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<130> VN55298 WO

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<150> EP 14179945
<151> 2014-08-05

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<170> PatentIn version 3.5

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Thr Thr Asn Thr Val Thr Leu His Lys Ile Leu Gln Thr Glu Ser Asn
        35                  40                  45

Leu Asn Lys Ser Asn Phe Pro Gly Thr Thr Gly Leu Asn Gly Lys Asp
    50                  55                  60

Tyr Lys Gly Gly Ala Ile Ser Asp Leu Ala Gly Tyr Phe Gly Glu Gly
65                  70                  75                  80

Ser Lys Glu Ile Glu Gly Ala Phe Phe Ala Leu Ala Leu Lys Glu Asp
                85                  90                  95

Lys Ser Gly Lys Val Gln Tyr Val Lys Ala Lys Glu Gly Asn Lys Leu
            100                 105                 110

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

Ile Asp Glu Ala Val Ser Gly Leu Thr Pro Glu Gly Asp Thr Gly Leu
    130                 135                 140

Val Phe Asn Thr Lys Gly Leu Lys Gly Glu Phe Lys Ile Val Glu Val
145                 150                 155                 160

Lys Ser Lys Ser Thr Tyr Asn Asn Asn Gly Ser Leu Leu Ala Ala Ser
                165                 170                 175
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Lys Ala Val Pro Val Asn Ile Thr Leu Pro Leu Val Asn Glu Asp Gly
            180                 185                 190

Val Val Ala Asp Ala His Val Tyr Pro Lys Asn Thr Glu Glu Lys Pro
        195                 200                 205

Glu Ile Asp Lys Asn Phe Ala Lys Thr Asn Asp Leu Thr Ala Leu Thr
    210                 215                 220

Asp Val Asn Arg Leu Leu Thr Ala Gly Ala Asn Tyr Gly Asn Tyr Ala
225                 230                 235                 240

Arg Asp Lys Ala Thr Ala Thr Ala Glu Ile Gly Lys Val Val Pro Tyr
                245                 250                 255

Glu Val Lys Thr Lys Ile His Lys Gly Ser Lys Tyr Glu Asn Leu Val
            260                 265                 270

Trp Thr Asp Ile Met Ser Asn Gly Leu Thr Met Gly Ser Thr Val Ser
        275                 280                 285

Leu Lys Ala Ser Gly Thr Thr Glu Thr Phe Ala Lys Asp Thr Asp Tyr
    290                 295                 300

Glu Leu Ser Ile Asp Ala Arg Gly Phe Thr Leu Lys Phe Thr Ala Asp
305                 310                 315                 320

Gly Leu Gly Lys Leu Glu Lys Ala Ala Lys Thr Ala Asp Ile Glu Phe
                325                 330                 335

Thr Leu Thr Tyr Ser Ala Thr Val Asn Gly Gln Ala Ile Ile Asp Asn
            340                 345                 350

Pro Glu Ser Asn Asp Ile Lys Leu Ser Tyr Gly Asn Lys Pro Gly Lys
        355                 360                 365

Asp Leu Thr Glu Leu Pro Val Thr Pro Ser Lys Gly Glu Val Thr Val
    370                 375                 380

Ala Lys Thr Trp Ser Asp Gly Ile Ala Pro Asp Gly Val Asn Val Val
385                 390                 395                 400

Tyr Thr Leu Lys Asp Lys Asp Lys Thr Val Ala Ser Val Ser Leu Thr
                405                 410                 415

Lys Thr Ser Lys Gly Thr Ile Asp Leu Gly Asn Gly Ile Lys Phe Glu
            420                 425                 430

Val Ser Gly Asn Phe Ser Gly Lys Phe Thr Gly Leu Glu Asn Lys Ser
        435                 440                 445
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Tyr Met Ile Ser Glu Arg Val Ser Gly Tyr Gly Ser Ala Ile Asn Leu
    450                 455                 460

Glu Asn Gly Lys Val Thr Ile Thr Asn Thr Lys Asp Ser Asp Asn Pro
465                 470                 475                 480

Thr Pro Leu Asn Pro Thr Glu Pro Lys Val Glu Thr His Gly Lys Lys
                485                 490                 495

Phe Val Lys Thr Asn Glu Gln Gly Asp Arg Leu Ala Gly Ala Gln Phe
            500                 505                 510

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

Ser Glu Gly Gln Lys Thr Leu Ala Ala Lys Lys Ile Ala Leu Asp Glu
    530                 535                 540

Ala Ile Ala Ala Tyr Asn Lys Leu Ser Ala Thr Asp Gln Lys Gly Glu
545                 550                 555                 560

Lys Gly Ile Thr Ala Lys Glu Leu Ile Lys Thr Lys Gln Ala Asp Tyr
                565                 570                 575

Asp Ala Ala Phe Ile Glu Ala Arg Thr Ala Tyr Glu Trp Ile Thr Asp
            580                 585                 590

Lys Ala Arg Ala Ile Thr Tyr Thr Ser Asn Asp Gln Gly Gln Phe Glu
        595                 600                 605

Val Thr Gly Leu Ala Asp Gly Thr Tyr Asn Leu Glu Glu Thr Leu Ala
    610                 615                 620

Pro Ala Gly Phe Ala Lys Leu Ala Gly Asn Ile Lys Phe Val Val Asn
625                 630                 635                 640

Gln Gly Ser Tyr Ile Thr Gly Gly Asn Ile Asp Tyr Val Ala Asn Ser
                645                 650                 655

Asn Gln Lys Asp Ala Thr Arg Val Glu Asn Lys Lys Val Thr Ile Pro
            660                 665                 670

Gln Thr Gly Gly Ile Gly Thr Ile Leu Phe Thr Ile Ile Gly Leu Ser
        675                 680                 685

Ile Met Leu Gly Ala Val Val Ile Met Lys Arg Arg Gln Ser Lys Glu
    690                 695                 700

Ala
705
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<213> Streptococcus agalactiae

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Thr Val Thr Ser Leu Phe Ser Val Ala Pro Val Phe Ala Glu Glu Ala
            20                  25                  30

Lys Thr Thr Asp Thr Val Thr Leu His Lys Ile Val Met Pro Arg Thr
        35                  40                  45

Ala Phe Asp Gly Phe Thr Ala Gly Thr Lys Gly Lys Asp Asn Thr Asp
    50                  55                  60

Tyr Val Gly Lys Gln Ile Glu Asp Leu Lys Thr Tyr Phe Gly Ser Gly
65                  70                  75                  80

Glu Ala Lys Glu Ile Ala Gly Ala Tyr Phe Ala Phe Lys Asn Glu Ala
                85                  90                  95

Gly Thr Lys Tyr Ile Thr Glu Asn Gly Glu Glu Val Asp Thr Leu Asp
            100                 105                 110

Thr Thr Asp Ala Lys Gly Cys Ala Val Leu Lys Gly Leu Thr Thr Asp
        115                 120                 125

Asn Gly Phe Lys Phe Asn Thr Ser Lys Leu Thr Gly Thr Tyr Gln Ile
    130                 135                 140

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

Ala Asp Ser Lys Ala Val Pro Val Lys Ile Thr Leu Pro Leu Val Asn
                165                 170                 175

Asp Asn Gly Val Val Lys Asp Ala His Val Tyr Pro Lys Asn Thr Glu
            180                 185                 190

Thr Lys Pro Gln Val Asp Lys Asn Phe Ala Asp Lys Glu Leu Asp Tyr
        195                 200                 205

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

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

Lys Lys Leu Ile Trp Thr Asp Ser Met Thr Lys Gly Leu Thr Phe Asn
                245                 250                 255
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Asn Asp Ile Ala Val Thr Leu Asp Gly Ala Thr Leu Asp Ala Thr Asn
            260                 265                 270

Tyr Lys Leu Val Ala Asp Asp Gln Gly Phe Arg Leu Val Leu Thr Asp
        275                 280                 285

Lys Gly Leu Glu Ala Val Ala Lys Ala Ala Lys Thr Lys Asp Val Glu
    290                 295                 300

Ile Lys Ile Thr Tyr Ser Ala Thr Leu Asn Gly Ser Ala Val Val Glu
305                 310                 315                 320

Val Leu Glu Thr Asn Asp Val Lys Leu Asp Tyr Gly Asn Asn Pro Thr
                325                 330                 335

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

Val Asn Lys Thr Trp Ala Val Asp Gly Asn Glu Val Asn Lys Ala Asp
        355                 360                 365

Glu Thr Val Asp Ala Val Phe Thr Leu Gln Val Lys Asp Gly Asp Lys
    370                 375                 380

Trp Val Asn Val Asp Ser Ala Lys Ala Thr Ala Ala Thr Ser Phe Lys
385                 390                 395                 400

His Thr Phe Glu Asn Leu Asp Asn Ala Lys Thr Tyr Arg Val Ile Glu
                405                 410                 415

Arg Val Ser Gly Tyr Ala Pro Glu Tyr Val Ser Phe Val Asn Gly Val
            420                 425                 430

Val Thr Ile Lys Asn Asn Lys Asp Ser Asn Glu Pro Thr Pro Ile Asn
        435                 440                 445

Pro Ser Glu Pro Lys Val Val Thr Tyr Gly Arg Lys Phe Val Lys Thr
    450                 455                 460

Asn Lys Asp Gly Lys Glu Arg Leu Ala Gly Ala Thr Phe Leu Val Lys
465                 470                 475                 480

Lys Asp Gly Lys Tyr Leu Ala Arg Lys Ser Gly Val Ala Thr Asp Ala
                485                 490                 495

Glu Lys Ala Ala Val Asp Ser Thr Lys Ser Ala Leu Asp Ala Ala Val
            500                 505                 510

Lys Ala Tyr Asn Asp Leu Thr Lys Glu Lys Gln Glu Gly Gln Asp Gly
        515                 520                 525
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Lys Ser Ala Leu Ala Thr Val Ser Glu Lys Gln Lys Ala Tyr Asn Asp
    530                 535                 540

Ala Phe Val Lys Ala Asn Tyr Ser Tyr Glu Trp Val Glu Asp Lys Asn
545                 550                 555                 560

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

Ile Thr Gly Leu Thr Glu Gly Gln Tyr Ser Leu Glu Glu Thr Gln Ala
            580                 585                 590

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

Ala Thr Ser Tyr Ser Lys Gly Ser Ala Gln Asp Ile Glu Tyr Thr Gln
    610                 615                 620

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

Ile Pro Gln Thr Gly Gly Ile Gly Thr Ile Phe Phe Thr Ile Ile Gly
                645                 650                 655

Leu Ser Ile Met Leu Gly Ala Val Val Ile Met Lys Arg Arg Gln Ser
            660                 665                 670

Glu Glu Val
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1               5                   10                  15

