Thr Glu Lys Val Asp Ser Arg
65                  70                  75                  80

Gln Leu Lys Asp Asn Thr Gln Thr Ala Thr Ala Asp Gln Pro Lys Val
                85                  90                  95

Thr Met Ser Asp Ser Ala Thr Val Lys Glu Thr Ser Ser Asn Met Gln
            100                 105                 110

Ser Pro Gln Asn Ala Thr Ala Ser Gln Ser Thr Thr Gln Thr Ser Asn
        115                 120                 125

Val Thr Thr Asn Asp Lys Ser Ser Thr Thr Tyr Ser Asn Glu Thr Asp
    130                 135                 140

Lys Ser Asn Leu Thr Gln Ala Lys Asn Val Ser Thr Thr Pro Lys Thr
145                 150                 155                 160

Thr Thr Ile Lys Gln Arg Ala Leu Asn Arg Met Ala Val Asn Thr Val
                165                 170                 175

Ala Ala Pro Gln Gln Gly Thr Asn Val Asn Asp Lys Val His Phe Thr
            180                 185                 190

Asn Ile Asp Ile Ala Ile Asp Lys Gly His Val Asn Lys Thr Thr Gly
        195                 200                 205

Asn Thr Glu Phe Trp Ala Thr Ser Ser Asp Val Leu Lys Leu Lys Ala
    210                 215                 220

Asn Tyr Thr Ile Asp Asp Ser Val Lys Glu Gly Asp Thr Phe Thr Phe
225                 230                 235                 240

Lys Tyr Gly Gln Tyr Phe Arg Pro Gly Ser Val Arg Leu Pro Ser Gln
                245                 250                 255
```

```
Thr Gln Asn Leu Tyr Asn Ala Gln Gly Asn Ile Ile Ala Lys Gly Ile
            260                 265                 270

Tyr Asp Ser Lys Thr Asn Thr Thr Thr Tyr Thr Phe Thr Asn Tyr Val
        275                 280                 285

Asp Gln Tyr Thr Asn Val Ser Gly Ser Phe Glu Gln Val Ala Phe Ala
    290                 295                 300

Lys Arg Glu Asn Ala Thr Thr Asp Lys Thr Ala Tyr Lys Met Glu Val
305                 310                 315                 320

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

Asn Gln Lys Gly Gln Gln Leu Ile Ser Ser Thr Asn Tyr Ile Asn Asn
            340                 345                 350

Glu Asp Leu Ser Arg Asn Met Thr Val Tyr Val Asn Gln Pro Lys Lys
        355                 360                 365

Thr Tyr Thr Lys Glu Thr Phe Val Thr Asn Leu Thr Gly Tyr Lys Phe
    370                 375                 380

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

Gln Phe Val Asp Ser Phe Thr Pro Asp Thr Ser Lys Leu Lys Asp Val
                405                 410                 415

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

Val Asp Leu Leu Asn Gly Gln Ser Ser Ser Asp Lys Gln Tyr Ile Ile
        435                 440                 445

Gln Gln Val Ala Tyr Pro Asp Asn Ser Ser Thr Asp Asn Gly Lys Ile
    450                 455                 460

Asp Tyr Thr Leu Glu Thr Gln Asn Gly Lys Ser Ser Trp Ser Asn Ser
465                 470                 475                 480

Tyr Ser Asn Val Asn Gly Ser Ser Thr Ala Asn Gly Asp Gln Lys Lys
                485                 490                 495

Tyr Asn Leu Gly Asp Tyr Val Trp Glu Asp Thr Asn Lys Asp Gly Lys
            500                 505                 510
```

```
Gln Asp Ala Asn Glu Lys Gly Ile Lys Gly Val Tyr Val Ile Leu Lys
        515                 520                 525

Asp Ser Asn Gly Lys Glu Leu Asp Arg Thr Thr Thr Asp Glu Asn Gly
    530                 535                 540

Lys Tyr Gln Phe Thr Gly Leu Ser Asn Gly Thr Tyr Ser Val Glu Phe
545                 550                 555                 560

Ser Thr Pro Ala Gly Tyr Thr Pro Thr Thr Ala Asn Ala Gly Thr Asp
                565                 570                 575

Asp Ala Val Asp Ser Asp Gly Leu Thr Thr Thr Gly Val Ile Lys Asp
            580                 585                 590

Ala Asp Asn Met Thr Leu Asp Ser Gly Phe Tyr Lys Thr Pro Lys Tyr
        595                 600                 605

Ser Leu Gly Asp Tyr Val Trp Tyr Asp Ser Asn Lys Asp Gly Lys Gln
    610                 615                 620

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

Glu Lys Gly Glu Val Ile Gly Thr Thr Glu Thr Asp Glu Asn Gly Lys
                645                 650                 655

Tyr Arg Phe Asp Asn Leu Asp Ser Gly Lys Tyr Lys Val Ile Phe Glu
            660                 665                 670

Lys Pro Ala Gly Leu Thr Gln Thr Gly Thr Asn Thr Thr Glu Asp Asp
        675                 680                 685

Lys Asp Ala Asp Gly Gly Glu Val Asp Val Thr Ile Thr Asp His Asp
    690                 695                 700

Asp Phe Thr Leu Asp Asn Gly Tyr Tyr Glu Glu Glu Thr Ser Asp Ser
705                 710                 715                 720

Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser
                725                 730                 735

Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser
            740                 745                 750

Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser
        755                 760                 765
```

```
Asp Ser Asp Ser Glu Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser
    770                 775                 780

Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser
785                 790                 795                 800

Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser
                805                 810                 815

Asp Ser Asp Ser Asp Ser Asp Asn Asp Ser Asp Ser Asp Ser Asp Ser
            820                 825                 830

Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser
        835                 840                 845

Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser
    850                 855                 860

Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser
865                 870                 875                 880

Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ala Gly Lys
                885                 890                 895

His Thr Pro Thr Lys Pro Met Ser Thr Val Lys Asp Gln His Lys Thr
            900                 905                 910

Ala Lys Ala Leu Pro Glu Thr Gly Ser Glu Asn Asn Asn Ser Asn Asn
        915                 920                 925

Gly Thr Leu Phe Gly Gly Leu Phe Ala Ala Leu Gly Ser Leu Leu Leu
    930                 935                 940

Phe Gly Arg Arg Lys Lys Gln Asn Lys
945                 950
```

<210> 22
<211> 989
<212> PRT
<213> Staphylococcus sp.

<400> 22

```
Met Asn Met Lys Lys Lys Glu Lys His Ala Ile Arg Lys Lys Ser Ile
1               5                   10                  15

Gly Val Ala Ser Val Leu Val Gly Thr Leu Ile Gly Phe Gly Leu Leu
            20                  25                  30
```

```
Ser Ser Lys Glu Ala Asp Ala Ser Glu Asn Ser Val Thr Gln Ser Asp
        35                  40                  45

Ser Ala Ser Asn Glu Ser Lys Ser Asn Asp Ser Ser Ser Val Ser Ala
    50                  55                  60

Ala Pro Lys Thr Asp Asp Thr Asn Val Ser Asp Thr Lys Thr Ser Ser
65                  70                  75                  80

Asn Thr Asn Asn Gly Glu Thr Ser Val Ala Gln Asn Pro Ala Gln Gln
                85                  90                  95

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

Val Thr Gly Glu Ala Thr Thr Thr Thr Thr Asn Gln Ala Asn Thr Pro
        115                 120                 125

Ala Thr Thr Gln Ser Ser Asn Thr Asn Ala Glu Glu Leu Val Asn Gln
    130                 135                 140

Thr Ser Asn Glu Thr Thr Ser Asn Asp Thr Asn Thr Val Ser Ser Val
145                 150                 155                 160

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

Asp Thr Ser Thr Glu Ala Thr Pro Ser Asn Asn Glu Ser Ala Pro Gln
            180                 185                 190

Asn Thr Asp Ala Ser Asn Lys Asp Val Val Ser Gln Ala Val Asn Pro
        195                 200                 205

Ser Thr Pro Arg Met Arg Ala Phe Ser Leu Ala Ala Val Ala Ala Asp
    210                 215                 220

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

Val Thr Ile Asp Ser Gly Thr Thr Val Tyr Pro His Gln Ala Gly Tyr
                245                 250                 255

Val Lys Leu Asn Tyr Gly Phe Ser Val Pro Asn Ser Ala Val Lys Gly
            260                 265                 270

Asp Thr Phe Lys Ile Thr Val Pro Lys Glu Leu Asn Leu Asn Gly Val
```

275 280 285

Thr Ser Thr Ala Lys Val Pro Pro Ile Met Ala Gly Asp Gln Val Leu
290 295 300

Ala Asn Gly Val Ile Asp Ser Asp Gly Asn Val Ile Tyr Thr Phe Thr
305 310 315 320

Asp Tyr Val Asp Asn Lys Glu Asn Val Thr Ala Asn Ile Thr Met Pro
325 330 335

Ala Tyr Ile Asp Pro Glu Asn Val Thr Lys Thr Gly Asn Val Thr Leu
340 345 350

Thr Thr Gly Ile Gly Thr Asn Thr Ala Ser Lys Thr Val Leu Ile Asp
355 360 365

Tyr Glu Lys Tyr Gly Gln Phe His Asn Leu Ser Ile Lys Gly Thr Ile
370 375 380

Asp Gln Ile Asp Lys Thr Asn Asn Thr Tyr Arg Gln Thr Ile Tyr Val
385 390 395 400

Asn Pro Ser Gly Asp Asn Val Val Leu Pro Ala Leu Thr Gly Asn Leu
405 410 415

Ile Pro Asn Thr Lys Ser Asn Ala Leu Ile Asp Ala Lys Asn Thr Asp
420 425 430

Ile Lys Val Tyr Arg Val Asp Asn Ala Asn Asp Leu Ser Glu Ser Tyr
435 440 445

Tyr Val Asn Pro Ser Asp Phe Glu Asp Val Thr Asn Gln Val Arg Ile
450 455 460

Ser Phe Pro Asn Ala Asn Gln Tyr Lys Val Glu Phe Pro Thr Asp Asp
465 470 475 480

Asp Gln Ile Thr Thr Pro Tyr Ile Val Val Val Asn Gly His Ile Asp
485 490 495

Pro Ala Ser Thr Gly Asp Leu Ala Leu Arg Ser Thr Phe Tyr Gly Tyr
500 505 510

Asp Ser Asn Phe Ile Trp Arg Ser Met Ser Trp Asp Asn Glu Val Ala
515 520 525

```
Phe Asn Asn Gly Ser Gly Ser Gly Asp Gly Ile Asp Lys Pro Val Val
    530                 535                 540

Pro Glu Gln Pro Asp Glu Pro Gly Glu Ile Glu Pro Ile Pro Glu Asp
545                 550                 555                 560

Ser Asp Ser Asp Pro Gly Ser Asp Ser Gly Ser Asp Ser Asn Ser Asp
                565                 570                 575

Ser Gly Ser Asp Ser Gly Ser Asp Ser Thr Ser Asp Ser Gly Ser Asp
            580                 585                 590

Ser Ala Ser Asp Ser Asp Ser Ala Ser Asp Ser Asp Ser Ala Ser Asp
        595                 600                 605

Ser Asp Ser Ala Ser Asp Ser Asp Ser Ala Ser Asp Ser Asp Ser Ala
    610                 615                 620

Ser Asp Ser Asp Ser Ala Ser Asp Ser Asp Ser Ala Ser Asp Ser Asp
625                 630                 635                 640

Ser Ala Ser Asp Ser Asp Ser Ala Ser Asp Ser Asp Ser Ala Ser Asp
                645                 650                 655

Ser Asp Ser Ala Ser Asp Ser Asp Ser Ala Ser Asp Ser Asp Ser Asp
            660                 665                 670

Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp
        675                 680                 685

Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp
    690                 695                 700

Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp
705                 710                 715                 720

Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp
                725                 730                 735

Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp
            740                 745                 750

Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp
        755                 760                 765

Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp
    770                 775                 780
```

```
Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp
785                 790                 795                 800

Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp
                805                 810                 815

Ser Asp Ser Asp Ser Ala Ser Asp Ser Asp Ser Asp Ser Asp Ser Glu
            820                 825                 830

Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp
        835                 840                 845

Ser Asp Ser Asp Ser Asp Ser Glu Ser Asp Ser Asp Ser Asp Ser Asp
    850                 855                 860

Ser Asp Ser Glu Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp Ser Asp
865                 870                 875                 880

Ser Ala Ser Asp Ser Asp Ser Gly Ser Asp Ser Asp Ser Ser Ser Asp
                885                 890                 895

Ser Asp Ser Asp Ser Thr Ser Asp Thr Gly Ser Asp Asn Asp Ser Asp
            900                 905                 910

Ser Asp Ser Asn Ser Asp Ser Glu Ser Gly Ser Asn Asn Asn Val Val
        915                 920                 925

Pro Pro Asn Ser Pro Lys Asn Gly Thr Asn Ala Ser Asn Lys Asn Glu
    930                 935                 940

Ala Lys Asp Ser Lys Glu Pro Leu Pro Asp Thr Gly Ser Glu Asp Glu
945                 950                 955                 960

Ala Asn Thr Ser Leu Ile Trp Gly Leu Leu Ala Ser Leu Gly Ser Leu
                965                 970                 975

Leu Leu Phe Arg Arg Lys Lys Glu Asn Lys Asp Lys Lys
            980                 985


<210>  23
<211>  584
<212>  PRT
<213>  Staphylococcus sp.

<400>  23

Met Lys Phe Lys Ser Leu Ile Thr Thr Thr Leu Ala Leu Gly Val Leu
1               5                   10                  15
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```
Ala Ser Thr Gly Ala Asn Phe Asn Asn Asn Glu Ala Ser Ala Ala Ala
            20                  25                  30

Lys Pro Leu Asp Lys Ser Ser Ser Ser Leu His His Gly Tyr Ser Lys
        35                  40                  45

Val His Val Pro Tyr Ala Ile Thr Val Asn Gly Thr Ser Gln Asn Ile
    50                  55                  60

Leu Ser Ser Leu Thr Phe Asn Lys Asn Gln Asn Ile Ser Tyr Lys Asp
65                  70                  75                  80

Leu Glu Asp Arg Val Lys Ser Val Leu Lys Ser Asp Arg Gly Ile Ser
                85                  90                  95

Asp Ile Asp Leu Arg Leu Ser Lys Gln Ala Lys Tyr Thr Val Tyr Phe
            100                 105                 110

Lys Asn Gly Thr Lys Lys Val Ile Asp Leu Lys Ala Gly Ile Tyr Thr
        115                 120                 125

Ala Asp Leu Ile Asn Thr Ser Glu Ile Lys Ala Ile Asn Ile Asn Val
    130                 135                 140

Asp Thr Lys Lys Gln Val Glu Asp Lys Lys Lys Asp Lys Ala Asn Tyr
145                 150                 155                 160

Gln Val Pro Tyr Thr Ile Thr Val Asn Gly Thr Ser Gln Asn Ile Leu
                165                 170                 175

Ser Asn Leu Thr Phe Asn Lys Asn Gln Asn Ile Ser Tyr Lys Asp Leu
            180                 185                 190

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

Val Asp Leu Arg Leu Ser Lys Gln Ala Lys Tyr Thr Val Asn Phe Lys
    210                 215                 220

Asn Gly Thr Lys Lys Val Ile Asp Leu Lys Ser Gly Ile Tyr Thr Ala
225                 230                 235                 240

Asn Leu Ile Asn Ser Ser Asp Ile Lys Ser Ile Asn Ile Asn Val Asp
                245                 250                 255

Thr Lys Lys His Ile Glu Asn Lys Ala Lys Arg Asn Tyr Gln Val Pro
            260                 265                 270
```

```
Tyr Ser Ile Asn Leu Asn Gly Thr Ser Thr Asn Ile Leu Ser Asn Leu
        275                 280                 285

Ser Phe Ser Asn Lys Pro Trp Thr Asn Tyr Lys Asn Leu Thr Ser Gln
    290                 295                 300

Ile Lys Ser Val Leu Lys His Asp Arg Gly Ile Ser Glu Gln Asp Leu
305                 310                 315                 320

Lys Tyr Ala Lys Lys Ala Tyr Tyr Thr Val Tyr Phe Lys Asn Gly Gly
                325                 330                 335

Lys Arg Ile Leu Gln Leu Asn Ser Lys Asn Tyr Thr Ala Asn Leu Val
            340                 345                 350

His Ala Lys Asp Val Lys Arg Ile Glu Ile Thr Val Lys Thr Gly Thr
        355                 360                 365

Lys Ala Lys Ala Asp Arg Tyr Val Pro Tyr Thr Ile Ala Val Asn Gly
    370                 375                 380

Thr Ser Thr Pro Ile Leu Ser Asp Leu Lys Phe Thr Gly Asp Pro Arg
385                 390                 395                 400

Val Gly Tyr Lys Asp Ile Ser Lys Lys Val Lys Ser Val Leu Lys His
                405                 410                 415

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

Tyr Thr Val His Phe Lys Asn Gly Thr Lys Lys Val Ile Asn Ile Asn
        435                 440                 445

Ser Asn Ile Ser Gln Leu Asn Leu Leu Tyr Val Gln Asp Ile Lys Lys
    450                 455                 460

Ile Asp Ile Asp Val Lys Thr Gly Thr Lys Ala Lys Ala Asp Ser Tyr
465                 470                 475                 480

Val Pro Tyr Thr Ile Ala Val Asn Gly Thr Ser Thr Pro Ile Leu Ser
                485                 490                 495

Lys Leu Lys Ile Ser Asn Lys Gln Leu Ile Ser Tyr Lys Tyr Leu Asn
            500                 505                 510

Asp Lys Val Lys Ser Val Leu Lys Ser Glu Arg Gly Ile Ser Asp Leu
```

515 520 525

Asp Leu Lys Phe Ala Lys Gln Ala Lys Tyr Thr Val Tyr Phe Lys Asn
530 535 540

Gly Lys Lys Gln Val Val Asn Leu Lys Ser Asp Ile Phe Thr Pro Asn
545 550 555 560

Leu Phe Ser Ala Lys Asp Ile Lys Lys Ile Asp Ile Asp Val Lys Gln
565 570 575

Tyr Thr Lys Ser Lys Lys Asn Lys
580

<210> 24
<211> 10419
<212> PRT
<213> Staphylococcus sp.

<400> 24

Met Asn Tyr Arg Asp Lys Ile Gln Lys Phe Ser Ile Arg Lys Tyr Thr
1 5 10 15

Val Gly Thr Phe Ser Thr Val Ile Ala Thr Leu Val Phe Leu Gly Phe
20 25 30

Asn Thr Ser Gln Ala His Ala Ala Glu Thr Asn Gln Pro Ala Ser Val
35 40 45

Val Lys Gln Lys Gln Gln Ser Asn Asn Glu Gln Thr Glu Asn Arg Glu
50 55 60

Ser Gln Val Gln Asn Ser Gln Asn Ser Gln Asn Gly Gln Ser Leu Ser
65 70 75 80

Ala Thr His Glu Asn Glu Gln Pro Asn Ile Ser Gln Ala Asn Leu Val
85 90 95

Asp Gln Lys Val Ala Gln Ser Ser Thr Thr Asn Asp Glu Gln Pro Ala
100 105 110

Ser Gln Asn Val Asn Thr Lys Lys Asp Ser Ala Thr Ala Ala Thr Thr
115 120 125

Gln Pro Asp Lys Glu Gln Ser Lys His Lys Gln Asn Glu Ser Gln Ser
130 135 140

Ala Asn Lys Asn Gly Asn Asp Asn Arg Ala Ala His Val Glu Asn His