Ile Leu Thr Ser Leu Phe Ser Val Ala Pro Ala Phe Ala Asp Asp Ala
            20                  25                  30

Thr Thr Asp Thr Val Thr Leu His Lys Ile Val Met Pro Gln Ala Ala
        35                  40                  45

Phe Asp Asn Phe Thr Glu Gly Thr Lys Gly Lys Asn Asp Ser Asp Tyr
    50                  55                  60

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

```
Ala Lys Glu Ile Lys Gly Ala Phe Phe Val Phe Lys Asn Glu Thr Gly
                85                  90                  95

Thr Lys Phe Ile Thr Glu Asn Gly Lys Glu Val Asp Thr Leu Glu Ala
            100                 105                 110

Lys Asp Ala Glu Gly Gly Ala Val Leu Ser Gly Leu Thr Lys Asp Asn
        115                 120                 125

Gly Phe Val Phe Asn Thr Ala Lys Leu Lys Gly Ile Tyr Gln Ile Val
    130                 135                 140

Glu Leu Lys Glu Lys Ser Asn Tyr Asp Asn Asn Gly Ser Ile Leu Ala
145                 150                 155                 160

Asp Ser Lys Ala Val Pro Val Lys Ile Thr Leu Pro Leu Val Asn Asn
                165                 170                 175

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

Lys Pro Gln Val Asp Lys Asn Phe Ala Asp Lys Asp Leu Asp Tyr Thr
        195                 200                 205

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

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

Lys Leu Val Trp Thr Asp Ser Met Thr Lys Gly Leu Thr Phe Asn Asn
                245                 250                 255

Asn Val Lys Val Thr Leu Asp Gly Glu Asp Phe Pro Val Leu Asn Tyr
            260                 265                 270

Lys Leu Val Thr Asp Asp Gln Gly Phe Arg Leu Ala Leu Asn Ala Thr
        275                 280                 285

Gly Leu Ala Ala Val Ala Ala Ala Ala Lys Asp Lys Asp Val Glu Ile
    290                 295                 300

Lys Ile Thr Tyr Ser Ala Thr Val Asn Gly Ser Thr Thr Val Glu Ile
305                 310                 315                 320

Pro Glu Thr Asn Asp Val Lys Leu Asp Tyr Gly Asn Asn Pro Thr Glu
                325                 330                 335

Glu Ser Glu Pro Gln Glu Gly Thr Pro Ala Asn Gln Glu Ile Lys Val
            340                 345                 350
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Ile Lys Asp Trp Ala Val Asp Gly Thr Ile Thr Asp Ala Asn Val Ala
        355                 360                 365

Val Lys Ala Ile Phe Thr Leu Gln Glu Lys Gln Thr Asp Gly Thr Trp
    370                 375                 380

Val Asn Val Ala Ser His Glu Ala Thr Lys Pro Ser Arg Phe Glu His
385                 390                 395                 400

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

Val Ser Gly Tyr Thr Pro Glu Tyr Val Ser Phe Lys Asn Gly Val Val
            420                 425                 430

Thr Ile Lys Asn Asn Lys Asn Ser Asn Asp Pro Thr Pro Ile Asn Pro
        435                 440                 445

Ser Glu Pro Lys Val Val Thr Tyr Gly Arg Lys Phe Val Lys Thr Asn
    450                 455                 460

Gln Ala Asn Thr Glu Arg Leu Ala Gly Ala Thr Phe Leu Val Lys Lys
465                 470                 475                 480

Glu Gly Lys Tyr Leu Ala Arg Lys Ala Gly Ala Ala Thr Ala Glu Ala
                485                 490                 495

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

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

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

Phe Val Lys Ala Asn Tyr Ser Tyr Glu Trp Val Ala Asp Lys Lys Ala
545                 550                 555                 560

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

Thr Gly Leu Asp Lys Gly Thr Tyr Gly Leu Glu Glu Thr Gln Ala Pro
            580                 585                 590

Ala Gly Tyr Ala Thr Leu Ser Gly Asp Val Asn Phe Glu Val Thr Ala
        595                 600                 605

Thr Ser Tyr Ser Lys Gly Ala Thr Thr Asp Ile Ala Tyr Asp Lys Gly
    610                 615                 620
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Ser Val Lys Lys Asp Ala Gln Gln Val Gln Asn Lys Lys Val Thr Ile
625 630 635 640

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

Glu Ala

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<400> 4
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Ile Leu Thr Ser Leu Leu Ser Val Ala Pro Val Phe Ala Ala Glu Met
20 25 30

Gly Asn Ile Thr Lys Thr Val Thr Leu His Lys Ile Val Gln Thr Ser
35 40 45

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

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

Gln Gly Ser Lys Glu Ile Ala Gly Ala Phe Phe Ala Val Met Asn Glu
85 90 95

Ser Gln Thr Lys Tyr Ile Thr Glu Ser Gly Thr Glu Val Glu Ser Ile
100 105 110

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

Phe Asn Thr Ala Asn Leu Lys Gly Thr Tyr Gln Ile Val Glu Leu Leu
130 135 140

Asp Lys Ser Asn Tyr Lys Asn Gly Asp Lys Val Leu Ala Asp Ser Lys
145 150 155 160

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

Val Val Asp Ala Glu Val Tyr Pro Lys Asn Thr Glu Glu Ala Pro Gln
180 185 190

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Ile Asp Lys Asn Phe Ala Lys Ala Asn Lys Leu Leu Asn Asp Ser Asp
        195                 200                 205

Asn Ser Ala Ile Ala Gly Gly Ala Asp Tyr Asp Lys Tyr Gln Ala Glu
    210                 215                 220

Lys Ala Lys Ala Thr Ala Glu Ile Gly Gln Glu Ile Pro Tyr Glu Val
225                 230                 235                 240

Lys Thr Lys Ile Gln Lys Gly Ser Lys Tyr Lys Asn Leu Ala Trp Val
                245                 250                 255

Asp Thr Met Ser Asn Gly Leu Thr Met Gly Asn Thr Val Asn Leu Glu
            260                 265                 270

Ala Ser Ser Gly Ser Phe Val Glu Gly Thr Asp Tyr Asn Val Glu Arg
        275                 280                 285

Asp Asp Arg Gly Phe Thr Leu Lys Phe Thr Asp Thr Gly Leu Thr Lys
    290                 295                 300

Leu Gln Lys Glu Ala Glu Thr Gln Ala Val Glu Phe Thr Leu Thr Tyr
305                 310                 315                 320

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

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

Ile Pro Val Thr Pro Ser Asn Gly Glu Ile Thr Val Ser Lys Thr Trp
        355                 360                 365

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

Asp Gly Gly Thr Ala Val Ala Ser Val Ser Leu Thr Lys Thr Thr Pro
385                 390                 395                 400

Asn Gly Glu Ile Asn Leu Gly Asn Gly Ile Lys Phe Thr Val Thr Gly
                405                 410                 415

Ala Phe Ala Gly Lys Phe Ser Gly Leu Thr Asp Ser Lys Thr Tyr Met
            420                 425                 430

Ile Ser Glu Arg Ile Ala Gly Tyr Gly Asn Thr Ile Thr Thr Gly Ala
        435                 440                 445

Gly Ser Ala Ala Ile Thr Asn Thr Pro Asp Ser Asp Asn Pro Thr Pro
    450                 455                 460
```

```
Leu Asn Pro Thr Glu Pro Lys Val Val Thr His Gly Lys Lys Phe Val
465                 470                 475                 480

Lys Thr Ser Ser Thr Glu Thr Glu Arg Leu Gln Gly Ala Gln Phe Val
                485                 490                 495

Val Lys Asp Ser Ala Gly Lys Tyr Leu Ala Leu Lys Ser Ser Ala Thr
            500                 505                 510

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

Ala Lys Ile Ala Ala Tyr Asn Lys Leu Ser Ala Asp Asp Gln Lys Gly
    530                 535                 540

Thr Lys Gly Glu Thr Ala Lys Ala Glu Ile Lys Thr Ala Gln Asp Ala
545                 550                 555                 560

Tyr Asn Ala Ala Phe Ile Val Ala Arg Thr Ala Tyr Glu Trp Val Thr
                565                 570                 575

Asn Lys Glu Asp Ala Asn Val Val Lys Val Thr Ser Asn Ala Asp Gly
            580                 585                 590

Gln Phe Glu Val Ser Gly Leu Ala Thr Gly Asp Tyr Lys Leu Glu Glu
        595                 600                 605

Thr Gln Ala Pro Ala Gly Tyr Ala Lys Leu Ala Gly Asp Val Asp Phe
    610                 615                 620

Lys Val Gly Asn Ser Ser Lys Ala Asp Asp Ser Gly Asn Ile Asp Tyr
625                 630                 635                 640

Thr Ala Ser Ser Asn Lys Lys Asp Ala Gln Arg Ile Glu Asn Lys Lys
                645                 650                 655

Val Thr Ile Pro Gln Thr Gly Gly Ile Gly Thr Ile Leu Phe Thr Ile
            660                 665                 670

Ile Gly Leu Ser Ile Met Leu Gly Ala Val Ile Ile Met Lys Arg Arg
        675                 680                 685

Gln Ser Glu Glu Ala
    690
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<213> Streptococcus agalactiae

<400> 5

eolf-seql

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Met Lys Lys Ile Asn Lys Tyr Phe Ala Val Phe Ser Ala Leu Leu Leu
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Thr Val Thr Ser Leu Leu Ser Val Ala Pro Ala Phe Ala Asp Glu Ala
            20                  25                  30

Thr Thr Asn Thr Val Thr Leu His Lys Ile Leu Gln Thr Glu Ser Asn
        35                  40                  45

Leu Asn Lys Ser Asn Phe Pro Gly Thr Thr Gly Leu Asn Gly Asp Asp
    50                  55                  60

Tyr Lys Gly Glu Ser Ile Ser Asp Leu Ala Glu Tyr Phe Gly Ser Gly
65                  70                  75                  80

Ser Lys Glu Ile Asp Gly Ala Phe Phe Ala Leu Ala Leu Glu Glu Glu
                85                  90                  95

Lys Asp Gly Val Val Gln Tyr Val Lys Ala Lys Ala Asn Asp Lys Leu
            100                 105                 110

Thr Pro Asp Leu Ile Thr Lys Gly Thr Pro Ala Thr Thr Thr Lys Val
        115                 120                 125

Glu Glu Ala Val Gly Gly Leu Thr Thr Gly Thr Gly Ile Val Phe Asn
    130                 135                 140

Thr Ala Gly Leu Lys Gly Asn Phe Lys Ile Ile Glu Leu Lys Asp Lys
145                 150                 155                 160

Ser Thr Tyr Asn Asn Asn Gly Ser Leu Leu Ala Ala Ser Lys Ala Val
                165                 170                 175

Pro Val Lys Ile Thr Leu Pro Leu Val Ser Lys Asp Gly Val Val Lys
            180                 185                 190

Asp Ala His Val Tyr Pro Lys Asn Thr Glu Thr Lys Pro Glu Val Asp
        195                 200                 205

Lys Asn Phe Ala Lys Thr Asn Asp Leu Thr Ala Leu Lys Asp Ala Thr
    210                 215                 220

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

Thr Val Thr Ala Glu Ile Gly Lys Val Ile Pro Tyr Glu Val Lys Thr
                245                 250                 255

Lys Val Leu Lys Gly Ser Lys Tyr Glu Lys Leu Val Trp Thr Asp Thr
            260                 265                 270
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Met Ser Asn Gly Leu Thr Met Gly Asp Asp Val Asn Leu Ala Val Ser
        275                 280                 285

Gly Thr Thr Thr Thr Phe Ile Lys Asp Ile Asp Tyr Thr Leu Ser Ile
    290                 295                 300

Asp Asp Arg Gly Phe Thr Leu Lys Phe Lys Ala Thr Gly Leu Asp Lys
305                 310                 315                 320

Leu Glu Glu Ala Ala Lys Ala Ser Asp Val Glu Phe Thr Leu Thr Tyr
                325                 330                 335

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

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

Gln Pro Val Thr Pro Glu Asp Gly Glu Val Lys Val Thr Lys Thr Trp
    370                 375                 380

Ala Ala Gly Ala Asn Lys Ala Asp Ala Lys Val Val Tyr Thr Leu Lys
385                 390                 395                 400

Asn Ala Thr Lys Gln Val Val Ala Ser Val Ala Leu Thr Ala Ala Asp
                405                 410                 415

Thr Lys Gly Thr Ile Asn Leu Gly Lys Gly Met Thr Phe Glu Ile Thr
            420                 425                 430

Gly Ala Phe Ser Gly Thr Phe Lys Gly Leu Gln Asn Lys Ala Tyr Thr
        435                 440                 445

Val Ser Glu Arg Val Ala Gly Tyr Thr Asn Ala Ile Asn Val Thr Gly
    450                 455                 460

Asn Ala Val Ala Ile Thr Asn Thr Pro Asp Ser Asp Asn Pro Thr Pro
465                 470                 475                 480

Leu Asn Pro Thr Gln Pro Lys Val Glu Thr His Gly Lys Lys Phe Val
                485                 490                 495

Lys Val Gly Asp Ala Asp Ala Arg Leu Ala Gly Ala Gln Phe Val Val
            500                 505                 510

Lys Asn Ser Ala Gly Lys Phe Leu Ala Leu Lys Glu Asp Ala Ala Val
        515                 520                 525

Ser Gly Ala Gln Thr Glu Leu Ala Thr Ala Lys Thr Asp Leu Asp Asn
    530                 535                 540
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Ala Ile Lys Ala Tyr Asn Gly Leu Thr Lys Ala Gln Gln Glu Gly Ala
545 550 555 560

Asp Gly Thr Ser Ala Lys Glu Leu Ile Asn Thr Lys Gln Ser Ala Tyr
565 570 575

Asp Ala Ala Phe Ile Lys Ala Arg Thr Ala Tyr Thr Trp Val Asp Glu
580 585 590

Lys Thr Lys Ala Ile Thr Phe Thr Ser Asn Asn Gln Gly Gln Phe Glu
595 600 605

Val Thr Gly Leu Glu Val Gly Ser Tyr Lys Leu Glu Glu Thr Leu Ala
610 615 620

Pro Ala Gly Tyr Ala Lys Leu Ser Gly Asp Ile Glu Phe Thr Val Gly
625 630 635 640

His Asp Ser Tyr Thr Ser Gly Asp Ile Lys Tyr Lys Thr Asp Asp Ala
645 650 655

Ser Asn Asn Ala Gln Lys Val Phe Asn Lys Lys Val Thr Ile Pro Gln
660 665 670

Thr Gly Gly Ile Gly Thr Ile Leu Phe Thr Ile Ile Gly Leu Ser Ile
675 680 685

Met Leu Gly Ala Val Val Ile Met Lys Arg Arg Gln Ser Glu Glu Ala
690 695 700

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<212> PRT
<213> Streptococcus agalactiae

<400> 6
Met Lys Lys Ile Asn Lys Phe Phe Val Ala Phe Ser Ala Leu Leu Leu
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Ile Leu Thr Ser Leu Leu Ser Val Ala Pro Ala Phe Ala Glu Glu Glu
20 25 30

Arg Thr Thr Glu Thr Val Thr Leu His Lys Ile Leu Gln Thr Glu Thr
35 40 45

Asn Leu Lys Asn Ser Ala Phe Pro Gly Thr Lys Gly Leu Asp Gly Thr
50 55 60

Glu Tyr Asp Gly Lys Ala Ile Asp Lys Leu Asp Ser Tyr Phe Gly Asn
65 70 75 80

Asp Ser Lys Asp Ile Gly Gly Ala Tyr Phe Ile Leu Ala Asn Ser Lys
85 90 95

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Gly Glu Tyr Ile Lys Ala Asn Asp Lys Asn Lys Leu Lys Pro Glu Phe
            100                 105                 110

Ser Gly Asn Thr Pro Lys Thr Thr Leu Asn Ile Ser Glu Ala Val Gly
        115                 120                 125

Gly Leu Thr Glu Glu Asn Ala Gly Ile Lys Phe Glu Thr Thr Gly Leu
    130                 135                 140

Arg Gly Asp Phe Gln Ile Ile Glu Leu Lys Asp Lys Ser Thr Tyr Asn
145                 150                 155                 160

Asn Gly Gly Ala Ile Leu Ala Asp Ser Lys Ala Val Pro Val Lys Ile
                165                 170                 175

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

Tyr Pro Lys Asn Thr Glu Thr Lys Pro Gln Ile Asp Lys Asn Phe Ala
        195                 200                 205

Asp Lys Asn Leu Asp Tyr Ile Asn Asn Gln Lys Asp Lys Gly Thr Ile
    210                 215                 220

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

Leu Lys Gly Ser Asp Tyr Lys Lys Leu Val Trp Thr Asp Ser Met Thr
                245                 250                 255

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

Asn Phe Glu Gln Ser Asn Tyr Thr Leu Val Ala Asp Asp Gln Gly Phe
        275                 280                 285

Arg Leu Val Leu Asn Ala Thr Gly Leu Ser Lys Val Ala Glu Ala Ala
    290                 295                 300

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

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

Tyr Gly Asn Asn Pro Thr Thr Glu Asn Glu Pro Gln Thr Gly Asn Pro
            340                 345                 350

Val Asn Lys Glu Ile Thr Val Arg Lys Thr Trp Ala Val Asp Gly Asn
        355                 360                 365
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Glu Val Asn Lys Gly Asp Glu Lys Val Asp Ala Val Phe Thr Leu Gln
    370                 375                 380

Val Lys Asp Ser Asp Lys Trp Val Asn Val Asp Ser Ala Thr Ala Thr
385                 390                 395                 400

Ala Ala Thr Asp Phe Lys Tyr Thr Phe Lys Asn Leu Asp Asn Ala Lys
                405                 410                 415

Thr Tyr Arg Val Val Glu Arg Val Ser Gly Tyr Ala Pro Ala Tyr Val
            420                 425                 430

Ser Phe Val Gly Gly Val Val Thr Ile Lys Asn Asn Lys Asn Ser Asn
        435                 440                 445

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

Arg Lys Phe Val Lys Thr Asn Gln Asp Gly Ser Glu Arg Leu Ala Gly
465                 470                 475                 480

Ala Thr Phe Leu Val Lys Asn Ser Gln Ser Gln Tyr Leu Ala Arg Lys
                485                 490                 495

Ser Gly Val Ala Thr Asn Glu Ala His Lys Ala Val Thr Asp Ala Lys
            500                 505                 510

Val Gln Leu Asp Glu Ala Val Lys Ala Tyr Asn Lys Leu Thr Lys Glu
        515                 520                 525

Gln Gln Glu Ser Gln Asp Gly Lys Ala Ala Leu Asn Leu Ile Asp Glu
    530                 535                 540

Lys Gln Thr Ala Tyr Asn Glu Ala Phe Ala Lys Ala Asn Tyr Ser Tyr
545                 550                 555                 560

Glu Trp Val Val Asp Lys Asn Ala Ala Asn Val Val Lys Leu Ile Ser
                565                 570                 575

Asn Thr Ala Gly Lys Phe Glu Ile Thr Gly Leu Asn Ala Gly Glu Tyr
            580                 585                 590

Ser Leu Glu Glu Thr Gln Ala Pro Thr Gly Tyr Ala Lys Leu Ser Ser
        595                 600                 605

Asp Val Ser Phe Lys Val Asn Asp Thr Ser Tyr Ser Glu Gly Ala Ser
    610                 615                 620

Asn Asp Ile Ala Tyr Asp Lys Asp Ser Gly Lys Thr Asp Ala Gln Lys
625                 630                 635                 640
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```
Val Val Asn Lys Lys Val Thr Ile Pro Gln Thr Gly Gly Ile Gly Thr
                645                 650                 655

Ile Leu Phe Thr Ile Ile Gly Leu Ser Ile Met Leu Gly Ala Val Val
            660                 665                 670

Ile Met Lys Arg Arg Gln Ser Glu Glu Ala
        675                 680


<210> 7
<211> 674
<212> PRT
<213> Streptococcus agalactiae

<400> 7
Met Lys Lys Ile Asn Lys Cys Leu Thr Val Phe Ser Thr Leu Leu Leu
1               5                   10                  15

Ile Leu Thr Ser Leu Phe Ser Val Ala Pro Ala Phe Ala Asp Asp Val
            20                  25                  30

Thr Thr Asp Thr Val Thr Leu His Lys Ile Val Met Pro Gln Ala Ala
        35                  40                  45

Phe Asp Asn Phe Thr Glu Gly Thr Lys Gly Lys Asn Asp Ser Asp Tyr
    50                  55                  60

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

Ala Lys Glu Ile Lys Gly Ala Phe Phe Val Phe Lys Asn Glu Thr Gly
                85                  90                  95

Thr Lys Phe Ile Thr Glu Asn Gly Lys Glu Val Asp Thr Leu Glu Ala
            100                 105                 110

Lys Asp Ala Glu Gly Gly Ala Val Leu Ser Gly Leu Thr Lys Asp Thr
        115                 120                 125

Gly Phe Ala Phe Asn Thr Ala Lys Leu Lys Gly Thr Tyr Gln Ile Val
    130                 135                 140

Glu Leu Lys Glu Lys Ser Asn Tyr Asp Asn Asn Gly Ser Ile Leu Ala