```
145                 150                 155                 160

Glu Ala Asn Val Val Thr Ala Ser Asp Ser Ser Asp Asn Gly Asn Val
                165                 170                 175

Gln His Asp Arg Asn Glu Leu Gln Ala Phe Phe Asp Ala Asn Tyr His
            180                 185                 190

Asp Tyr Arg Phe Ile Asp Arg Glu Asn Ala Asp Ser Gly Thr Phe Asn
        195                 200                 205

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

Asp Pro Ile Asn Asn Lys Asp Leu Gln Leu Ala Tyr Lys Glu Leu Glu
225                 230                 235                 240

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

Arg Arg Ser Asn Arg Ile Gln Thr Arg Ser Val Glu Ser Arg Ala Ala
            260                 265                 270

Glu Pro Arg Ser Val Ser Asp Tyr Gln Asn Ala Asn Ser Ser Tyr Tyr
        275                 280                 285

Val Glu Asn Ala Asn Asp Gly Ser Gly Tyr Pro Val Gly Thr Tyr Ile
    290                 295                 300

Asn Ala Ser Ser Lys Gly Ala Pro Tyr Asn Leu Pro Thr Thr Pro Trp
305                 310                 315                 320

Asn Thr Leu Lys Ala Ser Asp Ser Lys Glu Ile Ala Leu Met Thr Ala
                325                 330                 335

Lys Gln Thr Gly Asp Gly Tyr Gln Trp Val Ile Lys Phe Asn Lys Gly
            340                 345                 350

His Ala Pro His Gln Asn Met Ile Phe Trp Phe Ala Leu Pro Ala Asp
        355                 360                 365

Gln Val Pro Val Gly Arg Thr Asp Phe Val Thr Val Asn Ser Asp Gly
    370                 375                 380

Thr Asn Val Gln Trp Ser His Gly Ala Gly Ala Gly Ala Asn Lys Pro
385                 390                 395                 400
```

```
Leu Gln Gln Met Trp Glu Tyr Gly Val Asn Asp Pro His Arg Ser His
               405                 410                 415

Asp Phe Lys Ile Arg Asn Arg Ser Gly Gln Val Ile Tyr Asp Trp Pro
           420                 425                 430

Thr Val His Ile Tyr Ser Leu Glu Asp Leu Ser Arg Ala Ser Asp Tyr
       435                 440                 445

Phe Ser Glu Ala Gly Ala Thr Pro Ala Thr Lys Ala Phe Gly Arg Gln
   450                 455                 460

Asn Phe Glu Tyr Ile Asn Gly Gln Lys Pro Ala Glu Ser Pro Gly Val
465                 470                 475                 480

Pro Lys Val Tyr Thr Phe Ile Gly Gln Gly Asp Ala Ser Tyr Thr Ile
               485                 490                 495

Ser Phe Lys Thr Gln Gly Pro Thr Val Asn Lys Leu Tyr Tyr Ala Ala
           500                 505                 510

Gly Gly Arg Ala Leu Glu Tyr Asn Gln Leu Phe Met Tyr Ser Gln Leu
       515                 520                 525

Tyr Val Glu Ser Thr Gln Asp His Gln Gln Arg Leu Asn Gly Leu Arg
   530                 535                 540

Gln Val Val Asn Arg Thr Tyr Arg Ile Gly Thr Thr Lys Arg Val Glu
545                 550                 555                 560

Val Ser Gln Gly Asn Val Gln Thr Lys Lys Val Leu Glu Ser Thr Asn
               565                 570                 575

Leu Asn Ile Asp Asp Phe Val Asp Asp Pro Leu Ser Tyr Val Lys Thr
           580                 585                 590

Pro Ser Asn Lys Val Leu Gly Phe Tyr Ser Asn Asn Ala Asn Thr Asn
       595                 600                 605

Ala Phe Arg Pro Gly Gly Ala Gln Gln Leu Asn Glu Tyr Gln Leu Ser
   610                 615                 620

Gln Leu Phe Thr Asp Gln Lys Leu Gln Glu Ala Ala Arg Thr Arg Asn
625                 630                 635                 640

Pro Ile Arg Leu Met Ile Gly Phe Asp Tyr Pro Asp Ala Tyr Gly Asn
               645                 650                 655
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Ser Glu Thr Leu Val Pro Val Asn Leu Thr Val Leu Pro Glu Ile Gln
660 665 670

His Asn Ile Lys Phe Phe Lys Asn Asp Asp Thr Gln Asn Ile Ala Glu
675 680 685

Lys Pro Phe Ser Lys Gln Ala Gly His Pro Val Phe Tyr Val Tyr Ala
690 695 700

Gly Asn Gln Gly Asn Ala Ser Val Asn Leu Gly Gly Ser Val Thr Ser
705 710 715 720

Ile Gln Pro Leu Arg Ile Asn Leu Thr Ser Asn Glu Asn Phe Thr Asp
725 730 735

Lys Asp Trp Gln Ile Thr Gly Ile Pro Arg Thr Leu His Ile Glu Asn
740 745 750

Ser Thr Asn Arg Pro Asn Asn Ala Arg Glu Arg Asn Ile Glu Leu Val
755 760 765

Gly Asn Leu Leu Pro Gly Asp Tyr Phe Gly Thr Ile Arg Phe Gly Arg
770 775 780

Lys Glu Gln Leu Phe Glu Ile Arg Val Lys Pro His Thr Pro Thr Ile
785 790 795 800

Thr Thr Thr Ala Glu Gln Leu Arg Gly Thr Ala Leu Gln Lys Val Pro
805 810 815

Val Asn Ile Ser Gly Ile Pro Leu Asp Pro Ser Ala Leu Val Tyr Leu
820 825 830

Val Ala Pro Thr Asn Gln Thr Thr Asn Gly Gly Ser Glu Ala Asp Gln
835 840 845

Ile Pro Ser Gly Tyr Thr Ile Leu Ala Thr Gly Thr Pro Asp Gly Val
850 855 860

His Asn Thr Ile Thr Ile Arg Pro Gln Asp Tyr Val Val Phe Ile Pro
865 870 875 880

Pro Val Gly Lys Gln Ile Arg Ala Val Val Tyr Tyr Asn Lys Val Val
885 890 895

Ala Ser Asn Met Ser Asn Ala Val Thr Ile Leu Pro Asp Asp Ile Pro
900 905 910

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Pro Thr Ile Asn Asn Pro Val Gly Ile Asn Ala Lys Tyr Tyr Arg Gly
        915                 920                 925

Asp Glu Val Asn Phe Thr Met Gly Val Ser Asp Arg His Ser Gly Ile
    930                 935                 940

Lys Asn Thr Thr Ile Thr Thr Leu Pro Asn Gly Trp Thr Ser Asn Leu
945                 950                 955                 960

Thr Lys Ala Asp Lys Asn Asn Gly Ser Leu Ser Ile Thr Gly Arg Val
                965                 970                 975

Ser Met Asn Gln Ala Phe Asn Ser Asp Ile Thr Phe Lys Val Ser Ala
            980                 985                 990

Thr Asp Asn Val Asn Asn Thr Thr  Asn Asp Ser Gln Ser  Lys His Val
        995                 1000                1005

Ser Ile  His Val Gly Lys Ile  Ser Glu Asp Ala His  Pro Ile Val
    1010                1015                1020

Leu Gly  Asn Thr Glu Lys Val  Val Val Val Asn Pro  Thr Ala Val
    1025                1030                1035

Ser Asn  Asp Glu Lys Gln Ser  Ile Ile Thr Ala Phe  Met Asn Lys
    1040                1045                1050

Asn Gln  Asn Ile Arg Gly Tyr  Leu Ala Ser Thr Asp  Pro Val Thr
    1055                1060                1065

Val Asp  Asn Asn Gly Asn Val  Thr Leu His Tyr Arg  Asp Gly Ser
    1070                1075                1080

Ser Thr  Thr Leu Asp Ala Thr  Asn Val Met Thr Tyr  Glu Pro Val
    1085                1090                1095

Val Lys  Pro Glu Tyr Gln Thr  Val Asn Ala Ala Lys  Thr Ala Thr
    1100                1105                1110

Val Thr  Ile Ala Lys Gly Gln  Ser Phe Ser Ile Gly  Asp Ile Lys
    1115                1120                1125

Gln Tyr  Phe Thr Leu Ser Asn  Gly Gln Pro Ile Pro  Ser Gly Thr
    1130                1135                1140

Phe Thr  Asn Ile Thr Ser Asp  Arg Thr Ile Pro Thr  Ala Gln Glu
```

1145 1150 1155

Val Ser Gln Met Asn Ala Gly Thr Gln Leu Tyr His Ile Thr Ala
1160 1165 1170

Thr Asn Ala Tyr His Lys Asp Ser Glu Asp Phe Tyr Ile Ser Leu
1175 1180 1185

Lys Ile Ile Asp Val Lys Gln Pro Glu Gly Asp Gln Arg Val Tyr
1190 1195 1200

Arg Thr Ser Thr Tyr Asp Leu Thr Thr Asp Glu Ile Ser Lys Val
1205 1210 1215

Lys Gln Ala Phe Ile Asn Ala Asn Arg Asp Val Ile Thr Leu Ala
1220 1225 1230

Glu Gly Asp Ile Ser Val Thr Asn Thr Pro Asn Gly Ala Asn Val
1235 1240 1245

Ser Thr Ile Thr Val Asn Ile Asn Lys Gly Arg Leu Thr Lys Ser
1250 1255 1260

Phe Ala Ser Asn Leu Ala Asn Met Asn Phe Leu Arg Trp Val Asn
1265 1270 1275

Phe Pro Gln Asp Tyr Thr Val Thr Trp Thr Asn Ala Lys Ile Ala
1280 1285 1290

Asn Arg Pro Thr Asp Gly Gly Leu Ser Trp Ser Asp Asp His Lys
1295 1300 1305

Ser Leu Ile Tyr Arg Tyr Asp Ala Thr Leu Gly Thr Gln Ile Thr
1310 1315 1320

Thr Asn Asp Ile Leu Thr Met Leu Lys Ala Thr Thr Thr Val Pro
1325 1330 1335

Gly Leu Arg Asn Asn Ile Thr Gly Asn Glu Lys Ser Gln Ala Glu
1340 1345 1350

Ala Gly Gly Arg Pro Asn Phe Arg Thr Thr Gly Tyr Ser Gln Ser
1355 1360 1365

Asn Ala Thr Thr Asp Gly Gln Arg Gln Phe Thr Leu Asn Gly Gln
1370 1375 1380

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Val Ile  Gln Val Leu Asp Ile  Ile Asn Pro Ser Asn  Gly Tyr Gly
    1385                1390                1395

Gly Gln  Pro Val Thr Asn Ser  Asn Thr Arg Ala Asn  His Ser Asn
    1400                1405                1410

Ser Thr  Val Val Asn Val Asn  Glu Pro Ala Ala Asn  Gly Ala Gly
    1415                1420                1425

Ala Phe  Thr Ile Asp His Val  Val Lys Ser Asn Ser  Thr His Asn
    1430                1435                1440

Ala Ser  Asp Ala Val Tyr Lys  Ala Gln Leu Tyr Leu  Thr Pro Tyr
    1445                1450                1455

Gly Pro  Lys Gln Tyr Val Glu  His Leu Asn Gln Asn  Thr Gly Asn
    1460                1465                1470

Thr Thr  Asp Ala Ile Asn Ile  Tyr Phe Val Pro Ser  Asp Leu Val
    1475                1480                1485

Asn Pro  Thr Ile Ser Val Gly  Asn Tyr Thr Asn His  Gln Val Phe
    1490                1495                1500

Ser Gly  Glu Thr Phe Thr Asn  Thr Ile Thr Ala Asn  Asp Asn Phe
    1505                1510                1515

Gly Val  Gln Ser Val Thr Val  Pro Asn Thr Ser Gln  Ile Thr Gly
    1520                1525                1530

Thr Val  Asp Asn Asn His Gln  His Val Ser Ala Thr  Ala Pro Asn
    1535                1540                1545

Val Thr  Ser Ala Thr Asn Lys  Thr Ile Asn Leu Leu  Ala Thr Asp
    1550                1555                1560

Thr Ser  Gly Asn Thr Ala Thr  Thr Ser Phe Asn Val  Thr Val Lys
    1565                1570                1575

Pro Leu  Arg Asp Lys Tyr Arg  Val Gly Thr Ser Ser  Thr Ala Ala
    1580                1585                1590

Asn Pro  Val Arg Ile Ala Asn  Ile Ser Asn Asn Ala  Thr Val Ser
    1595                1600                1605

Gln Ala  Asp Gln Thr Thr Ile  Ile Asn Ser Leu Thr  Phe Thr Glu
    1610                1615                1620
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Thr Val  Pro Asn Arg Ser Tyr  Ala Arg Ala Ser Ala  Asn Glu Ile
    1625                1630                1635

Thr Ser  Lys Thr Val Ser Asn  Val Ser Arg Thr Gly  Asn Asn Ala
    1640                1645                1650

Asn Val  Thr Val Thr Val Thr  Tyr Gln Asp Gly Thr  Thr Ser Thr
    1655                1660                1665

Val Thr  Val Pro Val Lys His  Val Ile Pro Glu Ile  Val Ala His
    1670                1675                1680

Ser His  Tyr Thr Val Gln Gly  Gln Asp Phe Pro Ala  Gly Asn Gly
    1685                1690                1695

Ser Ser  Ala Ser Asp Tyr Phe  Lys Leu Ser Asn Gly  Ser Asp Ile
    1700                1705                1710

Ala Asp  Ala Thr Ile Thr Trp  Val Ser Gly Gln Ala  Pro Asn Lys
    1715                1720                1725

Asp Asn  Thr Arg Ile Gly Glu  Asp Ile Thr Val Thr  Ala His Ile
    1730                1735                1740

Leu Ile  Asp Gly Glu Thr Thr  Pro Ile Thr Lys Thr  Ala Thr Tyr
    1745                1750                1755

Lys Val  Val Arg Thr Val Pro  Lys His Val Phe Glu  Thr Ala Arg
    1760                1765                1770

Gly Val  Leu Tyr Pro Gly Val  Ser Asp Met Tyr Asp  Ala Lys Gln
    1775                1780                1785

Tyr Val  Lys Pro Val Asn Asn  Ser Trp Ser Thr Asn  Ala Gln His
    1790                1795                1800

Met Asn  Phe Gln Phe Val Gly  Thr Tyr Gly Pro Asn  Lys Asp Val
    1805                1810                1815

Val Gly  Ile Ser Thr Arg Leu  Ile Arg Val Thr Tyr  Asp Asn Arg
    1820                1825                1830

Gln Thr  Glu Asp Leu Thr Ile  Leu Ser Lys Val Lys  Pro Asp Pro
    1835                1840                1845

Pro Arg  Ile Asp Ala Asn Ser  Val Thr Tyr Lys Ala  Gly Leu Thr
    1850                1855                1860
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Asn Gln  Glu Ile Lys Val Asn  Asn Val Leu Asn Asn  Ser Ser Val
    1865                1870                1875

Lys Leu  Phe Lys Ala Asp Asn  Thr Pro Leu Asn Val  Thr Asn Ile
    1880                1885                1890

Thr His  Gly Ser Gly Phe Ser  Ser Val Val Thr Val  Ser Asp Ala
    1895                1900                1905

Leu Pro  Asn Gly Gly Ile Lys  Ala Lys Ser Ser Ile  Ser Met Asn
    1910                1915                1920

Asn Val  Thr Tyr Thr Thr Gln  Asp Glu His Gly Gln  Val Val Thr
    1925                1930                1935

Val Thr  Arg Asn Glu Ser Val  Asp Ser Asn Asp Ser  Ala Thr Val
    1940                1945                1950

Thr Val  Thr Pro Gln Leu Gln  Ala Thr Thr Glu Gly  Ala Val Phe
    1955                1960                1965

Ile Lys  Gly Gly Asp Gly Phe  Asp Phe Gly His Val  Glu Arg Phe
    1970                1975                1980

Ile Gln  Asn Pro Pro His Gly  Ala Thr Val Ala Trp  His Asp Ser
    1985                1990                1995

Pro Asp  Thr Trp Lys Asn Thr  Val Gly Asn Thr His  Lys Thr Ala
    2000                2005                2010

Val Val  Thr Leu Pro Asn Gly  Gln Gly Thr Arg Asn  Val Glu Val
    2015                2020                2025

Pro Val  Lys Val Tyr Pro Val  Ala Asn Ala Lys Ala  Pro Ser Arg
    2030                2035                2040

Asp Val  Lys Gly Gln Asn Leu  Thr Asn Gly Thr Asp  Ala Met Asn
    2045                2050                2055

Tyr Ile  Thr Phe Asp Pro Asn  Thr Asn Thr Asn Gly  Ile Thr Ala
    2060                2065                2070

Ala Trp  Ala Asn Arg Gln Gln  Pro Asn Asn Gln Gln  Ala Gly Val
    2075                2080                2085

Gln His  Leu Asn Val Asp Val  Thr Tyr Pro Gly Ile  Ser Ala Ala
```

2090 2095 2100

Lys Arg Val Pro Val Thr Val Asn Val Tyr Gln Phe Glu Phe Pro
2105 2110 2115

Gln Thr Thr Tyr Thr Thr Thr Val Gly Gly Thr Leu Ala Ser Gly
2120 2125 2130

Thr Gln Ala Ser Gly Tyr Ala His Met Gln Asn Ala Thr Gly Leu
2135 2140 2145

Pro Thr Asp Gly Phe Thr Tyr Lys Trp Asn Arg Asp Thr Thr Gly
2150 2155 2160

Thr Asn Asp Ala Asn Trp Ser Ala Met Asn Lys Pro Asn Val Ala
2165 2170 2175

Lys Val Val Asn Ala Lys Tyr Asp Val Ile Tyr Asn Gly His Thr
2180 2185 2190

Phe Ala Thr Ser Leu Pro Ala Lys Phe Val Val Lys Asp Val Gln
2195 2200 2205

Pro Ala Lys Pro Thr Val Thr Glu Thr Ala Ala Gly Ala Ile Thr
2210 2215 2220

Ile Ala Pro Gly Ala Asn Gln Thr Val Asn Thr His Ala Gly Asn
2225 2230 2235

Val Thr Thr Tyr Ala Asp Lys Leu Val Ile Lys Arg Asn Gly Asn
2240 2245 2250

Val Val Thr Thr Phe Thr Arg Arg Asn Asn Thr Ser Pro Trp Val
2255 2260 2265

Lys Glu Ala Ser Ala Ala Thr Val Ala Gly Ile Ala Gly Thr Asn
2270 2275 2280

Asn Gly Ile Thr Val Ala Ala Gly Thr Phe Asn Pro Ala Asp Thr
2285 2290 2295

Ile Gln Val Val Ala Thr Gln Gly Ser Gly Glu Thr Val Ser Asp
2300 2305 2310

Glu Gln Arg Ser Asp Asp Phe Thr Val Val Ala Pro Gln Pro Asn
2315 2320 2325

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Gln Ala  Thr Thr Lys Ile Trp  Gln Asn Gly His Ile  Asp Ile Thr
    2330                2335                2340