145                 150                 155                 160

Asp Ser Lys Ala Val Pro Val Lys Ile Thr Leu Pro Leu Val Asn Asn
                165                 170                 175

Gln Gly Val Val Lys Asp Ala His Ile Tyr Pro Lys Asn Thr Glu Thr
            180                 185                 190
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Lys Pro Gln Val Asp Lys Asn Phe Ala Asp Lys Asp Leu Asp Tyr Thr
        195                 200                 205

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

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

Lys Leu Val Trp Thr Asp Ser Met Thr Lys Gly Leu Thr Phe Asn Asn
                245                 250                 255

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

Lys Leu Val Thr Asp Asp Gln Gly Phe Arg Leu Ala Leu Asn Ala Thr
        275                 280                 285

Gly Leu Ala Ala Val Ala Ala Ala Ala Lys Asp Lys Asp Val Glu Ile
    290                 295                 300

Lys Ile Thr Tyr Ser Ala Thr Val Asn Gly Ser Thr Thr Val Glu Val
305                 310                 315                 320

Pro Glu Thr Asn Asp Val Lys Leu Asp Tyr Gly Asn Asn Pro Thr Glu
                325                 330                 335

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

Ile Lys Asp Trp Ala Val Asp Gly Thr Ile Thr Asp Val Asn Val Ala
        355                 360                 365

Val Lys Ala Ile Phe Thr Leu Gln Glu Lys Gln Thr Asp Gly Thr Trp
    370                 375                 380

Val Asn Val Ala Ser His Glu Ala Thr Lys Pro Ser Arg Phe Glu His
385                 390                 395                 400

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

Val Ser Gly Tyr Thr Pro Glu Tyr Val Ser Phe Lys Asn Gly Val Val
            420                 425                 430

Thr Ile Lys Asn Asn Lys Asn Ser Asn Asp Pro Thr Pro Ile Asn Pro
        435                 440                 445

Ser Glu Pro Lys Val Val Thr Tyr Gly Arg Lys Phe Val Lys Thr Asn
    450                 455                 460
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Gln Ala Asn Thr Glu Arg Leu Ala Gly Ala Thr Phe Leu Val Lys Lys
465 470 475 480

Glu Gly Lys Tyr Leu Ala Arg Lys Ala Gly Ala Ala Thr Ala Glu Ala
485 490 495

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

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

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

Phe Val Lys Ala Asn Tyr Ser Tyr Glu Trp Val Ala Asp Lys Lys Ala
545 550 555 560

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

Thr Gly Leu Asp Lys Gly Thr Tyr Ser Leu Glu Glu Thr Gln Ala Pro
580 585 590

Ala Gly Tyr Ala Thr Leu Ser Gly Asp Val Asn Phe Glu Val Thr Ala
595 600 605

Thr Ser Tyr Ser Lys Gly Ala Thr Thr Asp Ile Ala Tyr Asp Lys Gly
610 615 620

Ser Val Lys Lys Asp Ala Gln Gln Val Gln Asn Lys Lys Val Thr Ile
625 630 635 640

Pro Gln Thr Gly Gly Ile Gly Thr Ile Leu Phe Thr Ile Ile Gly Leu
645 650 655

Ser Ile Met Leu Gly Ala Val Val Val Met Lys Lys Arg Gln Ser Glu
660 665 670

Glu Ala

<210> 8
<211> 146
<212> PRT
<213> Streptococcus agalactiae

<400> 8
Asp Glu Ala Thr Thr Asn Thr Val Thr Leu His Lys Ile Leu Gln Thr
1 5 10 15

Glu Ser Asn Leu Asn Lys Ser Asn Phe Pro Gly Thr Thr Gly Leu Asn
20 25 30

Gly Lys Asp Tyr Lys Gly Gly Ala Ile Ser Asp Leu Ala Gly Tyr Phe
35 40 45

Gly Glu Gly Ser Lys Glu Ile Glu Gly Ala Phe Phe Ala Leu Ala Leu
50 55 60

Lys Glu Asp Lys Ser Gly Lys Val Gln Tyr Val Lys Ala Lys Glu Gly
65 70 75 80

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

Thr Val Asn Ile Asp Glu Ala Val Ser Gly Leu Thr Pro Glu Gly Asp
100 105 110

Thr Gly Leu Val Phe Asn Thr Lys Gly Leu Lys Gly Glu Phe Lys Ile
115 120 125

Val Glu Val Lys Ser Lys Ser Thr Tyr Asn Asn Asn Gly Ser Leu Leu
130 135 140

Ala Ala
145

<210> 9
<211> 201
<212> PRT
<213> Streptococcus agalactiae

<400> 9
Asn Gly Ser Leu Leu Ala Ala Ser Lys Ala Val Pro Val Asn Ile Thr
1 5 10 15

Leu Pro Leu Val Asn Glu Asp Gly Val Val Ala Asp Ala His Val Tyr
20 25 30

Pro Lys Asn Thr Glu Glu Lys Pro Glu Ile Asp Lys Asn Phe Ala Lys
35 40 45

Thr Asn Asp Leu Thr Ala Leu Thr Asp Val Asn Arg Leu Leu Thr Ala
50 55 60

Gly Ala Asn Tyr Gly Asn Tyr Ala Arg Asp Lys Ala Thr Ala Thr Ala
65 70 75 80

Glu Ile Gly Lys Val Val Pro Tyr Glu Val Lys Thr Lys Ile His Lys
85 90 95

Gly Ser Lys Tyr Glu Asn Leu Val Trp Thr Asp Ile Met Ser Asn Gly
100 105 110

Leu Thr Met Gly Ser Thr Val Ser Leu Lys Ala Ser Gly Thr Thr Glu
115 120 125

Thr Phe Ala Lys Asp Thr Asp Tyr Glu Leu Ser Ile Asp Ala Arg Gly
130 135 140

Phe Thr Leu Lys Phe Thr Ala Asp Gly Leu Gly Lys Leu Glu Lys Ala
145 150 155 160

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

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

Ser Tyr Gly Asn Lys Pro Gly Lys Asp
195 200

<210> 10
<211> 147
<212> PRT
<213> Streptococcus agalactiae

<400> 10
Gly Asn Lys Pro Gly Lys Asp Leu Thr Glu Leu Pro Val Thr Pro Ser
1 5 10 15

Lys Gly Glu Val Thr Val Ala Lys Thr Trp Ser Asp Gly Ile Ala Pro
20 25 30

Asp Gly Val Asn Val Val Tyr Thr Leu Lys Asp Lys Asp Lys Thr Val
35 40 45

Ala Ser Val Ser Leu Thr Lys Thr Ser Lys Gly Thr Ile Asp Leu Gly
50 55 60

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

Gly Leu Glu Asn Lys Ser Tyr Met Ile Ser Glu Arg Val Ser Gly Tyr
85 90 95

Gly Ser Ala Ile Asn Leu Glu Asn Gly Lys Val Thr Ile Thr Asn Thr
100 105 110

Lys Asp Ser Asp Asn Pro Thr Pro Leu Asn Pro Thr Glu Pro Lys Val
115 120 125

Glu Thr His Gly Lys Lys Phe Val Lys Thr Asn Glu Gln Gly Asp Arg
130 135 140

Leu Ala Gly
145

<210> 11
<211> 168
<212> PRT
<213> Streptococcus agalactiae

<400> 11
Gln Gly Asp Arg Leu Ala Gly Ala Gln Phe Val Val Lys Asn Ser Ala
1   5   10   15

Gly Lys Tyr Leu Ala Leu Lys Ala Asp Gln Ser Glu Gly Gln Lys Thr
            20   25   30

Leu Ala Ala Lys Lys Ile Ala Leu Asp Glu Ala Ile Ala Ala Tyr Asn
        35   40   45

Lys Leu Ser Ala Thr Asp Gln Lys Gly Glu Lys Gly Ile Thr Ala Lys
    50   55   60

Glu Leu Ile Lys Thr Lys Gln Ala Asp Tyr Asp Ala Ala Phe Ile Glu
65   70   75   80

Ala Arg Thr Ala Tyr Glu Trp Ile Thr Asp Lys Ala Arg Ala Ile Thr
                85   90   95

Tyr Thr Ser Asn Asp Gln Gly Gln Phe Glu Val Thr Gly Leu Ala Asp
            100   105   110

Gly Thr Tyr Asn Leu Glu Glu Thr Leu Ala Pro Ala Gly Phe Ala Lys
        115   120   125

Leu Ala Gly Asn Ile Lys Phe Val Val Asn Gln Gly Ser Tyr Ile Thr
    130   135   140

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

Arg Val Glu Asn Lys Lys Val Thr
                165

<210> 12
<211> 133
<212> PRT
<213> Streptococcus agalactiae

<400> 12
Glu Glu Ala Lys Thr Thr Asp Thr Val Thr Leu His Lys Ile Val Met
1   5   10   15

Pro Arg Thr Ala Phe Asp Gly Phe Thr Ala Gly Thr Lys Gly Lys Asp
            20   25   30

Asn Thr Asp Tyr Val Gly Lys Gln Ile Glu Asp Leu Lys Thr Tyr Phe
        35   40   45

Gly Ser Gly Glu Ala Lys Glu Ile Ala Gly Ala Tyr Phe Ala Phe Lys
50 55 60

Asn Glu Ala Gly Thr Lys Tyr Ile Thr Glu Asn Gly Glu Glu Val Asp
65 70 75 80

Thr Leu Asp Thr Thr Asp Ala Lys Gly Cys Ala Val Leu Lys Gly Leu
85 90 95

Thr Thr Asp Asn Gly Phe Lys Phe Asn Thr Ser Lys Leu Thr Gly Thr
100 105 110

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

Ser Ile Leu Ala Asp
130

<210> 13
<211> 183
<212> PRT
<213> Streptococcus agalactiae

<400> 13
Asp Gly Ser Ile Leu Ala Asp Ser Lys Ala Val Pro Val Lys Ile Thr
1 5 10 15

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

Pro Lys Asn Thr Glu Thr Lys Pro Gln Val Asp Lys Asn Phe Ala Asp
35 40 45

Lys Glu Leu Asp Tyr Ala Asn Asn Lys Lys Asp Lys Gly Thr Val Ser
50 55 60

Ala Ser Val Gly Asp Val Lys Lys Tyr His Val Gly Thr Lys Ile Leu
65 70 75 80

Lys Gly Ser Asp Tyr Lys Lys Leu Ile Trp Thr Asp Ser Met Thr Lys
85 90 95

Gly Leu Thr Phe Asn Asn Asp Ile Ala Val Thr Leu Asp Gly Ala Thr
100 105 110

Leu Asp Ala Thr Asn Tyr Lys Leu Val Ala Asp Asp Gln Gly Phe Arg
115 120 125

Leu Val Leu Thr Asp Lys Gly Leu Glu Ala Val Ala Lys Ala Ala Lys
130 135 140

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

Ser Ala Val Val Glu Val Leu Glu Thr Asn Asp Val Lys Leu Asp Tyr
165 170 175

Gly Asn Asn Pro Thr Ile Glu
180

<210> 14
<211> 168
<212> PRT
<213> Streptococcus agalactiae

<400> 14
Gly Asn Asn Pro Thr Ile Glu Asn Glu Pro Lys Glu Gly Ile Pro Val
1 5 10 15

Asp Lys Lys Ile Thr Val Asn Lys Thr Trp Ala Val Asp Gly Asn Glu
20 25 30

Val Asn Lys Ala Asp Glu Thr Val Asp Ala Val Phe Thr Leu Gln Val
35 40 45

Lys Asp Gly Asp Lys Trp Val Asn Val Asp Ser Ala Lys Ala Thr Ala
50 55 60

Ala Thr Ser Phe Lys His Thr Phe Glu Asn Leu Asp Asn Ala Lys Thr
65 70 75 80

Tyr Arg Val Ile Glu Arg Val Ser Gly Tyr Ala Pro Glu Tyr Val Ser
85 90 95

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

Pro Thr Pro Ile Asn Pro Ser Glu Pro Lys Val Val Thr Tyr Gly Arg
115 120 125

Lys Phe Val Lys Thr Asn Lys Asp Gly Lys Glu Arg Leu Ala Gly Ala
130 135 140

Thr Phe Leu Val Lys Lys Asp Gly Lys Tyr Leu Ala Arg Lys Ser Gly
145 150 155 160

Val Ala Thr Asp Ala Glu Lys Ala
165

<210> 15
<211> 169
<212> PRT
<213> Streptococcus agalactiae

<400> 15

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Leu Ala Gly Ala Thr Phe Leu Val Lys Lys Asp Gly Lys Tyr Leu Ala
1               5                  10                  15

Arg Lys Ser Gly Val Ala Thr Asp Ala Glu Lys Ala Ala Val Asp Ser
            20                  25                  30

Thr Lys Ser Ala Leu Asp Ala Ala Val Lys Ala Tyr Asn Asp Leu Thr
        35                  40                  45

Lys Glu Lys Gln Glu Gly Gln Asp Gly Lys Ser Ala Leu Ala Thr Val
    50                  55                  60

Ser Glu Lys Gln Lys Ala Tyr Asn Asp Ala Phe Val Lys Ala Asn Tyr
65                  70                  75                  80

Ser Tyr Glu Trp Val Glu Asp Lys Asn Ala Lys Asn Val Val Lys Leu
                85                  90                  95

Ile Ser Asn Asp Lys Gly Gln Phe Glu Ile Thr Gly Leu Thr Glu Gly
            100                 105                 110

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

Ser Gly Asp Val Ser Phe Asn Val Asn Ala Thr Ser Tyr Ser Lys Gly
    130                 135                 140

Ser Ala Gln Asp Ile Glu Tyr Thr Gln Gly Ser Lys Thr Lys Asp Ala
145                 150                 155                 160

Gln Gln Val Ile Asn Lys Lys Val Thr
                165
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<210> 16
<211> 133
<212> PRT
<213> Streptococcus agalactiae

<400> 16

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

Gln Ala Ala Phe Asp Asn Phe Thr Glu Gly Thr Lys Gly Lys Asn Asp
            20                  25                  30

Ser Asp Tyr Val Gly Lys Gln Ile Asn Asp Leu Lys Ser Tyr Phe Gly
        35                  40                  45

Ser Thr Asp Ala Lys Glu Ile Lys Gly Ala Phe Phe Val Phe Lys Asn
    50                  55                  60

Glu Thr Gly Thr Lys Phe Ile Thr Glu Asn Gly Lys Glu Val Asp Thr
65                  70                  75                  80
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Leu Glu Ala Lys Asp Ala Glu Gly Gly Ala Val Leu Ser Gly Leu Thr
85 90 95

Lys Asp Asn Gly Phe Val Phe Asn Thr Ala Lys Leu Lys Gly Ile Tyr
100 105 110

Gln Ile Val Glu Leu Lys Glu Lys Ser Asn Tyr Asp Asn Asn Gly Ser
115 120 125

Ile Leu Ala Asp Ser
130

<210> 17
<211> 183
<212> PRT
<213> Streptococcus agalactiae

<400> 17
Asn Gly Ser Ile Leu Ala Asp Ser Lys Ala Val Pro Val Lys Ile Thr
1 5 10 15

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

Pro Lys Asn Thr Glu Thr Lys Pro Gln Val Asp Lys Asn Phe Ala Asp
35 40 45

Lys Asp Leu Asp Tyr Thr Asp Asn Arg Lys Asp Lys Gly Val Val Ser
50 55 60

Ala Thr Val Gly Asp Lys Lys Glu Tyr Ile Val Gly Thr Lys Ile Leu
65 70 75 80

Lys Gly Ser Asp Tyr Lys Lys Leu Val Trp Thr Asp Ser Met Thr Lys
85 90 95

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

Phe Pro Val Leu Asn Tyr Lys Leu Val Thr Asp Asp Gln Gly Phe Arg
115 120 125

Leu Ala Leu Asn Ala Thr Gly Leu Ala Ala Val Ala Ala Ala Ala Lys
130 135 140

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

Ser Thr Thr Val Glu Ile Pro Glu Thr Asn Asp Val Lys Leu Asp Tyr
165 170 175

Gly Asn Asn Pro Thr Glu Glu
180

<210> 18
<211> 144
<212> PRT
<213> Streptococcus agalactiae

<400> 18
Gly Asn Asn Pro Thr Glu Glu Ser Glu Pro Gln Glu Gly Thr Pro Ala
1 5 10 15

Asn Gln Glu Ile Lys Val Ile Lys Asp Trp Ala Val Asp Gly Thr Ile
20 25 30

Thr Asp Ala Asn Val Ala Val Lys Ala Ile Phe Thr Leu Gln Glu Lys
35 40 45

Gln Thr Asp Gly Thr Trp Val Asn Val Ala Ser His Glu Ala Thr Lys
50 55 60

Pro Ser Arg Phe Glu His Thr Phe Thr Gly Leu Asp Asn Ala Lys Thr
65 70 75 80

Tyr Arg Val Val Glu Arg Val Ser Gly Tyr Thr Pro Glu Tyr Val Ser
85 90 95

Phe Lys Asn Gly Val Val Thr Ile Lys Asn Asn Lys Asn Ser Asn Asp
100 105 110

Pro Thr Pro Ile Asn Pro Ser Glu Pro Lys Val Val Thr Tyr Gly Arg
115 120 125

Lys Phe Val Lys Thr Asn Gln Ala Asn Thr Glu Arg Leu Ala Gly Ala
130 135 140

<210> 19
<211> 172
<212> PRT
<213> Streptococcus agalactiae

<400> 19
Thr Glu Arg Leu Ala Gly Ala Thr Phe Leu Val Lys Lys Glu Gly Lys
1 5 10 15

Tyr Leu Ala Arg Lys Ala Gly Ala Ala Thr Ala Glu Ala Lys Ala Ala
20 25 30

Val Lys Thr Ala Lys Leu Ala Leu Asp Glu Ala Val Lys Ala Tyr Asn
35 40 45

Asp Leu Thr Lys Glu Lys Gln Glu Gly Gln Glu Gly Lys Thr Ala Leu
50 55 60

Ala Thr Val Asp Gln Lys Gln Lys Ala Tyr Asn Asp Ala Phe Val Lys
65 70 75 80

Ala Asn Tyr Ser Tyr Glu Trp Val Ala Asp Lys Lys Ala Asp Asn Val
85 90 95

Val Lys Leu Ile Ser Asn Ala Gly Gly Gln Phe Glu Ile Thr Gly Leu
100 105 110

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

Ala Thr Leu Ser Gly Asp Val Asn Phe Glu Val Thr Ala Thr Ser Tyr
130 135 140

Ser Lys Gly Ala Thr Thr Asp Ile Ala Tyr Asp Lys Gly Ser Val Lys
145 150 155 160

Lys Asp Ala Gln Gln Val Gln Asn Lys Lys Val Thr
165 170

<210> 20
<211> 129
<212> PRT
<213> Streptococcus agalactiae

<400> 20
Ala Glu Met Gly Asn Ile Thr Lys Thr Val Thr Leu His Lys Ile Val
1 5 10 15

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

Leu Asn Gly Thr Lys Tyr Met Gly Gln Lys Leu Thr Asp Ile Ser Gly
35 40 45

Tyr Phe Gly Gln Gly Ser Lys Glu Ile Ala Gly Ala Phe Phe Ala Val
50 55 60

Met Asn Glu Ser Gln Thr Lys Tyr Ile Thr Glu Ser Gly Thr Glu Val
65 70 75 80

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

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

Glu Leu Leu Asp Lys Ser Asn Tyr Lys Asn Gly Asp Lys Val Leu Ala
115 120 125

Asp

<210> 21
<211> 199
<212> PRT
<213> Streptococcus agalactiae

<400> 21
Gly Asp Lys Val Leu Ala Asp Ser Lys Ala Val Pro Val Lys Ile Thr
1 5 10 15

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

Pro Lys Asn Thr Glu Glu Ala Pro Gln Ile Asp Lys Asn Phe Ala Lys
35 40 45

Ala Asn Lys Leu Leu Asn Asp Ser Asp Asn Ser Ala Ile Ala Gly Gly
50 55 60

Ala Asp Tyr Asp Lys Tyr Gln Ala Glu Lys Ala Lys Ala Thr Ala Glu
65 70 75 80

Ile Gly Gln Glu Ile Pro Tyr Glu Val Lys Thr Lys Ile Gln Lys Gly
85 90 95

Ser Lys Tyr Lys Asn Leu Ala Trp Val Asp Thr Met Ser Asn Gly Leu
100 105 110

Thr Met Gly Asn Thr Val Asn Leu Glu Ala Ser Ser Gly Ser Phe Val
115 120 125

Glu Gly Thr Asp Tyr Asn Val Glu Arg Asp Asp Arg Gly Phe Thr Leu
130 135 140

Lys Phe Thr Asp Thr Gly Leu Thr Lys Leu Gln Lys Glu Ala Glu Thr
145 150 155 160

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

Ala Ile Asp Asp Lys Pro Glu Ser Asn Asp Ile Lys Leu Gln Tyr Gly
180 185 190

Asn Lys Pro Gly Lys Lys Val
195

<210> 22
<211> 151
<212> PRT
<213> Streptococcus agalactiae

<400> 22
Gly Asn Lys Pro Gly Lys Lys Val Lys Glu Ile Pro Val Thr Pro Ser
1 5 10 15

Asn Gly Glu Ile Thr Val Ser Lys Thr Trp Asp Lys Gly Ser Asp Leu
20 25 30

Glu Asn Ala Asn Val Val Tyr Thr Leu Lys Asp Gly Gly Thr Ala Val
35 40 45

Ala Ser Val Ser Leu Thr Lys Thr Thr Pro Asn Gly Glu Ile Asn Leu
50 55 60

Gly Asn Gly Ile Lys Phe Thr Val Thr Gly Ala Phe Ala Gly Lys Phe
65 70 75 80

Ser Gly Leu Thr Asp Ser Lys Thr Tyr Met Ile Ser Glu Arg Ile Ala
85 90 95

Gly Tyr Gly Asn Thr Ile Thr Thr Gly Ala Gly Ser Ala Ala Ile Thr
100 105 110

Asn Thr Pro Asp Ser Asp Asn Pro Thr Pro Leu Asn Pro Thr Glu Pro
115 120 125

Lys Val Val Thr His Gly Lys Lys Phe Val Lys Thr Ser Ser Thr Glu
130 135 140

Thr Glu Arg Leu Gln Gly Ala
145 150

<210> 23
<211> 172
<212> PRT
<213> Streptococcus agalactiae

<400> 23
Thr Glu Arg Leu Gln Gly Ala Gln Phe Val Val Lys Asp Ser Ala Gly
1 5 10 15

Lys Tyr Leu Ala Leu Lys Ser Ser Ala Thr Ile Ser Ala Gln Thr Thr
20 25 30

Ala Tyr Thr Asn Ala Lys Thr Ala Leu Asp Ala Lys Ile Ala Ala Tyr
35 40 45

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

Lys Ala Glu Ile Lys Thr Ala Gln Asp Ala Tyr Asn Ala Ala Phe Ile
65 70 75 80

Val Ala Arg Thr Ala Tyr Glu Trp Val Thr Asn Lys Glu Asp Ala Asn
85 90 95

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

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

Tyr Ala Lys Leu Ala Gly Asp Val Asp Phe Lys Val Gly Asn Ser Ser
130 135 140

Lys Ala Asp Asp Ser Gly Asn Ile Asp Tyr Thr Ala Ser Ser Asn Lys
145 150 155 160

Lys Asp Ala Gln Arg Ile Glu Asn Lys Lys Val Thr
165 170

<210> 24
<211> 143
<212> PRT
<213> Streptococcus agalactiae

<400> 24
Asp Glu Ala Thr Thr Asn Thr Val Thr Leu His Lys Ile Leu Gln Thr
1 5 10 15

Glu Ser Asn Leu Asn Lys Ser Asn Phe Pro Gly Thr Thr Gly Leu Asn
20 25 30

Gly Asp Asp Tyr Lys Gly Glu Ser Ile Ser Asp Leu Ala Glu Tyr Phe
35 40 45

Gly Ser Gly Ser Lys Glu Ile Asp Gly Ala Phe Phe Ala Leu Ala Leu
50 55 60

Glu Glu Glu Lys Asp Gly Val Val Gln Tyr Val Lys Ala Lys Ala Asn
65 70 75 80

Asp Lys Leu Thr Pro Asp Leu Ile Thr Lys Gly Thr Pro Ala Thr Thr
85 90 95

Thr Lys Val Glu Glu Ala Val Gly Gly Leu Thr Thr Gly Thr Gly Ile
100 105 110

Val Phe Asn Thr Ala Gly Leu Lys Gly Asn Phe Lys Ile Ile Glu Leu
115 120 125

Lys Asp Lys Ser Thr Tyr Asn Asn Asn Gly Ser Leu Leu Ala Ala
130 135 140

<210> 25
<211> 200
<212> PRT
<213> Streptococcus agalactiae

<400> 25

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Asn Gly Ser Leu Leu Ala Ala Ser Lys Ala Val Pro Val Lys Ile Thr
1               5                  10                  15

Leu Pro Leu Val Ser Lys Asp Gly Val Val Lys Asp Ala His Val Tyr
            20                  25                  30

Pro Lys Asn Thr Glu Thr Lys Pro Glu Val Asp Lys Asn Phe Ala Lys
        35                  40                  45

Thr Asn Asp Leu Thr Ala Leu Lys Asp Ala Thr Leu Leu Lys Ala Gly
    50                  55                  60

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

Ile Gly Lys Val Ile Pro Tyr Glu Val Lys Thr Lys Val Leu Lys Gly
                85                  90                  95

Ser Lys Tyr Glu Lys Leu Val Trp Thr Asp Thr Met Ser Asn Gly Leu
            100                 105                 110

Thr Met Gly Asp Asp Val Asn Leu Ala Val Ser Gly Thr Thr Thr Thr
        115                 120                 125

Phe Ile Lys Asp Ile Asp Tyr Thr Leu Ser Ile Asp Asp Arg Gly Phe
    130                 135                 140

Thr Leu Lys Phe Lys Ala Thr Gly Leu Asp Lys Leu Glu Glu Ala Ala
145                 150                 155                 160

Lys Ala Ser Asp Val Glu Phe Thr Leu Thr Tyr Lys Ala Thr Val Asn
                165                 170                 175

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

Tyr Gly Asn Lys Pro Gly Thr Asp
        195                 200


<210> 26
<211> 149
<212> PRT
<213> Streptococcus agalactiae

<400> 26
Gly Asn Lys Pro Gly Thr Asp Leu Ser Glu Gln Pro Val Thr Pro Glu
1               5                  10                  15

Asp Gly Glu Val Lys Val Thr Lys Thr Trp Ala Ala Gly Ala Asn Lys
            20                  25                  30

Ala Asp Ala Lys Val Val Tyr Thr Leu Lys Asn Ala Thr Lys Gln Val
        35                  40                  45
```