Pro Asn  Asn Pro Ser Gly His  Leu Ile Asn Pro Thr  Gln Ala Met
    2345                2350                2355

Asp Ile  Ala Tyr Thr Glu Lys  Val Gly Asn Gly Ala  Glu His Ser
    2360                2365                2370

Lys Thr  Ile Asn Val Val Arg  Gly Gln Asn Asn Gln  Trp Thr Ile
    2375                2380                2385

Ala Asn  Lys Pro Asp Tyr Val  Thr Leu Asp Ala Gln  Thr Gly Lys
    2390                2395                2400

Val Thr  Phe Asn Ala Asn Thr  Ile Lys Pro Asn Ser  Ser Ile Thr
    2405                2410                2415

Ile Thr  Pro Lys Ala Gly Thr  Gly His Ser Val Ser  Ser Asn Pro
    2420                2425                2430

Ser Thr  Leu Thr Ala Pro Ala  Ala His Thr Val Asn  Thr Thr Glu
    2435                2440                2445

Ile Val  Lys Asp Tyr Gly Ser  Asn Val Thr Ala Ala  Glu Ile Asn
    2450                2455                2460

Asn Ala  Val Gln Val Ala Asn  Lys Arg Thr Ala Thr  Ile Lys Asn
    2465                2470                2475

Gly Thr  Ala Met Pro Thr Asn  Leu Ala Gly Gly Ser  Thr Thr Thr
    2480                2485                2490

Ile Pro  Val Thr Val Thr Tyr  Asn Asp Gly Ser Thr  Glu Glu Val
    2495                2500                2505

Gln Glu  Ser Ile Phe Thr Lys  Ala Asp Lys Arg Glu  Leu Ile Thr
    2510                2515                2520

Ala Lys  Asn His Leu Asp Asp  Pro Val Ser Thr Glu  Gly Lys Lys
    2525                2530                2535

Pro Gly  Thr Ile Thr Gln Tyr  Asn Asn Ala Met His  Asn Ala Gln
    2540                2545                2550

Gln Gln  Ile Asn Thr Ala Lys  Thr Glu Ala Gln Gln  Val Ile Asn
    2555                2560                2565
```

```
Asn Glu  Arg Ala Thr Pro Gln  Gln Val Ser Asp Ala  Leu Thr Lys
    2570                2575                2580

Val Arg  Ala Ala Gln Thr Lys  Ile Asp Gln Ala Lys  Ala Leu Leu
    2585                2590                2595

Gln Asn  Lys Glu Asp Asn Ser  Gln Leu Val Thr Ser  Lys Asn Asn
    2600                2605                2610

Leu Gln  Ser Ser Val Asn Gln  Val Pro Ser Thr Ala  Gly Met Thr
    2615                2620                2625

Gln Gln  Ser Ile Asp Asn Tyr  Asn Ala Lys Lys Arg  Glu Ala Glu
    2630                2635                2640

Thr Glu  Ile Thr Ala Ala Gln  Arg Val Ile Asp Asn  Gly Asp Ala
    2645                2650                2655

Thr Ala  Gln Gln Ile Ser Asp  Glu Lys His Arg Val  Asp Asn Ala
    2660                2665                2670

Leu Thr  Ala Leu Asn Gln Ala  Lys His Asp Leu Thr  Ala Asp Thr
    2675                2680                2685

His Ala  Leu Glu Gln Ala Val  Gln Gln Leu Asn Arg  Thr Gly Thr
    2690                2695                2700

Thr Thr  Gly Lys Lys Pro Ala  Ser Ile Thr Ala Tyr  Asn Asn Ser
    2705                2710                2715

Ile Arg  Ala Leu Gln Ser Asp  Leu Thr Ser Ala Lys  Asn Ser Ala
    2720                2725                2730

Asn Ala  Ile Ile Gln Lys Pro  Ile Arg Thr Val Gln  Glu Val Gln
    2735                2740                2745

Ser Ala  Leu Thr Asn Val Asn  Arg Val Asn Glu Arg  Leu Thr Gln
    2750                2755                2760

Ala Ile  Asn Gln Leu Val Pro  Leu Ala Asp Asn Ser  Ala Leu Lys
    2765                2770                2775

Thr Ala  Lys Thr Lys Leu Asp  Glu Glu Ile Asn Lys  Ser Val Thr
    2780                2785                2790

Thr Asp  Gly Met Thr Gln Ser  Ser Ile Gln Ala Tyr  Glu Asn Ala
    2795                2800                2805
```

```
Lys Arg  Ala Gly Gln Thr Glu  Ser Thr Asn Ala Gln  Asn Val Ile
    2810                 2815                 2820

Asn Asn  Gly Asp Ala Thr Asp  Gln Gln Ile Ala Ala  Glu Lys Thr
    2825                 2830                 2835

Lys Val  Glu Glu Lys Tyr Asn  Ser Leu Lys Gln Ala  Ile Ala Gly
    2840                 2845                 2850

Leu Thr  Pro Asp Leu Ala Pro  Leu Gln Thr Ala Lys  Thr Gln Leu
    2855                 2860                 2865

Gln Asn  Asp Ile Asp Gln Pro  Thr Ser Thr Thr Gly  Met Thr Ser
    2870                 2875                 2880

Ala Ser  Ile Ala Ala Phe Asn  Glu Lys Leu Ser Ala  Ala Arg Thr
    2885                 2890                 2895

Lys Ile  Gln Glu Ile Asp Arg  Val Leu Ala Ser His  Pro Asp Val
    2900                 2905                 2910

Ala Thr  Ile Arg Gln Asn Val  Thr Ala Ala Asn Ala  Ala Lys Ser
    2915                 2920                 2925

Ala Leu  Asp Gln Ala Arg Asn  Gly Leu Thr Val Asp  Lys Ala Pro
    2930                 2935                 2940

Leu Glu  Asn Ala Lys Asn Gln  Leu Gln His Ser Ile  Asp Thr Gln
    2945                 2950                 2955

Thr Ser  Thr Thr Gly Met Thr  Gln Asp Ser Ile Asn  Ala Tyr Asn
    2960                 2965                 2970

Ala Lys  Leu Thr Ala Ala Arg  Asn Lys Ile Gln Gln  Ile Asn Gln
    2975                 2980                 2985

Val Leu  Ala Gly Ser Pro Thr  Val Glu Gln Ile Asn  Thr Asn Thr
    2990                 2995                 3000

Ser Thr  Ala Asn Gln Ala Lys  Ser Asp Leu Asp His  Ala Arg Gln
    3005                 3010                 3015

Ala Leu  Thr Pro Asp Lys Ala  Pro Leu Gln Thr Ala  Lys Thr Gln
    3020                 3025                 3030

Leu Glu  Gln Ser Ile Asn Gln  Pro Thr Asp Thr Thr  Gly Met Thr
```

3035 3040 3045

Thr Ala Ser Leu Asn Ala Tyr Asn Gln Lys Leu Gln Ala Ala Arg
3050 3055 3060

Gln Lys Leu Thr Glu Ile Asn Gln Val Leu Asn Gly Asn Pro Thr
3065 3070 3075

Val Gln Asn Ile Asn Asp Lys Val Thr Glu Ala Asn Gln Ala Lys
3080 3085 3090

Asp Gln Leu Asn Thr Ala Arg Gln Gly Leu Thr Leu Asp Arg Gln
3095 3100 3105

Pro Ala Leu Thr Thr Leu His Gly Ala Ser Asn Leu Asn Gln Ala
3110 3115 3120

Gln Gln Asn Asn Phe Thr Gln Gln Ile Asn Ala Ala Gln Asn His
3125 3130 3135

Ala Ala Leu Glu Thr Ile Lys Ser Asn Ile Thr Ala Leu Asn Thr
3140 3145 3150

Ala Met Thr Lys Leu Lys Asp Ser Val Ala Asp Asn Asn Thr Ile
3155 3160 3165

Lys Ser Asp Gln Asn Tyr Thr Asp Ala Thr Pro Ala Asn Lys Gln
3170 3175 3180

Ala Tyr Asp Asn Ala Val Asn Ala Ala Lys Gly Val Ile Gly Glu
3185 3190 3195

Thr Thr Asn Pro Thr Met Asp Val Asn Thr Val Asn Gln Lys Ala
3200 3205 3210

Ala Ser Val Lys Ser Thr Lys Asp Ala Leu Asp Gly Gln Gln Asn
3215 3220 3225

Leu Gln Arg Ala Lys Thr Glu Ala Thr Asn Ala Ile Thr His Ala
3230 3235 3240

Ser Asp Leu Asn Gln Ala Gln Lys Asn Ala Leu Thr Gln Gln Val
3245 3250 3255

Asn Ser Ala Gln Asn Val Gln Ala Val Asn Asp Ile Lys Gln Thr
3260 3265 3270

```
Thr Gln  Ser Leu Asn Thr Ala  Met Thr Gly Leu Lys  Arg Gly Val
    3275                3280                3285

Ala Asn  His Asn Gln Val Val  Gln Ser Asp Asn Tyr  Val Asn Ala
    3290                3295                3300

Asp Thr  Asn Lys Lys Asn Asp  Tyr Asn Asn Ala Tyr  Asn His Ala
    3305                3310                3315

Asn Asp  Ile Ile Asn Gly Asn  Ala Gln His Pro Val  Ile Thr Pro
    3320                3325                3330

Ser Asp  Val Asn Asn Ala Leu  Ser Asn Val Thr Ser  Lys Glu His
    3335                3340                3345

Ala Leu  Asn Gly Glu Ala Lys  Leu Asn Ala Ala Lys  Gln Glu Ala
    3350                3355                3360

Asn Thr  Ala Leu Gly His Leu  Asn Asn Leu Asn Asn  Ala Gln Arg
    3365                3370                3375

Gln Asn  Leu Gln Ser Gln Ile  Asn Gly Ala His Gln  Ile Asp Ala
    3380                3385                3390

Val Asn  Thr Ile Lys Gln Asn  Ala Thr Asn Leu Asn  Ser Ala Met
    3395                3400                3405

Gly Asn  Leu Arg Gln Ala Val  Ala Asp Lys Asp Gln  Val Lys Arg
    3410                3415                3420

Thr Glu  Asp Tyr Ala Asp Ala  Asp Thr Ala Lys Gln  Asn Ala Tyr
    3425                3430                3435

Asn Ser  Ala Val Ser Ser Ala  Glu Thr Ile Ile Asn  Gln Thr Thr
    3440                3445                3450

Asn Pro  Thr Met Ser Val Asp  Asp Val Asn Arg Ala  Thr Ser Ala
    3455                3460                3465

Val Thr  Ser Asn Lys Asn Ala  Leu Asn Gly Tyr Glu  Lys Leu Ala
    3470                3475                3480

Gln Ser  Lys Thr Asp Ala Ala  Arg Ala Ile Asp Ala  Leu Pro His
    3485                3490                3495

Leu Asn  Asn Ala Gln Lys Ala  Asp Val Lys Ser Lys  Ile Asn Ala
    3500                3505                3510
```

```
Ala Ser  Asn Ile Ala Gly Val  Asn Thr Val Lys Gln  Gln Gly Thr
    3515                3520                3525

Asp Leu  Asn Thr Ala Met Gly  Asn Leu Gln Gly Ala  Ile Asn Asp
    3530                3535                3540

Glu Gln  Thr Thr Leu Asn Ser  Gln Asn Tyr Gln Asp  Ala Thr Pro
    3545                3550                3555

Ser Lys  Lys Thr Ala Tyr Thr  Asn Ala Val Gln Ala  Ala Lys Asp
    3560                3565                3570

Ile Leu  Asn Lys Ser Asn Gly  Gln Asn Lys Thr Lys  Asp Gln Val
    3575                3580                3585

Thr Glu  Ala Met Asn Gln Val  Asn Ser Ala Lys Asn  Asn Leu Asp
    3590                3595                3600

Gly Thr  Arg Leu Leu Asp Gln  Ala Lys Gln Thr Ala  Lys Gln Gln
    3605                3610                3615

Leu Asn  Asn Met Thr His Leu  Thr Thr Ala Gln Lys  Thr Asn Leu
    3620                3625                3630

Thr Asn  Gln Ile Asn Ser Gly  Thr Thr Val Ala Gly  Val Gln Thr
    3635                3640                3645

Val Gln  Ser Asn Ala Asn Thr  Leu Asp Gln Ala Met  Asn Thr Leu
    3650                3655                3660

Arg Gln  Ser Ile Ala Asn Lys  Asp Ala Thr Lys Ala  Ser Glu Asp
    3665                3670                3675

Tyr Val  Asp Ala Asn Asn Asp  Lys Gln Thr Ala Tyr  Asn Asn Ala
    3680                3685                3690

Val Ala  Ala Ala Glu Thr Ile  Ile Asn Ala Asn Ser  Asn Pro Glu
    3695                3700                3705

Met Asn  Pro Ser Thr Ile Thr  Gln Lys Ala Glu Gln  Val Asn Ser
    3710                3715                3720

Ser Lys  Thr Ala Leu Asn Gly  Asp Glu Asn Leu Ala  Ala Ala Lys
    3725                3730                3735

Gln Asn  Ala Lys Thr Tyr Leu  Asn Thr Leu Thr Ser  Ile Thr Asp
    3740                3745                3750
```

```
Ala Gln  Lys Asn Asn Leu Ile  Ser Gln Ile Thr Ser  Ala Thr Arg
    3755                3760                3765

Val Ser  Gly Val Asp Thr Val  Lys Gln Asn Ala Gln  His Leu Asp
    3770                3775                3780

Gln Ala  Met Ala Ser Leu Gln  Asn Gly Ile Asn Asn  Glu Ser Gln
    3785                3790                3795

Val Lys  Ser Ser Glu Lys Tyr  Arg Asp Ala Asp Thr  Asn Lys Gln
    3800                3805                3810

Gln Glu  Tyr Asp Asn Ala Ile  Thr Ala Ala Lys Ala  Ile Leu Asn
    3815                3820                3825

Lys Ser  Thr Gly Pro Asn Thr  Ala Gln Asn Ala Val  Glu Ala Ala
    3830                3835                3840

Leu Gln  Arg Val Asn Asn Ala  Lys Asp Ala Leu Asn  Gly Asp Ala
    3845                3850                3855

Lys Leu  Ile Ala Ala Gln Asn  Ala Ala Lys Gln His  Leu Gly Thr
    3860                3865                3870

Leu Thr  His Ile Thr Thr Ala  Gln Arg Asn Asp Leu  Thr Asn Gln
    3875                3880                3885

Ile Ser  Gln Ala Thr Asn Leu  Ala Gly Val Glu Ser  Val Lys Gln
    3890                3895                3900

Asn Ala  Asn Ser Leu Asp Gly  Ala Met Gly Asn Leu  Gln Thr Ala
    3905                3910                3915

Ile Asn  Asp Lys Ser Gly Thr  Leu Ala Ser Gln Asn  Phe Leu Asp
    3920                3925                3930

Ala Asp  Glu Gln Lys Arg Asn  Ala Tyr Asn Gln Ala  Val Ser Ala
    3935                3940                3945

Ala Glu  Thr Ile Leu Asn Lys  Gln Thr Gly Pro Asn  Thr Ala Lys
    3950                3955                3960

Thr Ala  Val Glu Gln Ala Leu  Asn Asn Val Asn Asn  Ala Lys His
    3965                3970                3975

Ala Leu  Asn Gly Thr Gln Asn  Leu Asn Asn Ala Lys  Gln Ala Ala
```

3980 3985 3990

Ile Thr Ala Ile Asn Gly Ala Ser Asp Leu Asn Gln Lys Gln Lys
3995 4000 4005

Asp Ala Leu Lys Ala Gln Ala Asn Gly Ala Gln Arg Val Ser Asn
4010 4015 4020

Ala Gln Asp Val Gln His Asn Ala Thr Glu Leu Asn Thr Ala Met
4025 4030 4035

Gly Thr Leu Lys His Ala Ile Ala Asp Lys Thr Asn Thr Leu Ala
4040 4045 4050

Ser Ser Lys Tyr Val Asn Ala Asp Ser Thr Lys Gln Asn Ala Tyr
4055 4060 4065

Thr Thr Lys Val Thr Asn Ala Glu His Ile Ile Ser Gly Thr Pro
4070 4075 4080

Thr Val Val Thr Thr Pro Ser Glu Val Thr Ala Ala Ala Asn Gln
4085 4090 4095

Val Asn Ser Ala Lys Gln Glu Leu Asn Gly Asp Glu Arg Leu Arg
4100 4105 4110

Glu Ala Lys Gln Asn Ala Asn Thr Ala Ile Asp Ala Leu Thr Gln
4115 4120 4125

Leu Asn Thr Pro Gln Lys Ala Lys Leu Lys Glu Gln Val Gly Gln
4130 4135 4140

Ala Asn Arg Leu Glu Asp Val Gln Thr Val Gln Thr Asn Gly Gln
4145 4150 4155

Ala Leu Asn Asn Ala Met Lys Gly Leu Arg Asp Ser Ile Ala Asn
4160 4165 4170

Glu Thr Thr Val Lys Thr Ser Gln Asn Tyr Thr Asp Ala Ser Pro
4175 4180 4185

Asn Asn Gln Ser Thr Tyr Asn Ser Ala Val Ser Asn Ala Lys Gly
4190 4195 4200

Ile Ile Asn Gln Thr Asn Asn Pro Thr Met Asp Thr Ser Ala Ile
4205 4210 4215

```
Thr Gln  Ala Thr Thr Gln Val  Asn Asn Ala Lys Asn  Gly Leu Asn
    4220                4225                4230

Gly Ala  Glu Asn Leu Arg Asn  Ala Gln Asn Thr Ala  Lys Gln Asn
    4235                4240                4245

Leu Asn  Thr Leu Ser His Leu  Thr Asn Asn Gln Lys  Ser Ala Ile
    4250                4255                4260

Ser Ser  Gln Ile Asp Arg Ala  Gly His Val Ser Glu  Val Thr Ala
    4265                4270                4275

Thr Lys  Asn Ala Ala Thr Glu  Leu Asn Thr Gln Met  Gly Asn Leu
    4280                4285                4290

Glu Gln  Ala Ile His Asp Gln  Asn Thr Val Lys Gln  Ser Val Lys
    4295                4300                4305

Phe Thr  Asp Ala Asp Lys Ala  Lys Arg Asp Ala Tyr  Thr Asn Ala
    4310                4315                4320

Val Ser  Arg Ala Glu Ala Ile  Leu Asn Lys Thr Gln  Gly Ala Asn
    4325                4330                4335

Thr Ser  Lys Gln Asp Val Glu  Ala Ala Ile Gln Asn  Val Ser Ser
    4340                4345                4350

Ala Lys  Asn Ala Leu Asn Gly  Asp Gln Asn Val Thr  Asn Ala Lys
    4355                4360                4365

Asn Ala  Ala Lys Asn Ala Leu  Asn Asn Leu Thr Ser  Ile Asn Asn
    4370                4375                4380

Ala Gln  Lys Arg Asp Leu Thr  Thr Lys Ile Asp Gln  Ala Thr Thr
    4385                4390                4395

Val Ala  Gly Val Glu Ala Val  Ser Asn Thr Ser Thr  Gln Leu Asn
    4400                4405                4410

Thr Ala  Met Ala Asn Leu Gln  Asn Gly Ile Asn Asp  Lys Thr Asn
    4415                4420                4425