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

Leu Gly Lys Gly Met Thr Phe Glu Ile Thr Gly Ala Phe Ser Gly Thr
65 70 75 80

Phe Lys Gly Leu Gln Asn Lys Ala Tyr Thr Val Ser Glu Arg Val Ala
85 90 95

Gly Tyr Thr Asn Ala Ile Asn Val Thr Gly Asn Ala Val Ala Ile Thr
100 105 110

Asn Thr Pro Asp Ser Asp Asn Pro Thr Pro Leu Asn Pro Thr Gln Pro
115 120 125

Lys Val Glu Thr His Gly Lys Lys Phe Val Lys Val Gly Asp Ala Asp
130 135 140

Ala Arg Leu Ala Gly
145

<210> 27
<211> 169
<212> PRT
<213> Streptococcus agalactiae

<400> 27
Ala Asp Ala Arg Leu Ala Gly Ala Gln Phe Val Val Lys Asn Ser Ala
1 5 10 15

Gly Lys Phe Leu Ala Leu Lys Glu Asp Ala Ala Val Ser Gly Ala Gln
20 25 30

Thr Glu Leu Ala Thr Ala Lys Thr Asp Leu Asp Asn Ala Ile Lys Ala
35 40 45

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

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

Ile Lys Ala Arg Thr Ala Tyr Thr Trp Val Asp Glu Lys Thr Lys Ala
85 90 95

Ile Thr Phe Thr Ser Asn Asn Gln Gly Gln Phe Glu Val Thr Gly Leu
100 105 110

Glu Val Gly Ser Tyr Lys Leu Glu Glu Thr Leu Ala Pro Ala Gly Tyr
115 120 125

Ala Lys Leu Ser Gly Asp Ile Glu Phe Thr Val Gly His Asp Ser Tyr
130 135 140

Thr Ser Gly Asp Ile Lys Tyr Lys Thr Asp Asp Ala Ser Asn Asn Ala
145 150 155 160

Gln Lys Val Phe Asn Lys Lys Val Thr
165

<210> 28
<211> 139
<212> PRT
<213> Streptococcus agalactiae

<400> 28
Glu Glu Glu Arg Thr Thr Glu Thr Val Thr Leu His Lys Ile Leu Gln
1 5 10 15

Thr Glu Thr Asn Leu Lys Asn Ser Ala Phe Pro Gly Thr Lys Gly Leu
20 25 30

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

Phe Gly Asn Asp Ser Lys Asp Ile Gly Gly Ala Tyr Phe Ile Leu Ala
50 55 60

Asn Ser Lys Gly Glu Tyr Ile Lys Ala Asn Asp Lys Asn Lys Leu Lys
65 70 75 80

Pro Glu Phe Ser Gly Asn Thr Pro Lys Thr Thr Leu Asn Ile Ser Glu
85 90 95

Ala Val Gly Gly Leu Thr Glu Glu Asn Ala Gly Ile Lys Phe Glu Thr
100 105 110

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

Thr Tyr Asn Asn Gly Gly Ala Ile Leu Ala Asp
130 135

<210> 29
<211> 183
<212> PRT
<213> Streptococcus agalactiae

<400> 29
Gly Gly Ala Ile Leu Ala Asp Ser Lys Ala Val Pro Val Lys Ile Thr
1 5 10 15

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

Pro Lys Asn Thr Glu Thr Lys Pro Gln Ile Asp Lys Asn Phe Ala Asp
35 40 45

Lys Asn Leu Asp Tyr Ile Asn Asn Gln Lys Asp Lys Gly Thr Ile Ser
50 55 60

Ala Thr Val Gly Asp Val Lys Lys Tyr Thr Val Gly Thr Lys Ile Leu
65 70 75 80

Lys Gly Ser Asp Tyr Lys Lys Leu Val Trp Thr Asp Ser Met Thr Lys
85 90 95

Gly Leu Thr Phe Asn Asn Asp Val Thr Val Thr Leu Asp Gly Ala Asn
100 105 110

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

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

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

Ser Thr Val Val Glu Lys Ser Glu Asn Asn Asp Val Lys Leu Asp Tyr
165 170 175

Gly Asn Asn Pro Thr Thr Glu
180

<210> 30
<211> 143
<212> PRT
<213> Streptococcus agalactiae

<400> 30
Gly Asn Asn Pro Thr Thr Glu Asn Glu Pro Gln Thr Gly Asn Pro Val
1 5 10 15

Asn Lys Glu Ile Thr Val Arg Lys Thr Trp Ala Val Asp Gly Asn Glu
20 25 30

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

Lys Asp Ser Asp Lys Trp Val Asn Val Asp Ser Ala Thr Ala Thr Ala
50 55 60

Ala Thr Asp Phe Lys Tyr Thr Phe Lys Asn Leu Asp Asn Ala Lys Thr
65 70 75 80

Tyr Arg Val Val Glu Arg Val Ser Gly Tyr Ala Pro Ala Tyr Val Ser
85 90 95

Phe Val Gly Gly Val Val Thr Ile Lys Asn Asn Lys Asn Ser Asn Asp
100 105 110

Pro Thr Pro Ile Asn Pro Ser Glu Pro Lys Val Val Thr Tyr Gly Arg
115 120 125

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

<210> 31
<211> 173
<212> PRT
<213> Streptococcus agalactiae

<400> 31
Ser Glu Arg Leu Ala Gly Ala Thr Phe Leu Val Lys Asn Ser Gln Ser
1 5 10 15