Thr Leu  Ala Ser Glu Asn Tyr  His Asp Ala Asp Ser  Asp Lys Lys
    4430                4435                4440

Thr Ala  Tyr Thr Gln Ala Val  Thr Asn Ala Glu Asn  Ile Leu Asn
    4445                4450                4455
```

```
Lys Asn  Ser Gly Ser Asn Leu  Asp Lys Thr Ala Val  Glu Asn Ala
    4460                 4465                 4470

Leu Ser  Gln Val Ala Asn Ala  Lys Gly Ala Leu Asn  Gly Asn His
    4475                 4480                 4485

Asn Leu  Glu Gln Ala Lys Ser  Asn Ala Asn Thr Thr  Ile Asn Gly
    4490                 4495                 4500

Leu Gln  His Leu Thr Thr Ala  Gln Lys Asp Lys Leu  Lys Gln Gln
    4505                 4510                 4515

Val Gln  Gln Ala Gln Asn Val  Ala Gly Val Asp Thr  Val Lys Ser
    4520                 4525                 4530

Ser Ala  Asn Thr Leu Asn Gly  Ala Met Gly Thr Leu  Arg Asn Ser
    4535                 4540                 4545

Ile Gln  Asp Asn Thr Ala Thr  Lys Asn Gly Gln Asn  Tyr Leu Asp
    4550                 4555                 4560

Ala Thr  Glu Arg Asn Lys Thr  Asn Tyr Asn Asn Ala  Val Asp Ser
    4565                 4570                 4575

Ala Asn  Gly Val Ile Asn Ala  Thr Ser Asn Pro Asn  Met Asp Ala
    4580                 4585                 4590

Asn Ala  Ile Asn Gln Ile Ala  Thr Gln Val Thr Ser  Thr Lys Asn
    4595                 4600                 4605

Ala Leu  Asp Gly Thr His Asn  Leu Thr Gln Ala Lys  Gln Thr Ala
    4610                 4615                 4620

Thr Asn  Ala Ile Asp Gly Ala  Thr Asn Leu Asn Lys  Ala Gln Lys
    4625                 4630                 4635

Asp Ala  Leu Lys Ala Gln Val  Thr Ser Ala Gln Arg  Val Ala Asn
    4640                 4645                 4650

Val Thr  Ser Ile Gln Gln Thr  Ala Asn Glu Leu Asn  Thr Ala Met
    4655                 4660                 4665

Gly Gln  Leu Gln His Gly Ile  Asp Asp Glu Asn Ala  Thr Lys Gln
    4670                 4675                 4680

Thr Gln  Lys Tyr Arg Asp Ala  Glu Gln Ser Lys Lys  Thr Ala Tyr
    4685                 4690                 4695
```

```
Asp Gln  Ala Val Ala Ala Ala  Lys Ala Ile Leu Asn  Lys Gln Thr
    4700                 4705                 4710

Gly Ser  Asn Ser Asp Lys Ala  Ala Val Asp Arg Ala  Leu Gln Gln
    4715                 4720                 4725

Val Thr  Ser Thr Lys Asp Ala  Leu Asn Gly Asp Ala  Lys Leu Ala
    4730                 4735                 4740

Glu Ala  Lys Ala Ala Ala Lys  Gln Asn Leu Gly Thr  Leu Asn His
    4745                 4750                 4755

Ile Thr  Asn Ala Gln Arg Thr  Asp Leu Glu Gly Gln  Ile Asn Gln
    4760                 4765                 4770

Ala Thr  Thr Val Asp Gly Val  Asn Thr Val Lys Thr  Asn Ala Asn
    4775                 4780                 4785

Thr Leu  Asp Gly Ala Met Asn  Ser Leu Gln Gly Ser  Ile Asn Asp
    4790                 4795                 4800

Lys Asp  Ala Thr Leu Arg Asn  Gln Asn Tyr Leu Asp  Ala Asp Glu
    4805                 4810                 4815

Ser Lys  Arg Asn Ala Tyr Thr  Gln Ala Val Thr Ala  Ala Glu Gly
    4820                 4825                 4830

Ile Leu  Asn Lys Gln Thr Gly  Gly Asn Thr Ser Lys  Ala Asp Val
    4835                 4840                 4845

Asp Asn  Ala Leu Asn Ala Val  Thr Arg Ala Lys Ala  Ala Leu Asn
    4850                 4855                 4860

Gly Ala  Asp Asn Leu Arg Asn  Ala Lys Thr Ser Ala  Thr Asn Thr
    4865                 4870                 4875

Ile Asp  Gly Leu Pro Asn Leu  Thr Gln Leu Gln Lys  Asp Asn Leu
    4880                 4885                 4890

Lys His  Gln Val Glu Gln Ala  Gln Asn Val Ala Gly  Val Asn Gly
    4895                 4900                 4905

Val Lys  Asp Lys Gly Asn Thr  Leu Asn Thr Ala Met  Gly Ala Leu
    4910                 4915                 4920

Arg Thr  Ser Ile Gln Asn Asp  Asn Thr Thr Lys Thr  Ser Gln Asn
```

4925 4930 4935

Tyr Leu Asp Ala Ser Asp Ser Asn Lys Asn Asn Tyr Asn Thr Ala
4940 4945 4950

Val Asn Asn Ala Asn Gly Val Ile Asn Ala Thr Asn Asn Pro Asn
4955 4960 4965

Met Asp Ala Asn Ala Ile Asn Gly Met Ala Asn Gln Val Asn Thr
4970 4975 4980

Thr Lys Ala Ala Leu Asn Gly Ala Gln Asn Leu Ala Gln Ala Lys
4985 4990 4995

Thr Asn Ala Thr Asn Thr Ile Asn Asn Ala His Asp Leu Asn Gln
5000 5005 5010

Lys Gln Lys Asp Ala Leu Lys Thr Gln Val Asn Asn Ala Gln Arg
5015 5020 5025

Val Ser Asp Ala Asn Asn Val Gln His Thr Ala Thr Glu Leu Asn
5030 5035 5040

Ser Ala Met Thr Ala Leu Lys Ala Ala Ile Ala Asp Lys Glu Arg
5045 5050 5055

Thr Lys Ala Ser Gly Asn Tyr Val Asn Ala Asp Gln Glu Lys Arg
5060 5065 5070

Gln Ala Tyr Asp Ser Lys Val Thr Asn Ala Glu Asn Ile Ile Ser
5075 5080 5085

Gly Thr Pro Asn Ala Thr Leu Thr Val Asn Asp Val Asn Ser Ala
5090 5095 5100

Ala Ser Gln Val Asn Ala Ala Lys Thr Ala Leu Asn Gly Asp Asn
5105 5110 5115

Asn Leu Arg Val Ala Lys Glu His Ala Asn Asn Thr Ile Asp Gly
5120 5125 5130

Leu Ala Gln Leu Asn Asn Ala Gln Lys Ala Lys Leu Lys Glu Gln
5135 5140 5145

Val Gln Ser Ala Thr Thr Leu Asp Gly Val Gln Thr Val Lys Asn
5150 5155 5160

```
Ser Ser  Gln Thr Leu Asn Thr  Ala Met Lys Gly Leu  Arg Asp Ser
    5165                5170                5175

Ile Ala  Asn Glu Ala Thr Ile  Lys Ala Gly Gln Asn  Tyr Thr Asp
    5180                5185                5190

Ala Ser  Pro Asn Asn Arg Asn  Glu Tyr Asp Ser Ala  Val Thr Ala
    5195                5200                5205

Ala Lys  Ala Ile Ile Asn Gln  Thr Ser Asn Pro Thr  Met Glu Pro
    5210                5215                5220

Asn Thr  Ile Thr Gln Val Thr  Ser Gln Val Thr Thr  Lys Glu Gln
    5225                5230                5235

Ala Leu  Asn Gly Ala Arg Asn  Leu Ala Gln Ala Lys  Thr Thr Ala
    5240                5245                5250

Lys Asn  Asn Leu Asn Asn Leu  Thr Ser Ile Asn Asn  Ala Gln Lys
    5255                5260                5265

Asp Ala  Leu Thr Arg Ser Ile  Asp Gly Ala Thr Thr  Val Ala Gly
    5270                5275                5280

Val Asn  Gln Glu Thr Ala Lys  Ala Thr Glu Leu Asn  Asn Ala Met
    5285                5290                5295

His Ser  Leu Gln Asn Gly Ile  Asn Asp Glu Thr Gln  Thr Lys Gln
    5300                5305                5310

Thr Gln  Lys Tyr Leu Asp Ala  Glu Pro Ser Lys Lys  Ser Ala Tyr
    5315                5320                5325

Asp Gln  Ala Val Asn Ala Ala  Lys Ala Ile Leu Thr  Lys Ala Ser
    5330                5335                5340

Gly Gln  Asn Val Asp Lys Ala  Ala Val Glu Gln Ala  Leu Gln Asn
    5345                5350                5355

Val Asn  Ser Thr Lys Thr Ala  Leu Asn Gly Asp Ala  Lys Leu Asn
    5360                5365                5370

Glu Ala  Lys Ala Ala Ala Lys  Gln Thr Leu Gly Thr  Leu Thr His
    5375                5380                5385

Ile Asn  Asn Ala Gln Arg Thr  Ala Leu Asp Asn Glu  Ile Thr Gln
    5390                5395                5400
```

```
Ala Thr  Asn Val Glu Gly Val  Asn Thr Val Lys Ala  Lys Ala Gln
    5405                 5410                 5415

Gln Leu  Asp Gly Ala Met Gly  Gln Leu Glu Thr Ser  Ile Arg Asp
    5420                 5425                 5430

Lys Asp  Thr Thr Leu Gln Ser  Gln Asn Tyr Gln Asp  Ala Asp Asp
    5435                 5440                 5445

Ala Lys  Arg Thr Ala Tyr Ser  Gln Ala Val Asn Ala  Ala Ala Thr
    5450                 5455                 5460

Ile Leu  Asn Lys Thr Ala Gly  Gly Asn Thr Pro Lys  Ala Asp Val
    5465                 5470                 5475

Glu Arg  Ala Met Gln Ala Val  Thr Gln Ala Asn Thr  Ala Leu Asn
    5480                 5485                 5490

Gly Ile  Gln Asn Leu Asp Arg  Ala Lys Gln Ala Ala  Asn Thr Ala
    5495                 5500                 5505

Ile Thr  Asn Ala Ser Asp Leu  Asn Thr Lys Gln Lys  Glu Ala Leu
    5510                 5515                 5520

Lys Ala  Gln Val Thr Ser Ala  Gly Arg Val Ser Ala  Ala Asn Gly
    5525                 5530                 5535

Val Glu  His Thr Ala Thr Glu  Leu Asn Thr Ala Met  Thr Ala Leu
    5540                 5545                 5550

Lys Arg  Ala Ile Ala Asp Lys  Ala Glu Thr Lys Ala  Ser Gly Asn
    5555                 5560                 5565

Tyr Val  Asn Ala Asp Ala Asn  Lys Arg Gln Ala Tyr  Asp Glu Lys
    5570                 5575                 5580

Val Thr  Ala Ala Glu Asn Ile  Val Ser Gly Thr Pro  Thr Pro Thr
    5585                 5590                 5595

Leu Thr  Pro Ala Asp Val Thr  Asn Ala Ala Thr Gln  Val Thr Asn
    5600                 5605                 5610

Ala Lys  Thr Gln Leu Asn Gly  Asn His Asn Leu Glu  Val Ala Lys
    5615                 5620                 5625

Gln Asn  Ala Asn Thr Ala Ile  Asp Gly Leu Thr Ser  Leu Asn Gly
    5630                 5635                 5640
```

```
Pro Gln  Lys Ala Lys Leu Lys  Glu Gln Val Gly Gln  Ala Thr Thr
    5645                5650                5655

Leu Pro  Asn Val Gln Thr Val  Arg Asp Asn Ala Gln  Thr Leu Asn
    5660                5665                5670

Thr Ala  Met Lys Gly Leu Arg  Asp Ser Ile Ala Asn  Glu Ala Thr
    5675                5680                5685

Ile Lys  Ala Gly Gln Asn Tyr  Thr Asp Ala Ser Gln  Asn Lys Gln
    5690                5695                5700

Thr Asp  Tyr Asn Ser Ala Val  Thr Ala Ala Lys Ala  Ile Ile Gly
    5705                5710                5715

Gln Thr  Thr Ser Pro Ser Met  Asn Ala Gln Glu Ile  Asn Gln Ala
    5720                5725                5730

Lys Asp  Gln Val Thr Ala Lys  Gln Gln Ala Leu Asn  Gly Gln Glu
    5735                5740                5745

Asn Leu  Arg Thr Ala Gln Thr  Asn Ala Lys Gln His  Leu Asn Gly
    5750                5755                5760

Leu Ser  Asp Leu Thr Asp Ala  Gln Lys Asp Ala Val  Lys Arg Gln
    5765                5770                5775

Ile Glu  Gly Ala Thr His Val  Asn Glu Val Thr Gln  Ala Gln Asn
    5780                5785                5790

Asn Ala  Asp Ala Leu Asn Thr  Ala Met Thr Asn Leu  Lys Asn Gly
    5795                5800                5805

Ile Gln  Asp Gln Asn Thr Ile  Lys Gln Gly Val Asn  Phe Thr Asp
    5810                5815                5820

Ala Asp  Glu Ala Lys Arg Asn  Ala Tyr Thr Asn Ala  Val Thr Gln
    5825                5830                5835

Ala Glu  Gln Ile Leu Asn Lys  Ala Gln Gly Pro Asn  Thr Ser Lys
    5840                5845                5850

Asp Gly  Val Glu Thr Ala Leu  Glu Asn Val Gln Arg  Ala Lys Asn
    5855                5860                5865

Glu Leu  Asn Gly Asn Gln Asn  Val Ala Asn Ala Lys  Thr Thr Ala
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5870 5875 5880

Lys Asn Ala Leu Asn Asn Leu Thr Ser Ile Asn Asn Ala Gln Lys
5885 5890 5895

Glu Ala Leu Lys Ser Gln Ile Glu Gly Ala Thr Thr Val Ala Gly
5900 5905 5910

Val Asn Gln Val Ser Thr Thr Ala Ser Glu Leu Asn Thr Ala Met
5915 5920 5925

Ser Asn Leu Gln Asn Gly Ile Asn Asp Glu Ala Ala Thr Lys Ala
5930 5935 5940

Ala Gln Lys Tyr Thr Asp Ala Asp Arg Glu Lys Gln Thr Ala Tyr
5945 5950 5955

Asn Asp Ala Val Thr Ala Ala Lys Thr Leu Leu Asp Lys Thr Ala
5960 5965 5970

Gly Ser Asn Asp Asn Lys Ala Ala Val Glu Gln Ala Leu Gln Arg
5975 5980 5985

Val Asn Thr Ala Lys Thr Ala Leu Asn Gly Asp Glu Arg Leu Asn
5990 5995 6000

Glu Ala Lys Asn Thr Ala Lys Gln Gln Val Ala Thr Met Ser His
6005 6010 6015

Leu Thr Asp Ala Gln Lys Ala Asn Leu Thr Ser Gln Ile Glu Ser
6020 6025 6030

Gly Thr Thr Val Ala Gly Val Gln Gly Ile Gln Ala Asn Ala Gly
6035 6040 6045

Thr Leu Asp Gln Ala Met Asn Gln Leu Arg Gln Ser Ile Ala Ser
6050 6055 6060

Lys Asp Ala Thr Lys Ser Ser Glu Asp Tyr Gln Asp Ala Asn Ala
6065 6070 6075

Asp Leu Gln Asn Ala Tyr Asn Asp Ala Val Thr Asn Ala Glu Gly
6080 6085 6090

Ile Ile Ser Ala Thr Asn Asn Pro Glu Met Asn Pro Asp Thr Ile
6095 6100 6105

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Asn Gln  Lys Ala Ser Gln Val  Asn Ser Ala Lys Ser  Ala Leu Asn
    6110                 6115                 6120

Gly Asp  Glu Lys Leu Ala Ala  Ala Lys Gln Thr Ala  Lys Ser Asp
    6125                 6130                 6135

Ile Gly  Arg Leu Thr Asp Leu  Asn Asn Ala Gln Arg  Thr Ala Ala
    6140                 6145                 6150

Asn Ala  Glu Val Asp Gln Ala  Pro Asn Leu Ala Ala  Val Thr Ala
    6155                 6160                 6165

Ala Lys  Asn Lys Ala Thr Ser  Leu Asn Thr Ala Met  Gly Asn Leu
    6170                 6175                 6180

Lys His  Ala Leu Ala Glu Lys  Asp Asn Thr Lys Arg  Ser Val Asn
    6185                 6190                 6195

Tyr Thr  Asp Ala Asp Gln Pro  Lys Gln Gln Ala Tyr  Asp Thr Ala
    6200                 6205                 6210

Val Thr  Gln Ala Glu Ala Ile  Thr Asn Ala Asn Gly  Ser Asn Ala
    6215                 6220                 6225

Asn Glu  Thr Gln Val Gln Ala  Ala Leu Asn Gln Leu  Asn Gln Ala
    6230                 6235                 6240

Lys Asn  Asp Leu Asn Gly Asp  Asn Lys Val Ala Gln  Ala Lys Glu
    6245                 6250                 6255

Ser Ala  Lys Arg Ala Leu Ala  Ser Tyr Ser Asn Leu  Asn Asn Ala
    6260                 6265                 6270

Gln Ser  Thr Ala Ala Ile Ser  Gln Ile Asp Asn Ala  Thr Thr Val
    6275                 6280                 6285

Ala Gly  Val Thr Ala Ala Gln  Asn Thr Ala Asn Glu  Leu Asn Thr
    6290                 6295                 6300

Ala Met  Gly Gln Leu Gln Asn  Gly Ile Asn Asp Gln  Asn Thr Val
    6305                 6310                 6315

Lys Gln  Gln Val Asn Phe Thr  Asp Ala Asp Gln Gly  Lys Lys Asp
    6320                 6325                 6330

Ala Tyr  Thr Asn Ala Val Thr  Asn Ala Gln Gly Ile  Leu Asp Lys
    6335                 6340                 6345
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Ala His  Gly Gln Asn Met Thr  Lys Ala Gln Val Glu  Ala Ala Leu
    6350                6355                6360

Asn Gln  Val Thr Thr Ala Lys  Asn Ala Leu Asn Gly  Asp Ala Asn
    6365                6370                6375

Val Arg  Gln Ala Lys Ser Asp  Ala Lys Ala Asn Leu  Gly Thr Leu
    6380                6385                6390

Thr His  Leu Asn Asn Ala Gln  Lys Gln Asp Leu Thr  Ser Gln Ile
    6395                6400                6405

Glu Gly  Ala Thr Thr Val Asn  Gly Val Asn Gly Val  Lys Thr Lys
    6410                6415                6420

Ala Gln  Asp Leu Asp Gly Ala  Met Gln Arg Leu Gln  Ser Ala Ile
    6425                6430                6435

Ala Asn  Lys Asp Gln Thr Lys  Ala Ser Glu Asn Tyr  Ile Asp Ala
    6440                6445                6450

Asp Pro  Thr Lys Lys Thr Ala  Phe Asp Asn Ala Ile  Thr Gln Ala
    6455                6460                6465

Glu Ser  Tyr Leu Asn Lys Asp  His Gly Ala Asn Lys  Asp Lys Gln
    6470                6475                6480