Gln Tyr Leu Ala Arg Lys Ser Gly Val Ala Thr Asn Glu Ala His Lys
20 25 30

Ala Val Thr Asp Ala Lys Val Gln Leu Asp Glu Ala Val Lys Ala Tyr
35 40 45

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

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

Lys Ala Asn Tyr Ser Tyr Glu Trp Val Val Asp Lys Asn Ala Ala Asn
85 90 95

Val Val Lys Leu Ile Ser Asn Thr Ala Gly Lys Phe Glu Ile Thr Gly
100 105 110

Leu Asn Ala Gly Glu Tyr Ser Leu Glu Glu Thr Gln Ala Pro Thr Gly
115 120 125

Tyr Ala Lys Leu Ser Ser Asp Val Ser Phe Lys Val Asn Asp Thr Ser
130 135 140

Tyr Ser Glu Gly Ala Ser Asn Asp Ile Ala Tyr Asp Lys Asp Ser Gly
145 150 155 160

Lys Thr Asp Ala Gln Lys Val Val Asn Lys Lys Val Thr
165 170

<210> 32
<211> 133
<212> PRT
<213> Streptococcus agalactiae

<400> 32
Asp Asp Val Thr Thr Asp Thr Val Thr Leu His Lys Ile Val Met Pro
1   5   10   15

Gln Ala Ala Phe Asp Asn Phe Thr Glu Gly Thr Lys Gly Lys Asn Asp
            20   25   30

Ser Asp Tyr Val Gly Lys Gln Ile Asn Asp Leu Lys Ser Tyr Phe Gly
        35   40   45

Ser Thr Asp Ala Lys Glu Ile Lys Gly Ala Phe Phe Val Phe Lys Asn
    50   55   60

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

Leu Glu Ala Lys Asp Ala Glu Gly Gly Ala Val Leu Ser Gly Leu Thr
                85   90   95

Lys Asp Thr Gly Phe Ala Phe Asn Thr Ala Lys Leu Lys Gly Thr Tyr
            100   105   110

Gln Ile Val Glu Leu Lys Glu Lys Ser Asn Tyr Asp Asn Asn Gly Ser
        115   120   125

Ile Leu Ala Asp Ser
    130

<210> 33
<211> 183
<212> PRT
<213> Streptococcus agalactiae

<400> 33
Asn Gly Ser Ile Leu Ala Asp Ser Lys Ala Val Pro Val Lys Ile Thr
1   5   10   15

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

Pro Lys Asn Thr Glu Thr Lys Pro Gln Val Asp Lys Asn Phe Ala Asp
        35   40   45

Lys Asp Leu Asp Tyr Thr Asp Asn Arg Lys Asp Lys Gly Val Val Ser
    50   55   60

Ala Thr Val Gly Asp Lys Lys Glu Tyr Ile Val Gly Thr Lys Ile Leu
65   70   75   80

Lys Gly Ser Asp Tyr Lys Lys Leu Val Trp Thr Asp Ser Met Thr Lys
                85   90   95

Gly Leu Thr Phe Asn Asn Asn Val Lys Val Thr Leu Asp Gly Lys Asp
100 105 110

Phe Pro Val Leu Asn Tyr Lys Leu Val Thr Asp Asp Gln Gly Phe Arg
115 120 125

Leu Ala Leu Asn Ala Thr Gly Leu Ala Ala Val Ala Ala Ala Ala Lys
130 135 140

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

Ser Thr Thr Val Glu Val Pro Glu Thr Asn Asp Val Lys Leu Asp Tyr
165 170 175

Gly Asn Asn Pro Thr Glu Glu
180

<210> 34
<211> 144
<212> PRT
<213> Streptococcus agalactiae

<400> 34
Gly Asn Asn Pro Thr Glu Glu Ser Glu Pro Gln Glu Gly Thr Pro Ala
1 5 10 15

Asn Gln Glu Ile Lys Val Ile Lys Asp Trp Ala Val Asp Gly Thr Ile
20 25 30

Thr Asp Val Asn Val Ala Val Lys Ala Ile Phe Thr Leu Gln Glu Lys
35 40 45

Gln Thr Asp Gly Thr Trp Val Asn Val Ala Ser His Glu Ala Thr Lys
50 55 60

Pro Ser Arg Phe Glu His Thr Phe Thr Gly Leu Asp Asn Thr Lys Thr
65 70 75 80

Tyr Arg Val Val Glu Arg Val Ser Gly Tyr Thr Pro Glu Tyr Val Ser
85 90 95

Phe Lys Asn Gly Val Val Thr Ile Lys Asn Asn Lys Asn Ser Asn Asp
100 105 110

Pro Thr Pro Ile Asn Pro Ser Glu Pro Lys Val Val Thr Tyr Gly Arg
115 120 125

Lys Phe Val Lys Thr Asn Gln Ala Asn Thr Glu Arg Leu Ala Gly Ala
130 135 140

<210> 35
<211> 172

<212> PRT
<213> Streptococcus agalactiae

<400> 35
Thr Glu Arg Leu Ala Gly Ala Thr Phe Leu Val Lys Lys Glu Gly Lys
1 5 10 15

Tyr Leu Ala Arg Lys Ala Gly Ala Ala Thr Ala Glu Ala Lys Ala Ala
20 25 30

Val Lys Thr Ala Lys Leu Ala Leu Asp Glu Ala Val Lys Ala Tyr Asn
35 40 45

Asp Leu Thr Lys Glu Lys Gln Glu Gly Gln Glu Gly Lys Thr Ala Leu
50 55 60

Ala Thr Val Asp Gln Lys Gln Lys Ala Tyr Asn Asp Ala Phe Val Lys
65 70 75 80

Ala Asn Tyr Ser Tyr Glu Trp Val Ala Asp Lys Lys Ala Asp Asn Val
85 90 95

Val Lys Leu Ile Ser Asn Ala Gly Gly Gln Phe Glu Ile Thr Gly Leu
100 105 110

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

Ala Thr Leu Ser Gly Asp Val Asn Phe Glu Val Thr Ala Thr Ser Tyr
130 135 140

Ser Lys Gly Ala Thr Thr Asp Ile Ala Tyr Asp Lys Gly Ser Val Lys
145 150 155 160

Lys Asp Ala Gln Gln Val Gln Asn Lys Lys Val Thr
165 170

<210> 36
<211> 121
<212> PRT
<213> Streptococcus agalactiae

<400> 36
Gly Asn Lys Pro Gly Lys Asp Leu Thr Glu Leu Pro Val Thr Pro Ser
1 5 10 15

Lys Gly Glu Val Thr Val Ala Lys Thr Trp Ser Asp Gly Ile Ala Pro
20 25 30

Asp Gly Val Asn Val Val Tyr Thr Leu Lys Asp Lys Asp Lys Thr Val
35 40 45

Ala Ser Val Ser Leu Thr Lys Thr Ser Lys Gly Thr Ile Asp Leu Gly
50 55 60

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

Gly Leu Glu Asn Lys Ser Tyr Met Ile Ser Glu Arg Val Ser Gly Tyr
85 90 95

Gly Ser Ala Ile Asn Leu Glu Asn Gly Lys Val Thr Ile Thr Asn Thr
100 105 110

Lys Asp Ser Asp Asn Pro Thr Pro Leu
115 120

<210> 37
<211> 105
<212> PRT
<213> Streptococcus agalactiae

<400> 37
Asn Pro Thr Glu Pro Lys Val Glu Thr His Gly Lys Lys Phe Val Lys
1 5 10 15

Thr Asn Glu Gln Gly Asp Arg Leu Ala Gly Ala Gln Phe Val Val Lys
20 25 30

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

Gln Lys Thr Leu Ala Ala Lys Lys Ile Ala Leu Asp Glu Ala Ile Ala
50 55 60

Ala Tyr Asn Lys Leu Ser Ala Thr Asp Gln Lys Gly Glu Lys Gly Ile
65 70 75 80

Thr Ala Lys Glu Leu Ile Lys Thr Lys Gln Ala Asp Tyr Asp Ala Ala
85 90 95

Phe Ile Glu Ala Arg Thr Ala Tyr Glu
100 105

<210> 38
<211> 116
<212> PRT
<213> Streptococcus agalactiae

<400> 38
Gly Asn Asn Pro Thr Ile Glu Asn Glu Pro Lys Glu Gly Ile Pro Val
1 5 10 15

Asp Lys Lys Ile Thr Val Asn Lys Thr Trp Ala Val Asp Gly Asn Glu
20 25 30

Val Asn Lys Ala Asp Glu Thr Val Asp Ala Val Phe Thr Leu Gln Val
35 40 45

Lys Asp Gly Asp Lys Trp Val Asn Val Asp Ser Ala Lys Ala Thr Ala
    50   55   60

Ala Thr Ser Phe Lys His Thr Phe Glu Asn Leu Asp Asn Ala Lys Thr
65   70   75   80

Tyr Arg Val Ile Glu Arg Val Ser Gly Tyr Ala Pro Glu Tyr Val Ser
                85   90   95

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

Pro Thr Pro Ile
        115

<210> 39
<211> 107
<212> PRT
<213> Streptococcus agalactiae

<400> 39
Asn Pro Ser Glu Pro Lys Val Val Thr Tyr Gly Arg Lys Phe Val Lys
1   5   10   15

Thr Asn Lys Asp Gly Lys Glu Arg Leu Ala Gly Ala Thr Phe Leu Val
            20   25   30

Lys Lys Asp Gly Lys Tyr Leu Ala Arg Lys Ser Gly Val Ala Thr Asp
        35   40   45

Ala Glu Lys Ala Ala Val Asp Ser Thr Lys Ser Ala Leu Asp Ala Ala
    50   55   60

Val Lys Ala Tyr Asn Asp Leu Thr Lys Glu Lys Gln Glu Gly Gln Asp
65   70   75   80

Gly Lys Ser Ala Leu Ala Thr Val Ser Glu Lys Gln Lys Ala Tyr Asn
                85   90   95

Asp Ala Phe Val Lys Ala Asn Tyr Ser Tyr Glu
            100   105

<210> 40
<211> 116
<212> PRT
<213> Streptococcus agalactiae

<400> 40
Gly Asn Asn Pro Thr Glu Glu Ser Glu Pro Gln Glu Gly Thr Pro Ala
1   5   10   15

Asn Gln Glu Ile Lys Val Ile Lys Asp Trp Ala Val Asp Gly Thr Ile
            20   25   30