Ala Val  Glu Gln Ala Ile Gln  Ser Val Thr Ser Thr  Glu Asn Ala
    6485                6490                6495

Leu Asn  Gly Asp Ala Asn Leu  Gln Arg Ala Lys Thr  Glu Ala Ile
    6500                6505                6510

Gln Ala  Ile Asp Asn Leu Thr  His Leu Asn Thr Pro  Gln Lys Thr
    6515                6520                6525

Ala Leu  Lys Gln Gln Val Asn  Ala Ala Gln Arg Val  Ser Gly Val
    6530                6535                6540

Thr Asp  Leu Lys Asn Ser Ala  Thr Ser Leu Asn Asn  Ala Met Asp
    6545                6550                6555

Gln Leu  Lys Gln Ala Ile Ala  Asp His Asp Thr Ile  Val Ala Ser
    6560                6565                6570

Gly Asn  Tyr Thr Asn Ala Ser  Pro Asp Lys Gln Gly  Ala Tyr Thr
    6575                6580                6585
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Asp Ala  Tyr Asn Ala Ala Lys  Asn Ile Val Asn Gly  Ser Pro Asn
    6590                 6595                 6600

Val Ile  Thr Asn Ala Ala Asp  Val Thr Ala Ala Thr  Gln Arg Val
    6605                 6610                 6615

Asn Asn  Ala Glu Thr Gly Leu  Asn Gly Asp Thr Asn  Leu Ala Thr
    6620                 6625                 6630

Ala Lys  Gln Gln Ala Lys Asp  Ala Leu Arg Gln Met  Thr His Leu
    6635                 6640                 6645

Ser Asp  Ala Gln Lys Gln Ser  Ile Thr Gly Gln Ile  Asp Ser Ala
    6650                 6655                 6660

Thr Gln  Val Thr Gly Val Gln  Ser Val Lys Asp Asn  Ala Thr Asn
    6665                 6670                 6675

Leu Asp  Asn Ala Met Asn Gln  Leu Arg Asn Ser Ile  Ala Asn Lys
    6680                 6685                 6690

Asp Asp  Val Lys Ala Ser Gln  Pro Tyr Val Asp Ala  Asp Arg Asp
    6695                 6700                 6705

Lys Gln  Asn Ala Tyr Asn Thr  Ala Val Thr Asn Ala  Glu Asn Ile
    6710                 6715                 6720

Ile Asn  Ala Thr Ser Gln Pro  Thr Leu Asp Pro Ser  Ala Val Thr
    6725                 6730                 6735

Gln Ala  Ala Asn Gln Val Ser  Thr Asn Lys Thr Ala  Leu Asn Gly
    6740                 6745                 6750

Ala Gln  Asn Leu Ala Asn Lys  Lys Gln Glu Thr Thr  Ala Asn Ile
    6755                 6760                 6765

Asn Gln  Leu Ser His Leu Asn  Asn Ala Gln Lys Gln  Asp Leu Asn
    6770                 6775                 6780

Thr Gln  Val Thr Asn Ala Pro  Asn Ile Ser Thr Val  Asn Gln Val
    6785                 6790                 6795

Lys Thr  Lys Ala Glu Gln Leu  Asp Gln Ala Met Glu  Arg Leu Ile
    6800                 6805                 6810

Asn Gly  Ile Gln Asp Lys Asp  Gln Val Lys Gln Ser  Val Asn Phe
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6815 6820 6825

Thr Asp Ala Asp Pro Glu Lys Gln Thr Ala Tyr Asn Asn Ala Val
6830 6835 6840

Thr Ala Ala Glu Asn Ile Ile Asn Gln Ala Asn Gly Thr Asn Ala
6845 6850 6855

Asn Gln Ser Gln Val Glu Ala Ala Leu Ser Thr Val Thr Thr Thr
6860 6865 6870

Lys Gln Ala Leu Asn Gly Asp Arg Lys Val Thr Asp Ala Lys Asn
6875 6880 6885

Asn Ala Asn Gln Thr Leu Ser Thr Leu Asp Asn Leu Asn Asn Ala
6890 6895 6900

Gln Lys Gly Ala Val Thr Gly Asn Ile Asn Gln Ala His Thr Val
6905 6910 6915

Ala Glu Val Thr Gln Ala Ile Gln Thr Ala Gln Glu Leu Asn Thr
6920 6925 6930

Ala Met Gly Asn Leu Lys Asn Ser Leu Asn Asp Lys Asp Thr Thr
6935 6940 6945

Leu Gly Ser Gln Asn Phe Ala Asp Ala Asp Pro Glu Lys Lys Asn
6950 6955 6960

Ala Tyr Asn Glu Ala Val His Asn Ala Glu Asn Ile Leu Asn Lys
6965 6970 6975

Ser Thr Gly Thr Asn Val Pro Lys Asp Gln Val Glu Ala Ala Met
6980 6985 6990

Asn Gln Val Asn Ala Thr Lys Ala Ala Leu Asn Gly Thr Gln Asn
6995 7000 7005

Leu Glu Lys Ala Lys Gln His Ala Asn Thr Ala Ile Asp Gly Leu
7010 7015 7020

Ser His Leu Thr Asn Ala Gln Lys Glu Ala Leu Lys Gln Leu Val
7025 7030 7035

Gln Gln Ser Thr Thr Val Ala Glu Ala Gln Gly Asn Glu Gln Lys
7040 7045 7050

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Ala Asn  Asn Val Asp Ala Ala  Met Asp Lys Leu Arg  Gln Ser Ile
    7055                 7060                 7065

Ala Asp  Asn Ala Thr Thr Lys  Gln Asn Gln Asn Tyr  Thr Asp Ala
    7070                 7075                 7080

Ser Gln  Asn Lys Lys Asp Ala  Tyr Asn Asn Ala Val  Thr Thr Ala
    7085                 7090                 7095

Gln Gly  Ile Ile Asp Gln Thr  Thr Ser Pro Thr Leu  Asp Pro Thr
    7100                 7105                 7110

Val Ile  Asn Gln Ala Ala Gly  Gln Val Ser Thr Thr  Lys Asn Ala
    7115                 7120                 7125

Leu Asn  Gly Asn Glu Asn Leu  Glu Ala Ala Lys Gln  Gln Ala Ser
    7130                 7135                 7140

Gln Ser  Leu Gly Ser Leu Asp  Asn Leu Asn Asn Ala  Gln Lys Gln
    7145                 7150                 7155

Thr Val  Thr Asp Gln Ile Asn  Gly Ala His Thr Val  Asp Glu Ala
    7160                 7165                 7170

Asn Gln  Ile Lys Gln Asn Ala  Gln Asn Leu Asn Thr  Ala Met Gly
    7175                 7180                 7185

Asn Leu  Lys Gln Ala Ile Ala  Asp Lys Asp Ala Thr  Lys Ala Thr
    7190                 7195                 7200

Val Asn  Phe Thr Asp Ala Asp  Gln Ala Lys Gln Gln  Ala Tyr Asn
    7205                 7210                 7215

Thr Ala  Val Thr Asn Ala Glu  Asn Ile Ser Lys Ala  Asn Gly Asn
    7220                 7225                 7230

Ala Thr  Gln Ala Glu Val Glu  Gln Ala Ile Lys Gln  Val Asn Ala
    7235                 7240                 7245

Ala Lys  Gln Ala Leu Asn Gly  Asn Ala Asn Val Gln  His Ala Lys
    7250                 7255                 7260

Asp Glu  Ala Thr Ala Leu Ile  Asn Ser Ser Asn Asp  Leu Asn Gln
    7265                 7270                 7275

Ala Gln  Lys Asp Ala Leu Lys  Gln Gln Val Gln Asn  Ala Thr Thr
    7280                 7285                 7290
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Val Ala  Gly Val Asn Asn Val  Lys Gln Thr Ala Gln  Glu Leu Asn
    7295                 7300                 7305

Asn Ala  Met Thr Gln Leu Lys  Gln Gly Ile Ala Asp  Lys Glu Gln
    7310                 7315                 7320

Thr Lys  Ala Asp Gly Asn Phe  Val Asn Ala Asp Pro  Asp Lys Gln
    7325                 7330                 7335

Asn Ala  Tyr Asn Gln Ala Val  Ala Lys Ala Glu Ala  Leu Ile Ser
    7340                 7345                 7350

Ala Thr  Pro Asp Val Val Val  Thr Pro Ser Glu Ile  Thr Ala Ala
    7355                 7360                 7365

Leu Asn  Lys Val Thr Gln Ala  Lys Asn Asp Leu Asn  Gly Asn Thr
    7370                 7375                 7380

Asn Leu  Ala Thr Ala Lys Gln  Asn Val Gln His Ala  Ile Asp Gln
    7385                 7390                 7395

Leu Pro  Asn Leu Asn Gln Ala  Gln Arg Asp Glu Tyr  Ser Lys Gln
    7400                 7405                 7410

Ile Thr  Gln Ala Thr Leu Val  Pro Asn Val Asn Ala  Ile Gln Gln
    7415                 7420                 7425

Ala Ala  Thr Thr Leu Asn Asp  Ala Met Thr Gln Leu  Lys Gln Gly
    7430                 7435                 7440

Ile Ala  Asn Lys Ala Gln Ile  Lys Gly Ser Glu Asn  Tyr His Asp
    7445                 7450                 7455

Ala Asp  Thr Asp Lys Gln Thr  Ala Tyr Asp Asn Ala  Val Thr Lys
    7460                 7465                 7470

Ala Glu  Glu Leu Leu Lys Gln  Thr Thr Asn Pro Thr  Met Asp Pro
    7475                 7480                 7485

Asn Thr  Ile Gln Gln Ala Leu  Thr Lys Val Asn Asp  Thr Asn Gln
    7490                 7495                 7500

Ala Leu  Asn Gly Asn Gln Lys  Leu Ala Asp Ala Lys  Gln Asp Ala
    7505                 7510                 7515

Lys Thr  Thr Leu Gly Thr Leu  Asp His Leu Asn Asp  Ala Gln Lys
    7520                 7525                 7530
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Gln Ala  Leu Thr Thr Gln Val  Glu Gln Ala Pro Asp  Ile Ala Thr
    7535                7540                7545

Val Asn  Asn Val Lys Gln Asn  Ala Gln Asn Leu Asn  Asn Ala Met
    7550                7555                7560

Thr Asn  Leu Asn Asn Ala Leu  Gln Asp Lys Thr Glu  Thr Leu Asn
    7565                7570                7575

Ser Ile  Asn Phe Thr Asp Ala  Asp Gln Ala Lys Lys  Asp Ala Tyr
    7580                7585                7590

Thr Asn  Ala Val Ser His Ala  Glu Gly Ile Leu Ser  Lys Ala Asn
    7595                7600                7605

Gly Ser  Asn Ala Ser Gln Thr  Glu Val Glu Gln Ala  Met Gln Arg
    7610                7615                7620

Val Asn  Glu Ala Lys Gln Ala  Leu Asn Gly Asn Asp  Asn Val Gln
    7625                7630                7635

Arg Ala  Lys Asp Ala Ala Lys  Gln Val Ile Thr Asn  Ala Asn Asp
    7640                7645                7650

Leu Asn  Gln Ala Gln Lys Asp  Ala Leu Lys Gln Gln  Val Asp Ala
    7655                7660                7665

Ala Gln  Thr Val Ala Asn Val  Asn Thr Ile Lys Gln  Thr Ala Gln
    7670                7675                7680

Asp Leu  Asn Gln Ala Met Thr  Gln Leu Lys Gln Gly  Ile Ala Asp
    7685                7690                7695

Lys Asp  Gln Thr Lys Ala Asn  Gly Asn Phe Val Asn  Ala Asp Thr
    7700                7705                7710

Asp Lys  Gln Asn Ala Tyr Asn  Asn Ala Val Ala His  Ala Glu Gln
    7715                7720                7725

Ile Ile  Ser Gly Thr Pro Asn  Ala Asn Val Asp Pro  Gln Gln Val
    7730                7735                7740

Ala Gln  Ala Leu Gln Gln Val  Asn Gln Ala Lys Gly  Asp Leu Asn
    7745                7750                7755

Gly Asn  His Asn Leu Gln Val  Ala Lys Asp Asn Ala  Asn Thr Ala
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7760 7765 7770

Ile Asp Gln Leu Pro Asn Leu Asn Gln Pro Gln Lys Thr Ala Leu
7775 7780 7785

Lys Asp Gln Val Ser His Ala Glu Leu Val Thr Gly Val Asn Ala
7790 7795 7800

Ile Lys Gln Asn Ala Asp Ala Leu Asn Asn Ala Met Gly Thr Leu
7805 7810 7815

Lys Gln Gln Ile Gln Ala Asn Ser Gln Val Pro Gln Ser Val Asp
7820 7825 7830

Phe Thr Gln Ala Asp Gln Asp Lys Gln Gln Ala Tyr Asn Asn Ala
7835 7840 7845

Ala Asn Gln Ala Gln Gln Ile Ala Asn Gly Ile Pro Thr Pro Val
7850 7855 7860

Leu Thr Pro Asp Thr Val Thr Gln Ala Val Thr Thr Met Asn Gln
7865 7870 7875

Ala Lys Asp Ala Leu Asn Gly Asp Glu Lys Leu Ala Gln Ala Lys
7880 7885 7890

Gln Glu Ala Leu Ala Asn Leu Asp Thr Leu Arg Asp Leu Asn Gln
7895 7900 7905

Pro Gln Arg Asp Ala Leu Arg Asn Gln Ile Asn Gln Ala Gln Ala
7910 7915 7920

Leu Ala Thr Val Glu Gln Thr Lys Gln Asn Ala Gln Asn Val Asn
7925 7930 7935

Thr Ala Met Ser Asn Leu Lys Gln Gly Ile Ala Asn Lys Asp Thr
7940 7945 7950

Val Lys Ala Ser Glu Asn Tyr His Asp Ala Asp Ala Asp Lys Gln
7955 7960 7965

Thr Ala Tyr Thr Asn Ala Val Ser Gln Ala Glu Gly Ile Ile Asn
7970 7975 7980

Gln Thr Thr Asn Pro Thr Leu Asn Pro Asp Glu Ile Thr Arg Ala
7985 7990 7995

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Leu Thr  Gln Val Thr Asp Ala  Lys Asn Gly Leu Asn  Gly Glu Ala
    8000                8005                8010

Lys Leu  Ala Thr Glu Lys Gln  Asn Ala Lys Asp Ala  Val Ser Gly
    8015                8020                8025

Met Thr  His Leu Asn Asp Ala  Gln Lys Gln Ala Leu  Lys Gly Gln
    8030                8035                8040

Ile Asp  Gln Ser Pro Glu Ile  Ala Thr Val Asn Gln  Val Lys Gln
    8045                8050                8055

Thr Ala  Thr Ser Leu Asp Gln  Ala Met Asp Gln Leu  Ser Gln Ala
    8060                8065                8070

Ile Asn  Asp Lys Ala Gln Thr  Leu Ala Asp Gly Asn  Tyr Leu Asn
    8075                8080                8085

Ala Asp  Pro Asp Lys Gln Asn  Ala Tyr Lys Gln Ala  Val Ala Lys
    8090                8095                8100

Ala Glu  Ala Leu Leu Asn Lys  Gln Ser Gly Thr Asn  Glu Val Gln
    8105                8110                8115

Ala Gln  Val Glu Ser Ile Thr  Asn Glu Val Asn Ala  Ala Lys Gln
    8120                8125                8130

Ala Leu  Asn Gly Asn Asp Asn  Leu Ala Asn Ala Lys  Gln Gln Ala
    8135                8140                8145

Lys Gln  Gln Leu Ala Asn Leu  Thr His Leu Asn Asp  Ala Gln Lys
    8150                8155                8160

Gln Ser  Phe Glu Ser Gln Ile  Thr Gln Ala Pro Leu  Val Thr Asp
    8165                8170                8175

Val Thr  Thr Ile Asn Gln Lys  Ala Gln Thr Leu Asp  His Ala Met
    8180                8185                8190

Glu Leu  Leu Arg Asn Ser Val  Ala Asp Asn Gln Thr  Thr Leu Ala
    8195                8200                8205

Ser Glu  Asp Tyr His Asp Ala  Thr Ala Gln Arg Gln  Asn Asp Tyr
    8210                8215                8220

Asn Gln  Ala Val Thr Ala Ala  Asn Asn Ile Ile Asn  Gln Thr Thr
    8225                8230                8235
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Ser Pro  Thr Met Asn Pro Asp  Asp Val Asn Gly Ala  Thr Thr Gln
    8240                8245                8250

Val Asn  Asn Thr Lys Val Ala  Leu Asp Gly Asp Glu  Asn Leu Ala
    8255                8260                8265

Ala Ala  Lys Gln Gln Ala Asn  Asn Arg Leu Asp Gln  Leu Asp His
    8270                8275                8280

Leu Asn  Asn Ala Gln Lys Gln  Gln Leu Gln Ser Gln  Ile Thr Gln
    8285                8290                8295

Ser Ser  Asp Ile Ala Ala Val  Asn Gly His Lys Gln  Thr Ala Glu
    8300                8305                8310

Ser Leu  Asn Thr Ala Met Gly  Asn Leu Ile Asn Ala  Ile Ala Asp
    8315                8320                8325

His Gln  Ala Val Glu Gln Arg  Gly Asn Phe Ile Asn  Ala Asp Thr
    8330                8335                8340

Asp Lys  Gln Thr Ala Tyr Asn  Thr Ala Val Asn Glu  Ala Ala Ala
    8345                8350                8355

Met Ile  Asn Lys Gln Thr Gly  Gln Asn Ala Asn Gln  Thr Glu Val
    8360                8365                8370

Glu Gln  Ala Ile Thr Lys Val  Gln Thr Thr Leu Gln  Ala Leu Asn
    8375                8380                8385

Gly Asp  His Asn Leu Gln Val  Ala Lys Thr Asn Ala  Thr Gln Ala
    8390                8395                8400

Ile Asp  Ala Leu Thr Ser Leu  Asn Asp Pro Gln Lys  Thr Ala Leu
    8405                8410                8415

Lys Asp  Gln Val Thr Ala Ala  Thr Leu Val Thr Ala  Val His Gln
    8420                8425                8430

Ile Glu  Gln Asn Ala Asn Thr  Leu Asn Gln Ala Met  His Gly Leu
    8435                8440                8445

Arg Gln  Ser Ile Gln Asp Asn  Ala Ala Thr Lys Ala  Asn Ser Lys
    8450                8455                8460

Tyr Ile  Asn Glu Asp Gln Pro  Glu Gln Gln Asn Tyr  Asp Gln Ala
    8465                8470                8475
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Val Gln  Ala Ala Asn Asn Ile  Ile Asn Glu Gln Thr  Ala Thr Leu
    8480                 8485                 8490

Asp Asn  Asn Ala Ile Asn Gln  Ala Ala Thr Thr Val  Asn Thr Thr
    8495                 8500                 8505

Lys Ala  Ala Leu His Gly Asp  Val Lys Leu Gln Asn  Asp Lys Asp
    8510                 8515                 8520

His Ala  Lys Gln Thr Val Ser  Gln Leu Ala His Leu  Asn Asn Ala
    8525                 8530                 8535

Gln Lys  His Met Glu Asp Thr  Leu Ile Asp Ser Glu  Thr Thr Arg
    8540                 8545                 8550

Thr Ala  Val Lys Gln Asp Leu  Thr Glu Ala Gln Ala  Leu Asp Gln
    8555                 8560                 8565

Leu Met  Asp Ala Leu Gln Gln  Ser Ile Ala Asp Lys  Asp Ala Thr
    8570                 8575                 8580

Arg Ala  Ser Ser Ala Tyr Val  Asn Ala Glu Pro Asn  Lys Lys Gln
    8585                 8590                 8595

Ser Tyr  Asp Glu Ala Val Gln  Asn Ala Glu Ser Ile  Ile Ala Gly
    8600                 8605                 8610

Leu Asn  Asn Pro Thr Ile Asn  Lys Gly Asn Val Ser  Ser Ala Thr
    8615                 8620                 8625

Gln Ala  Val Ile Ser Ser Lys  Asn Ala Leu Asp Gly  Val Glu Arg
    8630                 8635                 8640

Leu Ala  Gln Asp Lys Gln Thr  Ala Gly Asn Ser Leu  Asn His Leu
    8645                 8650                 8655

Asp Gln  Leu Thr Pro Ala Gln  Gln Gln Ala Leu Glu  Asn Gln Ile
    8660                 8665                 8670

Asn Asn  Ala Thr Thr Arg Gly  Glu Val Ala Gln Lys  Leu Thr Glu
    8675                 8680                 8685

Ala Gln  Ala Leu Asn Gln Ala  Met Glu Ala Leu Arg  Asn Ser Ile
    8690                 8695                 8700

Gln Asp  Gln Gln Gln Thr Glu  Ala Gly Ser Lys Phe  Ile Asn Glu
```

8705 8710 8715

Asp Lys Pro Gln Lys Asp Ala Tyr Gln Ala Ala Val Gln Asn Ala
8720 8725 8730

Lys Asp Leu Ile Asn Gln Thr Asn Asn Pro Thr Leu Asp Lys Ala
8735 8740 8745

Gln Val Glu Gln Leu Thr Gln Ala Val Asn Gln Ala Lys Asp Asn
8750 8755 8760

Leu His Gly Asp Gln Lys Leu Ala Asp Asp Lys Gln His Ala Val
8765 8770 8775

Thr Asp Leu Asn Gln Leu Asn Gly Leu Asn Asn Pro Gln Arg Gln
8780 8785 8790

Ala Leu Glu Ser Gln Ile Asn Asn Ala Ala Thr Arg Gly Glu Val
8795 8800 8805

Ala Gln Lys Leu Ala Glu Ala Lys Ala Leu Asp Gln Ala Met Gln
8810 8815 8820

Ala Leu Arg Asn Ser Ile Gln Asp Gln Gln Gln Thr Glu Ser Gly
8825 8830 8835

Ser Lys Phe Ile Asn Glu Asp Lys Pro Gln Lys Asp Ala Tyr Gln
8840 8845 8850

Ala Ala Val Gln Asn Ala Lys Asp Leu Ile Asn Gln Thr Gly Asn
8855 8860 8865

Pro Thr Leu Asp Lys Ser Gln Val Glu Gln Leu Thr Gln Ala Val
8870 8875 8880

Thr Thr Ala Lys Asp Asn Leu His Gly Asp Gln Lys Leu Ala Arg
8885 8890 8895

Asp Gln Gln Gln Ala Val Thr Thr Val Asn Ala Leu Pro Asn Leu
8900 8905 8910

Asn His Ala Gln Gln Gln Ala Leu Thr Asp Ala Ile Asn Ala Ala
8915 8920 8925

Pro Thr Arg Thr Glu Val Ala Gln His Val Gln Thr Ala Thr Glu
8930 8935 8940

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Leu Asp  His Ala Met Glu Thr  Leu Lys Asn Lys Val  Asp Gln Val
    8945                 8950                 8955

Asn Thr  Asp Lys Ala Gln Pro  Asn Tyr Thr Glu Ala  Ser Thr Asp
    8960                 8965                 8970

Lys Lys  Glu Ala Val Asp Gln  Ala Leu Gln Ala Ala  Glu Ser Ile
    8975                 8980                 8985

Thr Asp  Pro Thr Asn Gly Ser  Asn Ala Asn Lys Asp  Ala Val Asp
    8990                 8995                 9000

Gln Val  Leu Thr Lys Leu Gln  Glu Lys Glu Asn Glu  Leu Asn Gly
    9005                 9010                 9015

Asn Glu  Arg Val Ala Glu Ala  Lys Thr Gln Ala Lys  Gln Thr Ile
    9020                 9025                 9030

Asp Gln  Leu Thr His Leu Asn  Ala Asp Gln Ile Ala  Thr Ala Lys
    9035                 9040                 9045

Gln Asn  Ile Asp Gln Ala Thr  Lys Leu Gln Pro Ile  Ala Glu Leu
    9050                 9055                 9060

Val Asp  Gln Ala Thr Gln Leu  Asn Gln Ser Met Asp  Gln Leu Gln
    9065                 9070                 9075

Gln Ala  Val Asn Glu His Ala  Asn Val Glu Gln Thr  Val Asp Tyr
    9080                 9085                 9090

Thr Gln  Ala Asp Ser Asp Lys  Gln Asn Ala Tyr Lys  Gln Ala Ile
    9095                 9100                 9105

Ala Asp  Ala Glu Asn Val Leu  Lys Gln Asn Ala Asn  Lys Gln Gln
    9110                 9115                 9120

Val Asp  Gln Ala Leu Gln Asn  Ile Leu Asn Ala Lys  Gln Ala Leu
    9125                 9130                 9135

Asn Gly  Asp Glu Arg Val Ala  Leu Ala Lys Thr Asn  Gly Lys His
    9140                 9145                 9150

Asp Ile  Asp Gln Leu Asn Ala  Leu Asn Asn Ala Gln  Gln Asp Gly
    9155                 9160                 9165

Phe Lys  Gly Arg Ile Asp Gln  Ser Asn Asp Leu Asn  Gln Ile Gln
    9170                 9175                 9180
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Gln Ile  Val Asp Glu Ala Lys  Ala Leu Asn Arg Ala  Met Asp Gln
    9185                 9190                 9195

Leu Ser  Gln Glu Ile Thr Asp  Asn Glu Gly Arg Thr  Lys Gly Ser
    9200                 9205                 9210

Thr Asn  Tyr Val Asn Ala Asp  Thr Gln Val Lys Gln  Val Tyr Asp
    9215                 9220                 9225

Glu Thr  Val Asp Lys Ala Lys  Gln Ala Leu Asp Lys  Ser Thr Gly
    9230                 9235                 9240

Gln Asn  Leu Thr Ala Lys Gln  Val Ile Lys Leu Asn  Asp Ala Val
    9245                 9250                 9255

Thr Ala  Ala Lys Lys Ala Leu  Asn Gly Glu Glu Arg  Leu Asn Asn
    9260                 9265                 9270

Arg Lys  Ala Glu Ala Leu Gln  Arg Leu Asp Gln Leu  Thr His Leu
    9275                 9280                 9285

Asn Asn  Ala Gln Arg Gln Leu  Ala Ile Gln Gln Ile  Asn Asn Ala
    9290                 9295                 9300

Glu Thr  Leu Asn Lys Ala Ser  Arg Ala Ile Asn Arg  Ala Thr Lys
    9305                 9310                 9315

Leu Asp  Asn Ala Met Gly Ala  Val Gln Gln Tyr Ile  Asp Glu Gln
    9320                 9325                 9330

His Leu  Gly Val Ile Ser Ser  Thr Asn Tyr Ile Asn  Ala Asp Asp
    9335                 9340                 9345

Asn Leu  Lys Ala Asn Tyr Asp  Asn Ala Ile Ala Asn  Ala Ala His
    9350                 9355                 9360

Glu Leu  Asp Lys Val Gln Gly  Asn Ala Ile Ala Lys  Ala Glu Ala
    9365                 9370                 9375

Glu Gln  Leu Lys Gln Asn Ile  Ile Asp Ala Gln Asn  Ala Leu Asn
    9380                 9385                 9390

Gly Asp  Gln Asn Leu Ala Asn  Ala Lys Asp Lys Ala  Asn Ala Phe
    9395                 9400                 9405

Val Asn  Ser Leu Asn Gly Leu  Asn Gln Gln Gln Gln  Asp Leu Ala
    9410                 9415                 9420
```

```
His Lys  Ala Ile Asn Asn Ala  Asp Thr Val Ser Asp  Val Thr Asp
    9425                9430                9435

Ile Val  Asn Asn Gln Ile Asp  Leu Asn Asp Ala Met  Glu Thr Leu
    9440                9445                9450

Lys His  Leu Val Asp Asn Glu  Ile Pro Asn Ala Glu  Gln Thr Val
    9455                9460                9465

Asn Tyr  Gln Asn Ala Asp Asp  Asn Ala Lys Thr Asn  Phe Asp Asp
    9470                9475                9480

Ala Lys  Arg Leu Ala Asn Thr  Leu Leu Asn Ser Asp  Asn Thr Asn
    9485                9490                9495

Val Asn  Asp Ile Asn Gly Ala  Ile Gln Ala Val Asn  Asp Ala Ile
    9500                9505                9510

His Asn  Leu Asn Gly Asp Gln  Arg Leu Gln Asp Ala  Lys Asp Lys
    9515                9520                9525

Ala Ile  Gln Ser Ile Asn Gln  Ala Leu Ala Asn Lys  Leu Lys Glu
    9530                9535                9540

Ile Glu  Ala Ser Asn Ala Thr  Asp Gln Asp Lys Leu  Ile Ala Lys
    9545                9550                9555

Asn Lys  Ala Glu Glu Leu Ala  Asn Ser Ile Ile Asn  Asn Ile Asn
    9560                9565                9570

Lys Ala  Thr Ser Asn Gln Ala  Val Ser Gln Val Gln  Thr Ala Gly
    9575                9580                9585

Asn His  Ala Ile Glu Gln Val  His Ala Asn Glu Ile  Pro Lys Ala
    9590                9595                9600

Lys Ile  Asp Ala Asn Lys Asp  Val Asp Lys Gln Val  Gln Ala Leu
    9605                9610                9615

Ile Asp  Glu Ile Asp Arg Asn  Pro Asn Leu Thr Asp  Lys Glu Lys
    9620                9625                9630

Gln Ala  Leu Lys Asp Arg Ile  Asn Gln Ile Leu Gln  Gln Gly His
    9635                9640                9645

Asn Gly  Ile Asn Asn Ala Met  Thr Lys Glu Glu Ile  Glu Gln Ala
```

9650 9655 9660

Lys Ala Gln Leu Ala Gln Ala Leu Gln Asp Ile Lys Asp Leu Val
9665 9670 9675

Lys Ala Lys Glu Asp Ala Lys Gln Asp Val Asp Lys Gln Val Gln
9680 9685 9690

Ala Leu Ile Asp Glu Ile Asp Gln Asn Pro Asn Leu Thr Asp Lys
9695 9700 9705

Glu Lys Gln Ala Leu Lys Tyr Arg Ile Asn Gln Ile Leu Gln Gln
9710 9715 9720

Gly His Asn Asp Ile Asn Asn Ala Leu Thr Lys Glu Glu Ile Glu
9725 9730 9735

Gln Ala Lys Ala Gln Leu Ala Gln Ala Leu Gln Asp Ile Lys Asp
9740 9745 9750

Leu Val Lys Ala Lys Glu Asp Ala Lys Asn Ala Ile Lys Ala Leu
9755 9760 9765

Ala Asn Ala Lys Arg Asp Gln Ile Asn Ser Asn Pro Asp Leu Thr
9770 9775 9780

Pro Glu Gln Lys Ala Lys Ala Leu Lys Glu Ile Asp Glu Ala Glu
9785 9790 9795

Lys Arg Ala Leu Gln Asn Val Glu Asn Ala Gln Thr Ile Asp Gln
9800 9805 9810

Leu Asn Arg Gly Leu Asn Leu Gly Leu Asp Asp Ile Arg Asn Thr
9815 9820 9825

His Val Trp Glu Val Asp Glu Gln Pro Ala Val Asn Glu Ile Phe
9830 9835 9840

Glu Ala Thr Pro Glu Gln Ile Leu Val Asn Gly Glu Leu Ile Val
9845 9850 9855

His Arg Asp Asp Ile Ile Thr Glu Gln Asp Ile Leu Ala His Ile
9860 9865 9870

Asn Leu Ile Asp Gln Leu Ser Ala Glu Val Ile Asp Thr Pro Ser
9875 9880 9885

```
Thr Ala  Thr Ile Ser Asp Ser  Leu Thr Ala Lys Val  Glu Val Thr
    9890                 9895                 9900

Leu Leu  Asp Gly Ser Lys Val  Ile Val Asn Val Pro  Val Lys Val
    9905                 9910                 9915

Val Glu  Lys Glu Leu Ser Val  Val Lys Gln Gln Ala  Ile Glu Ser
    9920                 9925                 9930

Ile Glu  Asn Ala Ala Gln Gln  Lys Ile Asn Glu Ile  Asn Asn Ser
    9935                 9940                 9945

Val Thr  Leu Thr Leu Glu Gln  Lys Glu Ala Ala Ile  Ala Glu Val
    9950                 9955                 9960

Asn Lys  Leu Lys Gln Gln Ala  Ile Asp His Val Asn  Asn Ala Pro
    9965                 9970                 9975

Asp Val  His Ser Val Glu Glu  Ile Gln Gln Gln Glu  Gln Ala His
    9980                 9985                 9990

Ile Glu  Gln Phe Asn Pro Glu   Gln Phe Thr Ile Glu   Gln Ala Lys
    9995                 10000                 10005

Ser Asn   Ala Ile Lys Ser Ile   Glu Asp Ala Ile Gln   His Met Ile
    10010                10015                 10020

Asp Glu   Ile Lys Ala Arg Thr   Asp Leu Thr Asp Lys   Glu Lys Gln
    10025                10030                 10035

Glu Ala   Ile Ala Lys Leu Asn   Gln Leu Lys Glu Gln   Ala Ile Gln
    10040                10045                 10050

Ala Ile   Gln Arg Ala Gln Ser   Ile Asp Glu Ile Ser   Glu Gln Leu
    10055                10060                 10065

Glu Gln   Phe Lys Ala Gln Met   Lys Ala Ala Asn Pro   Thr Ala Lys
    10070                10075                 10080

Glu Leu   Ala Lys Arg Lys Gln   Glu Ala Ile Ser Arg   Ile Lys Asp
    10085                10090                 10095

Phe Ser   Asn Glu Lys Ile Asn   Ser Ile Arg Asn Ser   Glu Ile Gly
    10100                10105                 10110

Thr Ala   Asp Glu Lys Gln Ala   Ala Met Asn Gln Ile   Asn Glu Ile
    10115                10120                 10125
```

```
Val Leu   Glu Thr Ile Arg Asp   Ile Asn Asn Ala His   Thr Leu Gln
    10130                 10135                 10140

Gln Val   Glu Ala Ala Leu Asn   Asn Gly Ile Ala Arg   Ile Ser Ala
    10145                 10150                 10155

Val Gln   Ile Val Thr Ser Asp   Arg Ala Lys Gln Ser   Ser Ser Thr
    10160                 10165                 10170

Gly Asn   Glu Ser Asn Ser His   Leu Thr Ile Gly Tyr   Gly Thr Ala
    10175                 10180                 10185

Asn His   Pro Phe Asn Ser Ser   Thr Ile Gly His Lys   Lys Lys Leu
    10190                 10195                 10200

Asp Glu   Asp Asp Asp Ile Asp   Pro Leu His Met Arg   His Phe Ser
    10205                 10210                 10215

Asn Asn   Phe Gly Asn Val Ile   Lys Asn Ala Ile Gly   Val Val Gly
    10220                 10225                 10230

Ile Ser   Gly Leu Leu Ala Ser   Phe Trp Phe Phe Ile   Ala Lys Arg
    10235                 10240                 10245

Arg Arg   Lys Glu Asp Glu Glu   Glu Glu Leu Glu Ile   Arg Asp Asn
    10250                 10255                 10260

Asn Lys   Asp Ser Ile Lys Glu   Thr Leu Asp Asp Thr   Lys His Leu
    10265                 10270                 10275

Pro Leu   Leu Phe Ala Lys Arg   Arg Arg Lys Glu Asp   Glu Glu Asp
    10280                 10285                 10290

Val Thr   Val Glu Glu Lys Asp   Ser Leu Asn Asn Gly   Glu Ser Leu
    10295                 10300                 10305

Asp Lys   Val Lys His Thr Pro   Phe Phe Leu Pro Lys   Arg Arg Arg
    10310                 10315                 10320

Lys Glu   Asp Glu Glu Asp Val   Glu Val Thr Asn Glu   Asn Thr Asp
    10325                 10330                 10335

Glu Lys   Val Leu Lys Asp Asn   Glu His Ser Pro Leu   Leu Phe Ala
    10340                 10345                 10350

Lys Arg   Arg Lys Asp Lys Glu   Glu Asp Val Glu Thr   Thr Thr Ser
    10355                 10360                 10365
```

Ile Glu Ser Lys Asp Glu Asp Val Pro Leu Leu Leu Ala Lys Lys
10370 10375 10380

Lys Asn Gln Lys Asp Asn Gln Ser Lys Asp Lys Lys Ser Ala Ser
10385 10390 10395

Lys Asn Thr Ser Lys Lys Val Ala Ala Lys Lys Lys Lys Lys Lys
10400 10405 10410

Ala Lys Lys Asn Lys Lys
10415

<210> 25
<211> 340
<212> PRT
<213> Staphylococcus sp.

<400> 25

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

Gln Ile Met Asn Ser Asn His Ala Lys Ala Ser Val Thr Glu Ser Val
20 25 30

Asp Lys Lys Phe Val Val Pro Glu Ser Gly Ile Asn Lys Ile Ile Pro
35 40 45

Ala Tyr Asp Glu Phe Lys Asn Ser Pro Lys Val Asn Val Ser Asn Leu
50 55 60

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

Ala Asp Ser Ser Ala Ala Ser Lys Ile Val Asp Lys Asn Phe Val Val
85 90 95

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

Asn Arg Val Asn Val Ala Thr Asn Asn Pro Ala Ser Gln Gln Val Asp
115 120 125

Lys His Phe Val Ala Lys Gly Pro Glu Val Asn Arg Phe Ile Thr Gln
130 135 140

Asn Lys Val Asn His His Phe Ile Thr Thr Gln Thr His Tyr Lys Lys
145 150 155 160

```
Val Ile Thr Ser Tyr Lys Ser Thr His Val His Lys His Val Asn His
                165                 170                 175

Ala Lys Asp Ser Ile Asn Lys His Phe Ile Val Lys Pro Ser Glu Ser
            180                 185                 190

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

Ala Val Pro Gly Tyr His Ala His Lys Phe Val Thr Pro Gly His Ala
    210                 215                 220

Ser Ile Lys Ile Asn His Phe Cys Val Val Pro Gln Ile Asn Ser Phe
225                 230                 235                 240

Lys Val Ile Pro Pro Tyr Gly His Asn Ser His Arg Met His Val Pro
                245                 250                 255

Ser Phe Gln Asn Asn Thr Thr Ala Thr His Gln Asn Ala Lys Val Asn
            260                 265                 270

Lys Ala Tyr Asp Tyr Lys Tyr Phe Tyr Ser Tyr Lys Val Val Lys Gly
        275                 280                 285

Val Lys Lys Tyr Phe Ser Phe Ser Gln Ser Asn Gly Tyr Lys Ile Gly
    290                 295                 300

Lys Pro Ser Leu Asn Ile Lys Asn Val Asn Tyr Gln Tyr Ala Val Pro
305                 310                 315                 320

Ser Tyr Ser Pro Thr His Tyr Val Pro Glu Phe Lys Gly Ser Leu Pro
                325                 330                 335

Ala Pro Arg Val
            340
```

<210> 26
<211> 130
<212> PRT
<213> Staphylococcus sp.

<400> 26

```
Met Asn Phe Asn Asp Ile Glu Thr Met Val Lys Ser Lys Phe Lys Asp
1               5                   10                  15

Ile Lys Lys His Ala Glu Glu Ile Ala His Glu Ile Glu Val Arg Ser
            20                  25                  30
```

```
Gly Tyr Leu Arg Lys Ala Glu Gln Tyr Lys Arg Leu Glu Phe Asn Leu
        35                  40                  45

Ser Phe Ala Leu Asp Asp Ile Glu Ser Thr Ala Lys Asp Val Gln Thr
    50                  55                  60

Ala Lys Ser Ser Ala Asn Lys Asp Ser Val Thr Val Lys Gly Lys Ala
65                  70                  75                  80

Pro Asn Thr Leu Tyr Ile Glu Lys Arg Asn Leu Met Lys Gln Lys Leu
                85                  90                  95

Glu Met Leu Gly Glu Asp Ile Asp Lys Asn Lys Glu Ser Leu Gln Lys
            100                 105                 110

Ala Lys Glu Ile Ala Gly Glu Lys Ala Ser Glu Tyr Phe Asn Lys Ala
        115                 120                 125

Met Asn
    130
```

<210> 27
<211> 636
<212> PRT
<213> Staphylococcus sp.

<400> 27

```
Met Lys Lys Gln Ile Ile Ser Leu Gly Ala Leu Ala Val Ala Ser Ser
1               5                   10                  15

Leu Phe Thr Trp Asp Asn Lys Ala Asp Ala Ile Val Thr Lys Asp Tyr
            20                  25                  30

Ser Gly Lys Ser Gln Val Asn Ala Gly Ser Lys Asn Gly Thr Leu Ile
        35                  40                  45

Asp Ser Arg Tyr Leu Asn Ser Ala Leu Tyr Tyr Leu Glu Asp Tyr Ile
    50                  55                  60

Ile Tyr Ala Ile Gly Leu Thr Asn Lys Tyr Glu Tyr Gly Asp Asn Ile
65                  70                  75                  80

Tyr Lys Glu Ala Lys Asp Arg Leu Leu Glu Lys Val Leu Arg Glu Asp
                85                  90                  95

Gln Tyr Leu Leu Glu Arg Lys Lys Ser Gln Tyr Glu Asp Tyr Lys Gln
            100                 105                 110
```

```
Trp Tyr Ala Asn Tyr Lys Lys Glu Asn Pro Arg Thr Asp Leu Lys Met
        115                 120                 125

Ala Asn Phe His Lys Tyr Asn Leu Glu Glu Leu Ser Met Lys Glu Tyr
    130                 135                 140

Asn Glu Leu Gln Asp Ala Leu Lys Arg Ala Leu Asp Asp Phe His Arg
145                 150                 155                 160

Glu Val Lys Asp Ile Lys Asp Lys Asn Ser Asp Leu Lys Thr Phe Asn
                165                 170                 175

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

Glu Ile Asp Thr Leu Val Val Ser Tyr Tyr Gly Asp Lys Asp Tyr Gly
        195                 200                 205

Glu His Ala Lys Glu Leu Arg Ala Lys Leu Asp Leu Ile Leu Gly Asp
    210                 215                 220

Thr Asp Asn Pro His Lys Ile Thr Asn Glu Arg Ile Lys Lys Glu Met
225                 230                 235                 240

Ile Asp Asp Leu Asn Ser Ile Ile Asp Asp Phe Phe Met Glu Thr Lys
                245                 250                 255

Gln Asn Arg Pro Lys Ser Ile Thr Lys Tyr Asn Pro Thr Thr His Asn
            260                 265                 270

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

Glu Thr Lys Lys Ala Val Lys Glu Ala Asp Asp Ser Trp Lys Lys Lys
    290                 295                 300

Thr Val Lys Lys Tyr Gly Glu Thr Glu Thr Lys Ser Pro Val Val Lys
305                 310                 315                 320

Glu Glu Lys Lys Val Glu Glu Pro Gln Ala Pro Lys Val Asp Asn Gln
                325                 330                 335

Gln Glu Val Lys Thr Thr Ala Gly Lys Ala Glu Glu Thr Thr Gln Pro
            340                 345                 350

Val Ala Gln Pro Leu Val Lys Ile Pro Gln Gly Thr Ile Thr Gly Glu
```

355 360 365

Ile Val Lys Gly Pro Glu Tyr Pro Thr Met Glu Asn Lys Thr Val Gln
370 375 380

Gly Glu Ile Val Gln Gly Pro Asp Phe Leu Thr Met Glu Gln Ser Gly
385 390 395 400

Pro Ser Leu Ser Asn Asn Tyr Thr Asn Pro Pro Leu Thr Asn Pro Ile
405 410 415

Leu Glu Gly Leu Glu Gly Ser Ser Ser Lys Leu Glu Ile Lys Pro Gln
420 425 430

Gly Thr Glu Ser Thr Leu Lys Gly Thr Gln Gly Glu Ser Ser Asp Ile
435 440 445

Glu Val Lys Pro Gln Ala Thr Glu Thr Thr Glu Ala Ser Gln Tyr Gly
450 455 460

Pro Arg Pro Gln Phe Asn Lys Thr Pro Lys Tyr Val Lys Tyr Arg Asp
465 470 475 480

Ala Gly Thr Gly Ile Arg Glu Tyr Asn Asp Gly Thr Phe Gly Tyr Glu
485 490 495

Ala Arg Pro Arg Phe Asn Lys Pro Ser Glu Thr Asn Ala Tyr Asn Val
500 505 510

Thr Thr His Ala Asn Gly Gln Val Ser Tyr Gly Ala Arg Pro Thr Tyr
515 520 525

Lys Lys Pro Ser Glu Thr Asn Ala Tyr Asn Val Thr Thr His Ala Asn
530 535 540

Gly Gln Val Ser Tyr Gly Ala Arg Pro Thr Gln Asn Lys Pro Ser Lys
545 550 555 560

Thr Asn Ala Tyr Asn Val Thr Thr His Gly Asn Gly Gln Val Ser Tyr
565 570 575

Gly Ala Arg Pro Thr Gln Asn Lys Pro Ser Lys Thr Asn Ala Tyr Asn
580 585 590

Val Thr Thr His Ala Asn Gly Gln Val Ser Tyr Gly Ala Arg Pro Thr
595 600 605

Tyr Lys Lys Pro Ser Lys Thr Asn Ala Tyr Asn Val Thr Thr His Ala
610 615 620

Asp Gly Thr Ala Thr Tyr Gly Pro Arg Val Thr Lys
625 630 635

<210> 28
<211> 745
<212> PRT
<213> Staphylococcus sp.

<400> 28

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

Lys Ala Thr Thr Asp Lys Gln Gln Val Pro Pro Thr Lys Glu Ala Ala
20 25 30

His His Ser Gly Lys Glu Ala Ala Thr Asn Val Ser Ala Ser Ala Gln
35 40 45

Gly Thr Ala Asp Asp Thr Asn Ser Lys Val Thr Ser Asn Ala Pro Ser
50 55 60

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

Val Asp Thr Gln Gln Ala Ser Thr Gln Lys Pro Thr His Thr Ala Thr
85 90 95

Phe Lys Leu Ser Asn Ala Lys Thr Ala Ser Leu Ser Pro Arg Met Phe
100 105 110

Ala Ala Asn Ala Pro Gln Thr Thr Thr His Lys Ile Leu His Thr Asn
115 120 125

Asp Ile His Gly Arg Leu Ala Glu Glu Lys Gly Arg Val Ile Gly Met
130 135 140

Ala Lys Leu Lys Thr Val Lys Glu Gln Glu Lys Pro Asp Leu Met Leu
145 150 155 160

Asp Ala Gly Asp Ala Phe Gln Gly Leu Pro Leu Ser Asn Gln Ser Lys
165 170 175

Gly Glu Glu Met Ala Lys Ala Met Asn Ala Val Gly Tyr Asp Ala Met
180 185 190

```
Ala Val Gly Asn His Glu Phe Asp Phe Gly Tyr Asp Gln Leu Lys Lys
        195                 200                 205

Leu Glu Gly Met Leu Asp Phe Pro Met Leu Ser Thr Asn Val Tyr Lys
    210                 215                 220

Asp Gly Lys Arg Ala Phe Lys Pro Ser Thr Ile Val Thr Lys Asn Gly
225                 230                 235                 240

Ile Arg Tyr Gly Ile Ile Gly Val Thr Thr Pro Glu Thr Lys Thr Lys
                245                 250                 255

Thr Arg Pro Glu Gly Ile Lys Gly Val Glu Phe Arg Asp Pro Leu Gln
            260                 265                 270

Ser Val Thr Ala Glu Met Met Arg Ile Tyr Lys Asp Val Asp Thr Phe
        275                 280                 285

Val Val Ile Ser His Leu Gly Ile Asp Pro Ser Thr Gln Glu Thr Trp
    290                 295                 300

Arg Gly Asp Tyr Leu Val Lys Gln Leu Ser Gln Asn Pro Gln Leu Lys
305                 310                 315                 320

Lys Arg Ile Thr Val Ile Asp Gly His Ser His Thr Val Leu Gln Asn
                325                 330                 335

Gly Gln Ile Tyr Asn Asn Asp Ala Leu Ala Gln Thr Gly Thr Ala Leu
            340                 345                 350

Ala Asn Ile Gly Lys Ile Thr Phe Asn Tyr Arg Asn Gly Glu Val Ser
        355                 360                 365

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

Pro Asn Lys Ala Leu Ala Glu Gln Ile Asn Gln Ala Asp Gln Thr Phe
385                 390                 395                 400

Arg Ala Gln Thr Ala Glu Val Ile Ile Pro Asn Asn Thr Ile Asp Phe
                405                 410                 415

Lys Gly Glu Arg Asp Asp Val Arg Thr Arg Glu Thr Asn Leu Gly Asn
            420                 425                 430

Ala Ile Ala Asp Ala Met Glu Ala Tyr Gly Val Lys Asn Phe Ser Lys
        435                 440                 445
```

```
Lys Thr Asp Phe Ala Val Thr Asn Gly Gly Gly Ile Arg Ala Ser Ile
    450                 455                 460

Ala Lys Gly Lys Val Thr Arg Tyr Asp Leu Ile Ser Val Leu Pro Phe
465                 470                 475                 480

Gly Asn Thr Ile Ala Gln Ile Asp Val Lys Gly Ser Asp Val Trp Thr
                485                 490                 495

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

Thr Val Leu Thr Ala Asn Gly Gly Leu Leu His Ile Ser Asp Ser Ile
        515                 520                 525

Arg Val Tyr Tyr Asp Ile Asn Lys Pro Ser Gly Lys Arg Ile Asn Ala
    530                 535                 540

Ile Gln Ile Leu Asn Lys Glu Thr Gly Lys Phe Glu Asn Ile Asp Leu
545                 550                 555                 560

Lys Arg Val Tyr His Val Thr Met Asn Asp Phe Thr Ala Ser Gly Gly
                565                 570                 575

Asp Gly Tyr Ser Met Phe Gly Gly Pro Arg Glu Glu Gly Ile Ser Leu
            580                 585                 590

Asp Gln Val Leu Ala Ser Tyr Leu Lys Thr Ala Asn Leu Ala Lys Tyr
        595                 600                 605

Asp Thr Thr Glu Pro Gln Arg Met Leu Leu Gly Lys Pro Ala Val Ser
    610                 615                 620

Glu Gln Pro Ala Lys Gly Gln Gln Gly Ser Lys Gly Ser Lys Ser Gly
625                 630                 635                 640

Lys Asp Thr Gln Pro Ile Gly Asp Asp Lys Val Met Asp Pro Ala Lys
                645                 650                 655

Lys Pro Ala Pro Gly Lys Val Val Leu Leu Leu Ala His Arg Gly Thr
            660                 665                 670

Val Ser Ser Gly Thr Glu Gly Ser Gly Arg Thr Ile Glu Gly Ala Thr
        675                 680                 685

Val Ser Ser Lys Ser Gly Lys Gln Leu Ala Arg Met Ser Val Pro Lys
    690                 695                 700
```

Gly Ser Ala His Glu Lys Gln Leu Pro Lys Thr Gly Thr Asn Gln Ser
705 710 715 720

Ser Ser Pro Glu Ala Met Phe Val Leu Leu Ala Gly Ile Gly Leu Ile
725 730 735

Ala Thr Val Arg Arg Arg Lys Ala Ser
740 745

<210> 29
<211> 628
<212> PRT
<213> Staphylococcus sp.

<400> 29

Met Ser Asp Arg Phe Ile Lys Phe Asn Asp Glu Gln Leu Asp Ala Lys
1 5 10 15

Gln Val Met Met Leu Gln Asp Leu Ala Arg Leu Leu Leu Lys Asn Glu
20 25 30

Gln Thr Gln Val Lys Ile Gln Lys Phe Pro Tyr Tyr Asn Pro Val Gln
35 40 45

Asn Val Leu Ile Thr Ser Trp Phe Trp Ser His Arg Pro Ser His Ile
50 55 60

Glu Met Ala Gly Leu Lys Thr Asp Val Met Leu Ala Ala Tyr Gly Tyr
65 70 75 80

His Met Met Asp Val Gln Ile Val Asn Glu Val Val Gln Asp Lys Thr
85 90 95

Phe Lys His Pro Lys Phe Tyr Gln Gln Leu Phe Lys Leu Leu Glu Asp
100 105 110

Met Arg Val Leu Asn Ser Ile Lys Val Glu Arg Pro Ser Thr Ala Lys
115 120 125

Leu Ile Asp Leu Arg Leu Asp Thr Arg Ile Ser Tyr Thr Glu Ser Gln
130 135 140

Ile Lys Val Tyr Arg Thr Lys Thr Gln Tyr Thr Asp Leu Leu Phe Leu
145 150 155 160

Tyr Leu Glu His Ala Phe Leu Ser Gln Asp Phe Phe Asp Ile Pro Ser
165 170 175

```
Ile His Ser Asp Leu Asp Asp Ile Leu Val Asn Met Phe Leu Tyr Leu
            180                 185                 190

Pro Asn Phe Phe Gln Asn Gln Asn Ser Glu Asp Asn Met Tyr Leu Ala
        195                 200                 205

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

Asn Glu Tyr Tyr Tyr Leu Pro Lys Thr Leu Tyr Asn Thr Leu Ala Ser
225                 230                 235                 240

Pro Glu Phe Asp Asp Leu Lys Arg Thr Asp Ala Ser Gln Val Asp Gly
                245                 250                 255

Gln Asp Asp Thr Ser Glu Asp Asp Asp Asn Glu Ser Glu Lys Ala Asp
            260                 265                 270

Ser Lys Ser Ala Asp Ser Glu Ser Lys Gly Gly Ala Tyr Leu Glu Met
        275                 280                 285

Glu Leu His Glu Gly Gln Asn Ser Glu Thr Leu Gly Asn Asp Glu Ala
    290                 295                 300

Arg Glu Gly Asp Ala Thr Asp Asp Met Thr Asp Met Met Thr Lys Lys
305                 310                 315                 320

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

Gly Gln Ser Gln Ala Phe Gln Leu Asp Gly Val Asn Lys Asn Val Glu
            340                 345                 350

Ile Lys Trp Gln Ile Pro Glu Ile Glu Pro Gln Tyr Val Leu Glu Tyr
        355                 360                 365

Gln Glu Ser Lys Gln Asp Val Gln Tyr Glu Ile Lys Asp Leu Ile Gln
    370                 375                 380

Ile Ile Lys Lys Thr Ile Glu Arg Glu Gln Arg Asp Ala Arg Phe Asn
385                 390                 395                 400

Leu Thr Lys Gly Arg Leu Gln Lys Asp Leu Ile Asn Trp Phe Ile Asp
                405                 410                 415

Asp Gln Tyr Lys Leu Phe Tyr Lys Lys Gln Asp Leu Ser Lys Ser Phe
```

420 425 430

Asp Ala Thr Phe Thr Leu Leu Ile Asp Ala Ser Ala Ser Met His Asp
435 440 445

Lys Met Ala Glu Thr Lys Lys Gly Val Val Leu Phe His Glu Thr Leu
450 455 460

Lys Ala Leu Asn Ile Lys His Glu Ile Leu Ser Phe Ser Glu Asp Ala
465 470 475 480

Phe Asp Ser Asp Glu His Ala Gln Pro Asn Ile Ile Asn Glu Ile Ile
485 490 495

Asn Tyr Asp Tyr Ser Thr Phe Glu Lys Asp Gly Pro Arg Ile Met Ala
500 505 510

Leu Glu Pro Gln Asp Asp Asn Arg Asp Gly Val Ala Ile Arg Val Ala
515 520 525

Ser Glu Arg Leu Met Arg Arg Asn Gln His Gln Arg Phe Leu Ile Val
530 535 540

Phe Ser Asp Gly Glu Pro Ser Ala Phe Asn Tyr Ser Gln Asp Gly Ile
545 550 555 560

Ile Asp Thr Tyr Glu Ala Val Glu Met Ser Arg Lys Phe Gly Ile Glu
565 570 575

Val Phe Asn Val Phe Leu Ser Gln Asp Pro Ile Thr Glu Asp Val Glu
580 585 590

Gln Thr Ile His Asn Ile Tyr Gly Gln Tyr Ala Ile Phe Val Glu Gly
595 600 605

Val Ala His Leu Pro Gly His Leu Ser Pro Leu Leu Lys Lys Leu Leu
610 615 620

Leu Lys Ser Leu
625

<210> 30
<211> 154
<212> PRT
<213> Staphylococcus sp.

<400> 30

Ala Glu Ile Asn Lys Gln Thr Thr Ser Gln Gly Val Thr Thr Glu Lys

```
1               5                   10                  15

Asn Asn Gly Ile Ala Val Leu Glu Gln Asp Val Ile Thr Pro Thr Val
            20                  25                  30

Lys Pro Gln Ala Lys Gln Asp Ile Ile Gln Ala Val Thr Thr Arg Lys
        35                  40                  45

Gln Gln Ile Lys Lys Ser Asn Ala Ser Leu Gln Asp Glu Lys Asp Val
    50                  55                  60

Ala Asn Asp Lys Ile Gly Lys Ile Glu Thr Lys Ala Ile Lys Asp Ile
65                  70                  75                  80

Asp Ala Ala Thr Thr Asn Ala Gln Val Glu Ala Ile Lys Thr Lys Ala
                85                  90                  95

Ile Asn Asp Ile Asn Gln Thr Thr Pro Ala Thr Thr Ala Lys Ala Ala
            100                 105                 110

Ala Leu Glu Glu Phe Asp Glu Val Val Gln Ala Gln Ile Asp Gln Ala
        115                 120                 125

Pro Leu Asn Pro Asp Thr Thr Asn Glu Glu Val Ala Glu Ala Ile Glu
    130                 135                 140

Arg Ile Asn Ala Ala Lys Val Ser Gly Val
145                 150
```

<210> 31
<211> 584
<212> PRT
<213> Staphylococcus sp.

<400> 31

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

Ala Ser Thr Gly Ala Asn Phe Asn Asn Asn Glu Ala Ser Ala Ala Ala
            20                  25                  30

Lys Pro Leu Asp Lys Ser Ser Ser Ser Leu His His Gly Tyr Ser Lys
        35                  40                  45

Val His Val Pro Tyr Ala Ile Thr Val Asn Gly Thr Ser Gln Asn Ile
    50                  55                  60

Leu Ser Ser Leu Thr Phe Asn Lys Asn Gln Asn Ile Ser Tyr Lys Asp
```

```
65                  70                  75                  80

Leu Glu Asp Arg Val Lys Ser Val Leu Lys Ser Asp Arg Gly Ile Ser
                85                  90                  95

Asp Ile Asp Leu Arg Leu Ser Lys Gln Ala Lys Tyr Thr Val Tyr Phe
            100                 105                 110

Lys Asn Gly Thr Lys Lys Val Ile Asp Leu Lys Ala Gly Ile Tyr Thr
        115                 120                 125

Ala Asp Leu Ile Asn Thr Ser Glu Ile Lys Ala Ile Asn Ile Asn Val
    130                 135                 140

Asp Thr Lys Lys Gln Val Glu Asp Lys Lys Lys Asp Lys Ala Asn Tyr
145                 150                 155                 160

Gln Val Pro Tyr Thr Ile Thr Val Asn Gly Thr Ser Gln Asn Ile Leu
                165                 170                 175

Ser Asn Leu Thr Phe Asn Lys Asn Gln Asn Ile Ser Tyr Lys Asp Leu
            180                 185                 190

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

Val Asp Leu Arg Leu Ser Lys Gln Ala Lys Tyr Thr Val Asn Phe Lys
    210                 215                 220

Asn Gly Thr Lys Lys Val Ile Asp Leu Lys Ser Gly Ile Tyr Thr Ala
225                 230                 235                 240

Asn Leu Ile Asn Ser Ser Asp Ile Lys Ser Ile Asn Ile Asn Val Asp
                245                 250                 255

Thr Lys Lys His Ile Glu Asn Lys Ala Lys Arg Asn Tyr Gln Val Pro
            260                 265                 270

Tyr Ser Ile Asn Leu Asn Gly Thr Ser Thr Asn Ile Leu Ser Asn Leu
        275                 280                 285

Ser Phe Ser Asn Lys Pro Trp Thr Asn Tyr Lys Asn Leu Thr Ser Gln
    290                 295                 300

Ile Lys Ser Val Leu Lys His Asp Arg Gly Ile Ser Glu Gln Asp Leu
305                 310                 315                 320
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Lys Tyr Ala Lys Lys Ala Tyr Tyr Thr Val Tyr Phe Lys Asn Gly Gly
                325                 330                 335

Lys Arg Ile Leu Gln Leu Asn Ser Lys Asn Tyr Thr Ala Asn Leu Val
            340                 345                 350

His Ala Lys Asp Val Lys Arg Ile Glu Ile Thr Val Lys Thr Gly Thr
        355                 360                 365

Lys Ala Lys Ala Asp Arg Tyr Val Pro Tyr Thr Ile Ala Val Asn Gly
    370                 375                 380

Thr Ser Thr Pro Ile Leu Ser Asp Leu Lys Phe Thr Gly Asp Pro Arg
385                 390                 395                 400

Val Gly Tyr Lys Asp Ile Ser Lys Lys Val Lys Ser Val Leu Lys His
                405                 410                 415

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

Tyr Thr Val His Phe Lys Asn Gly Thr Lys Lys Val Ile Asn Ile Asn
        435                 440                 445

Ser Asn Ile Ser Gln Leu Asn Leu Leu Tyr Val Gln Asp Ile Lys Lys
    450                 455                 460

Ile Asp Ile Asp Val Lys Thr Gly Thr Lys Ala Lys Ala Asp Ser Tyr
465                 470                 475                 480

Val Pro Tyr Thr Ile Ala Val Asn Gly Thr Ser Thr Pro Ile Leu Ser
                485                 490                 495

Lys Leu Lys Ile Ser Asn Lys Gln Leu Ile Ser Tyr Lys Tyr Leu Asn
            500                 505                 510

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

Asp Leu Lys Phe Ala Lys Gln Ala Lys Tyr Thr Val Tyr Phe Lys Asn
    530                 535                 540

Gly Lys Lys Gln Val Val Asn Leu Lys Ser Asp Ile Phe Thr Pro Asn
545                 550                 555                 560

Leu Phe Ser Ala Lys Asp Ile Lys Lys Ile Asp Ile Asp Val Lys Gln
                565                 570                 575
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Tyr Thr Lys Ser Lys Lys Asn Lys
580

<210> 32
<211> 508
<212> PRT
<213> Staphylococcus sp.

<400> 32

Met Lys Asn Lys Leu Leu Val Leu Ser Leu Gly Ala Leu Cys Val Ser
1 5 10 15

Gln Ile Trp Glu Ser Asn Arg Ala Ser Ala Val Val Ser Gly Glu Lys
20 25 30

Asn Pro Tyr Val Ser Glu Ser Leu Lys Leu Thr Asn Asn Lys Asn Lys
35 40 45

Ser Arg Thr Val Glu Glu Tyr Lys Lys Ser Leu Asp Asp Leu Ile Trp
50 55 60

Ser Phe Pro Asn Leu Asp Asn Glu Arg Phe Asp Asn Pro Glu Tyr Lys
65 70 75 80

Glu Ala Met Lys Lys Tyr Gln Gln Arg Phe Met Ala Glu Asp Glu Ala
85 90 95

Leu Lys Lys Phe Phe Ser Glu Glu Lys Lys Ile Lys Asn Gly Asn Thr
100 105 110

Asp Asn Leu Asp Tyr Leu Gly Leu Ser His Glu Arg Tyr Glu Ser Val
115 120 125

Phe Asn Thr Leu Lys Lys Gln Ser Glu Glu Phe Leu Lys Glu Ile Glu
130 135 140

Asp Ile Lys Lys Asp Asn Pro Glu Leu Lys Asp Phe Asn Glu Glu Glu
145 150 155 160

Gln Leu Lys Cys Asp Leu Glu Leu Asn Lys Leu Glu Asn Gln Ile Leu
165 170 175

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

Leu Tyr Ser Lys Leu Asp Leu Ile Met Gly Tyr Lys Asp Glu Glu Arg
195 200 205

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Ala Asn Lys Lys Ala Val Asn Lys Arg Met Leu Glu Asn Lys Lys Glu
    210                 215                 220

Asp Leu Glu Thr Ile Ile Asp Glu Phe Phe Ser Asp Ile Asp Lys Thr
225                 230                 235                 240

Arg Pro Asn Asn Ile Pro Val Leu Glu Asp Glu Lys Gln Glu Glu Lys
                245                 250                 255

Asn His Lys Asn Met Ala Gln Leu Lys Ser Asp Thr Glu Ala Ala Lys
            260                 265                 270

Ser Asp Glu Ser Lys Arg Ser Lys Arg Ser Lys Arg Ser Leu Asn Thr
        275                 280                 285

Gln Asn His Lys Pro Ala Ser Gln Glu Val Ser Glu Gln Gln Lys Ala
    290                 295                 300

Glu Tyr Asp Lys Arg Ala Glu Glu Arg Lys Ala Arg Phe Leu Asp Asn
305                 310                 315                 320

Gln Lys Ile Lys Lys Thr Pro Val Val Ser Leu Glu Tyr Asp Phe Glu
                325                 330                 335

His Lys Gln Arg Ile Asp Asn Glu Asn Asp Lys Lys Leu Val Val Ser
            340                 345                 350

Ala Pro Thr Lys Lys Pro Thr Ser Pro Thr Thr Tyr Thr Glu Thr Thr
        355                 360                 365

Thr Gln Val Pro Met Pro Thr Val Glu Arg Gln Thr Gln Gln Gln Ile
    370                 375                 380

Ile Tyr Asn Ala Pro Lys Gln Leu Ala Gly Leu Asn Gly Glu Ser His
385                 390                 395                 400

Asp Phe Thr Thr Thr His Gln Ser Pro Thr Thr Ser Asn His Thr His
                405                 410                 415

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

Ser Gly Ser Leu Val Gly Ile Ser Gln Ile Asp Ser Ser His Leu Thr
        435                 440                 445

Glu Arg Glu Lys Arg Val Ile Lys Arg Glu His Val Arg Glu Ala Gln
    450                 455                 460
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Lys Leu Val Asp Asn Tyr Lys Asp Thr His Ser Tyr Lys Asp Arg Ile
465                 470                 475                 480


Asn Ala Gln Gln Lys Val Asn Thr Leu Ser Glu Gly His Gln Lys Arg
                485                 490                 495


Phe Asn Lys Gln Ile Asn Lys Val Tyr Asn Gly Lys
            500                 505


<210>  33
<211>  520
<212>  PRT
<213>  Staphylococcus sp.

<400>  33

Met Leu Thr Leu Gln Ile His Thr Gly Gly Ile Asn Leu Lys Lys Lys
1               5                   10                  15


Asn Ile Tyr Ser Ile Arg Lys Leu Gly Val Gly Ile Ala Ser Val Thr
            20                  25                  30


Leu Gly Thr Leu Leu Ile Ser Gly Gly Val Thr Pro Ala Ala Asn Ala
        35                  40                  45


Ala Gln His Asp Glu Ala Gln Gln Asn Ala Phe Tyr Gln Val Leu Asn
    50                  55                  60


Met Pro Asn Leu Asn Ala Asp Gln Arg Asn Gly Phe Ile Gln Ser Leu
65                  70                  75                  80


Lys Asp Asp Pro Ser Gln Ser Ala Asn Val Leu Gly Glu Ala Gln Lys
                85                  90                  95


Leu Asn Asp Ser Gln Ala Pro Lys Ala Asp Ala Gln Gln Asn Asn Phe
            100                 105                 110


Asn Lys Asp Gln Gln Ser Ala Phe Tyr Glu Ile Leu Asn Met Pro Asn
        115                 120                 125


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


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


Ser Gln Ala Pro Lys Ala Asp Asn Asn Phe Asn Lys Glu Gln Gln Asn
                165                 170                 175
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```
Ala Phe Tyr Glu Ile Leu Asn Met Pro Asn Leu Asn Glu Glu Gln Arg
            180                 185                 190

Asn Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn
        195                 200                 205

Leu Leu Ser Glu Ala Lys Lys Leu Asn Glu Ser Gln Ala Pro Lys Ala
    210                 215                 220

Asp Asn Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu
225                 230                 235                 240

His Leu Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser
                245                 250                 255

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

Lys Leu Asn Asp Ala Gln Ala Pro Lys Ala Asp Asn Lys Phe Asn Lys
        275                 280                 285

Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu His Leu Pro Asn Leu Thr
    290                 295                 300

Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser
305                 310                 315                 320

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

Ala Pro Lys Glu Glu Asp Asn Asn Lys Pro Gly Lys Glu Asp Gly Asn
            340                 345                 350

Lys Pro Gly Lys Glu Asp Asn Asn Lys Pro Gly Lys Glu Asp Asn Lys
        355                 360                 365

Lys Pro Gly Lys Glu Asp Asn Asn Lys Pro Gly Lys Glu Asp Asn Asn
    370                 375                 380

Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Asn Lys
385                 390                 395                 400

Lys Pro Gly Lys Glu Asp Asn Asn Lys Pro Gly Lys Glu Asp Gly Asn
                405                 410                 415

Lys Pro Gly Lys Glu Asp Gly Asn Gly Val His Val Val Lys Pro Gly
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420 425 430

Asp Thr Val Asn Asp Ile Ala Lys Ala Asn Gly Thr Thr Ala Asp Lys
435 440 445

Ile Ala Ala Asp Asn Lys Leu Ala Asp Lys Asn Met Ile Lys Pro Gly
450 455 460

Gln Glu Leu Val Val Asp Lys Lys Gln Pro Ala Asn His Ala Asp Ala
465 470 475 480

Asn Lys Ala Gln Ala Leu Pro Glu Thr Gly Glu Glu Asn Pro Phe Ile
485 490 495

Gly Thr Thr Val Phe Gly Gly Leu Ser Leu Ala Leu Gly Ala Ala Leu
500 505 510

Leu Ala Gly Arg Arg Arg Glu Leu
515 520

<210> 34
<211> 291
<212> PRT
<213> Staphylococcus sp.

<400> 34

Ala Gln His Asp Glu Ala Lys Lys Asn Ala Phe Tyr Gln Val Leu Asn
1 5 10 15

Met Pro Asn Leu Asn Ala Asp Gln Arg Asn Gly Phe Ile Gln Ser Leu
20 25 30

Lys Ala Ala Pro Ser Gln Ser Ala Asn Val Leu Gly Glu Ala Gln Lys
35 40 45

Leu Asn Asp Ser Gln Ala Pro Lys Ala Asp Ala Gln Gln Asn Asn Phe
50 55 60

Asn Lys Asp Lys Lys Ser Ala Phe Tyr Glu Ile Leu Asn Met Pro Asn
65 70 75 80

Leu Asn Glu Ala Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Ala Ala
85 90 95

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

Ser Gln Ala Pro Lys Ala Asp Asn Asn Phe Asn Lys Glu Lys Lys Asn

115 120 125

Ala Phe Tyr Glu Ile Leu Asn Met Pro Asn Leu Asn Glu Glu Gln Arg
130 135 140

Asn Gly Phe Ile Gln Ser Leu Lys Ala Ala Pro Ser Gln Ser Ala Asn
145 150 155 160

Leu Leu Ser Glu Ala Lys Lys Leu Asn Glu Ser Gln Ala Pro Lys Ala
165 170 175

Asp Asn Lys Phe Asn Lys Glu Lys Lys Asn Ala Phe Tyr Glu Ile Leu
180 185 190

His Leu Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser
195 200 205

Leu Lys Ala Ala Pro Ser Gln Ser Ala Asn Leu Leu Ala Glu Ala Lys
210 215 220

Lys Leu Asn Asp Ala Gln Ala Pro Lys Ala Asp Asn Lys Phe Asn Lys
225 230 235 240

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

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

Val Ser Lys Glu Ile Leu Ala Glu Ala Lys Lys Leu Asn Asp Ala Gln
275 280 285

Ala Pro Lys
290

<210> 35
<211> 34
<212> DNA
<213> Staphylococcus sp.

<400> 35
gctgcacata tggcgcaaca cgatgaagct caac 34

<210> 36
<211> 30
<212> DNA
<213> Staphylococcus sp.

<400> 36
agtggatcct tatgctttgt tagcatctgc 30

<210> 37
<211> 19
<212> PRT
<213> Staphylococcus sp.

<400> 37

Met Gly Ser Ser His His His His His His Ser Ser Gly Leu Val Pro
1 5 10 15

Arg Gly Ser

<210> 38
<211> 29
<212> DNA
<213> Staphylococcus sp.

<400> 38
aacatatgtt caacaaagat caacaaagc 29

<210> 39
<211> 29
<212> DNA
<213> Staphylococcus sp.

<400> 39
aaggatccag attcgtttaa ttttttagc 29

<210> 40
<211> 43
<212> DNA
<213> Staphylococcus sp.

<400> 40
cttcattcaa agtcttaaag ccgccccaag ccaaagcact aac 43

<210> 41
<211> 43
<212> DNA
<213> Staphylococcus sp.

<400> 41
gttagtgctt tggcttgggg cggctttaag actttgaatg aag 43

<210> 42
<211> 42
<212> DNA
<213> Staphylococcus sp.

<400> 42
catatgttca acaaagataa aaaaagcgcc ttctatgaaa tc 42

<210> 43

<211> 42
<212> DNA
<213> Staphylococcus sp.

<400> 43
gatttcatag aaggcgcttt ttttatcttt gttgaacata tg 42

<210> 44
<211> 42
<212> DNA
<213> Staphylococcus sp.

<400> 44
catatgttca acaaagatgg aggaagcgcc ttctatgaaa tc 42

<210> 45
<211> 42
<212> DNA
<213> Staphylococcus sp.

<400> 45
gatttcatag aaggcgcttc ctccatcttt gttgaacata tg 42

<210> 46
<211> 52
<212> DNA
<213> Staphylococcus sp.

<400> 46
ggggacaagt ttgtacaaaa aagcaggctg atgactaagt tgaaaaaaga ag 52

<210> 47
<211> 28
<212> DNA
<213> Staphylococcus sp.

<400> 47
aaggatcccc tccaaaatgt aattgccc 28

<210> 48
<211> 30
<212> DNA
<213> Staphylococcus sp.

<400> 48
aaggatccgt ttgtaactct atccaaagac 30

<210> 49
<211> 49
<212> DNA
<213> Staphylococcus sp.

<400> 49
ggggaccact ttgtacaaga aagctgggtg acacctattg cacgattcg 49

<210> 50

<211> 50
<212> DNA
<213> Staphylococcus sp.

<400> 50
ggggacaagt ttgtacaaaa aagcaggctc agatagcgat tcagattcag 50

<210> 51
<211> 31
<212> DNA
<213> Staphylococcus sp.

<400> 51
aaggatccct gtattttctc cttaattttc c 31

<210> 52
<211> 30
<212> DNA
<213> Staphylococcus sp.

<400> 52
aaggatccca tggctgcaaa gcaaataatg 30

<210> 53
<211> 51
<212> DNA
<213> Staphylococcus sp.

<400> 53
ggggaccact ttgtacaaga aagctgggtg ccctggtgta acaaatttat g 51

<210> 54
<211> 37
<212> DNA
<213> Staphylococcus sp.

<400> 54
gaaggatccg tttattctag ttaatatata gttaatg 37

<210> 55
<211> 33
<212> DNA
<213> Staphylococcus sp.

<400> 55
gaactgcagc tgtatgtctt tggatagagt tac 33

<210> 56
<211> 33
<212> DNA
<213> Staphylococcus sp.

<400> 56
gaaggatccg gtggcttttt tacttggatt ttc 33

<210> 57

<211> 33
<212> DNA
<213> Staphylococcus sp.

<400> 57
gaactgcagc gacaaactca ttatttgctt tgc 33

<210> 58
<211> 27
<212> DNA
<213> Staphylococcus sp.

<400> 58
gaactcgagt ctagcttatt tacatgg 27

<210> 59
<211> 45
<212> DNA
<213> Staphylococcus sp.

<400> 59
gaactcgaga tagaaggcag aatagtaaca aaggattata gtggg 45

<210> 60
<211> 27
<212> DNA
<213> Staphylococcus sp.

<400> 60
gtaggatcct gggatagagt tacaaac 27

<210> 61
<211> 34
<212> DNA
<213> Staphylococcus sp.

<400> 61
gaactcgagg cattatgtgt atcacaaatt tggg 34

<210> 62
<211> 43
<212> DNA
<213> Staphylococcus sp.

<400> 62
gaactcgaga tagaaggcag agtggtttct ggggagaaga atc 43

<210> 63
<211> 33
<212> DNA
<213> Staphylococcus sp.

<400> 63
gaactcgagg cagccatgca ttaattattt gcc 33