Thr Asp Ala Asn Val Ala Val Lys Ala Ile Phe Thr Leu Gln Glu Lys
35 40 45

Gln Thr Asp Gly Thr Trp Val Asn Val Ala Ser His Glu Ala Thr Lys
50 55 60

Pro Ser Arg Phe Glu His Thr Phe Thr Gly Leu Asp Asn Ala Lys Thr
65 70 75 80

Tyr Arg Val Val Glu Arg Val Ser Gly Tyr Thr Pro Glu Tyr Val Ser
85 90 95

Phe Lys Asn Gly Val Val Thr Ile Lys Asn Asn Lys Asn Ser Asn Asp
100 105 110

Pro Thr Pro Ile
115

<210> 41
<211> 107
<212> PRT
<213> Streptococcus agalactiae

<400> 41
Asn Pro Ser Glu Pro Lys Val Val Thr Tyr Gly Arg Lys Phe Val Lys
1 5 10 15

Thr Asn Gln Ala Asn Thr Glu Arg Leu Ala Gly Ala Thr Phe Leu Val
20 25 30

Lys Lys Glu Gly Lys Tyr Leu Ala Arg Lys Ala Gly Ala Ala Thr Ala
35 40 45

Glu Ala Lys Ala Ala Val Lys Thr Ala Lys Leu Ala Leu Asp Glu Ala
50 55 60

Val Lys Ala Tyr Asn Asp Leu Thr Lys Glu Lys Gln Glu Gly Gln Glu
65 70 75 80

Gly Lys Thr Ala Leu Ala Thr Val Asp Gln Lys Gln Lys Ala Tyr Asn
85 90 95

Asp Ala Phe Val Lys Ala Asn Tyr Ser Tyr Glu
100 105

<210> 42
<211> 123
<212> PRT
<213> Streptococcus agalactiae

<400> 42
Gly Asn Lys Pro Gly Lys Lys Val Lys Glu Ile Pro Val Thr Pro Ser
1 5 10 15

Asn Gly Glu Ile Thr Val Ser Lys Thr Trp Asp Lys Gly Ser Asp Leu
20 25 30

Glu Asn Ala Asn Val Val Tyr Thr Leu Lys Asp Gly Gly Thr Ala Val
35 40 45

Ala Ser Val Ser Leu Thr Lys Thr Thr Pro Asn Gly Glu Ile Asn Leu
50 55 60

Gly Asn Gly Ile Lys Phe Thr Val Thr Gly Ala Phe Ala Gly Lys Phe
65 70 75 80

Ser Gly Leu Thr Asp Ser Lys Thr Tyr Met Ile Ser Glu Arg Ile Ala
85 90 95

Gly Tyr Gly Asn Thr Ile Thr Thr Gly Ala Gly Ser Ala Ala Ile Thr
100 105 110

Asn Thr Pro Asp Ser Asp Asn Pro Thr Pro Leu
115 120

<210> 43
<211> 108
<212> PRT
<213> Streptococcus agalactiae

<400> 43
Asn Pro Thr Glu Pro Lys Val Val Thr His Gly Lys Lys Phe Val Lys
1 5 10 15

Thr Ser Ser Thr Glu Thr Glu Arg Leu Gln Gly Ala Gln Phe Val Val
20 25 30

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

Ser Ala Gln Thr Thr Ala Tyr Thr Asn Ala Lys Thr Ala Leu Asp Ala
50 55 60

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

Lys Gly Glu Thr Ala Lys Ala Glu Ile Lys Thr Ala Gln Asp Ala Tyr
85 90 95

Asn Ala Ala Phe Ile Val Ala Arg Thr Ala Tyr Glu
100 105

<210> 44
<211> 123
<212> PRT
<213> Streptococcus agalactiae

<400> 44
Gly Asn Lys Pro Gly Thr Asp Leu Ser Glu Gln Pro Val Thr Pro Glu
1   5   10   15

Asp Gly Glu Val Lys Val Thr Lys Thr Trp Ala Ala Gly Ala Asn Lys
            20   25   30

Ala Asp Ala Lys Val Val Tyr Thr Leu Lys Asn Ala Thr Lys Gln Val
        35   40   45

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

Leu Gly Lys Gly Met Thr Phe Glu Ile Thr Gly Ala Phe Ser Gly Thr
65   70   75   80

Phe Lys Gly Leu Gln Asn Lys Ala Tyr Thr Val Ser Glu Arg Val Ala
                85   90   95

Gly Tyr Thr Asn Ala Ile Asn Val Thr Gly Asn Ala Val Ala Ile Thr
            100   105   110

Asn Thr Pro Asp Ser Asp Asn Pro Thr Pro Leu
        115   120

<210> 45
<211> 107
<212> PRT
<213> Streptococcus agalactiae

<400> 45
Asn Pro Thr Gln Pro Lys Val Glu Thr His Gly Lys Lys Phe Val Lys
1   5   10   15

Val Gly Asp Ala Asp Ala Arg Leu Ala Gly Ala Gln Phe Val Val Lys
            20   25   30

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

Gly Ala Gln Thr Glu Leu Ala Thr Ala Lys Thr Asp Leu Asp Asn Ala
    50   55   60

Ile Lys Ala Tyr Asn Gly Leu Thr Lys Ala Gln Gln Glu Gly Ala Asp
65   70   75   80

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

Ala Ala Phe Ile Lys Ala Arg Thr Ala Tyr Thr
            100   105

<210> 46
<211> 116
<212> PRT
<213> Streptococcus agalactiae

<400> 46
Gly Asn Asn Pro Thr Thr Glu Asn Glu Pro Gln Thr Gly Asn Pro Val
1 5 10 15

Asn Lys Glu Ile Thr Val Arg Lys Thr Trp Ala Val Asp Gly Asn Glu
20 25 30

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

Lys Asp Ser Asp Lys Trp Val Asn Val Asp Ser Ala Thr Ala Thr Ala
50 55 60

Ala Thr Asp Phe Lys Tyr Thr Phe Lys Asn Leu Asp Asn Ala Lys Thr
65 70 75 80

Tyr Arg Val Val Glu Arg Val Ser Gly Tyr Ala Pro Ala Tyr Val Ser
85 90 95

Phe Val Gly Gly Val Val Thr Ile Lys Asn Asn Lys Asn Ser Asn Asp
100 105 110

Pro Thr Pro Ile
115

<210> 47
<211> 108
<212> PRT
<213> Streptococcus agalactiae

<400> 47
Asn Pro Ser Glu Pro Lys Val Val Thr Tyr Gly Arg Lys Phe Val Lys
1 5 10 15

Thr Asn Gln Asp Gly Ser Glu Arg Leu Ala Gly Ala Thr Phe Leu Val
20 25 30

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

Asn Glu Ala His Lys Ala Val Thr Asp Ala Lys Val Gln Leu Asp Glu
50 55 60

Ala Val Lys Ala Tyr Asn Lys Leu Thr Lys Glu Gln Gln Glu Ser Gln
65 70 75 80

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

Asn Glu Ala Phe Ala Lys Ala Asn Tyr Ser Tyr Glu
100 105

<210> 48
<211> 116
<212> PRT
<213> Streptococcus agalactiae

<400> 48
Gly Asn Asn Pro Thr Glu Glu Ser Glu Pro Gln Glu Gly Thr Pro Ala
1 5 10 15

Asn Gln Glu Ile Lys Val Ile Lys Asp Trp Ala Val Asp Gly Thr Ile
20 25 30

Thr Asp Val Asn Val Ala Val Lys Ala Ile Phe Thr Leu Gln Glu Lys
35 40 45

Gln Thr Asp Gly Thr Trp Val Asn Val Ala Ser His Glu Ala Thr Lys
50 55 60

Pro Ser Arg Phe Glu His Thr Phe Thr Gly Leu Asp Asn Thr Lys Thr
65 70 75 80

Tyr Arg Val Val Glu Arg Val Ser Gly Tyr Thr Pro Glu Tyr Val Ser
85 90 95

Phe Lys Asn Gly Val Val Thr Ile Lys Asn Asn Lys Asn Ser Asn Asp
100 105 110

Pro Thr Pro Ile
115

<210> 49
<211> 107
<212> PRT
<213> Streptococcus agalactiae

<400> 49
Asn Pro Ser Glu Pro Lys Val Val Thr Tyr Gly Arg Lys Phe Val Lys
1 5 10 15

Thr Asn Gln Ala Asn Thr Glu Arg Leu Ala Gly Ala Thr Phe Leu Val
20 25 30

Lys Lys Glu Gly Lys Tyr Leu Ala Arg Lys Ala Gly Ala Ala Thr Ala
35 40 45

Glu Ala Lys Ala Ala Val Lys Thr Ala Lys Leu Ala Leu Asp Glu Ala
50 55 60

Val Lys Ala Tyr Asn Asp Leu Thr Lys Glu Lys Gln Glu Gly Gln Glu
65 70 75 80

Gly Lys Thr Ala Leu Ala Thr Val Asp Gln Lys Gln Lys Ala Tyr Asn
85 90 95

Asp Ala Phe Val Lys Ala Asn Tyr Ser Tyr Glu
100 105

<210> 50
<211> 308
<212> PRT
<213> Streptococcus agalactiae

<400> 50
Gly Asn Lys Pro Gly Lys Asp Leu Thr Glu Leu Pro Val Thr Pro Ser
1 5 10 15

Lys Gly Glu Val Thr Val Ala Lys Thr Trp Ser Asp Gly Ile Ala Pro
20 25 30

Asp Gly Val Asn Val Val Tyr Thr Leu Lys Asp Lys Asp Lys Thr Val
35 40 45

Ala Ser Val Ser Leu Thr Lys Thr Ser Lys Gly Thr Ile Asp Leu Gly
50 55 60

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

Gly Leu Glu Asn Lys Ser Tyr Met Ile Ser Glu Arg Val Ser Gly Tyr
85 90 95

Gly Ser Ala Ile Asn Leu Glu Asn Gly Lys Val Thr Ile Thr Asn Thr
100 105 110

Lys Asp Ser Asp Asn Pro Thr Pro Leu Asn Pro Thr Glu Pro Lys Val
115 120 125

Glu Thr His Gly Lys Lys Phe Val Lys Thr Asn Glu Gln Gly Asp Arg
130 135 140

Leu Ala Gly Ala Gln Phe Val Val Lys Asn Ser Ala Gly Lys Tyr Leu
145 150 155 160

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

Lys Ile Ala Leu Asp Glu Ala Ile Ala Ala Tyr Asn Lys Leu Ser Ala
180 185 190

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

Thr Lys Gln Ala Asp Tyr Asp Ala Ala Phe Ile Glu Ala Arg Thr Ala
210 215 220

Tyr Glu Trp Ile Thr Asp Lys Ala Arg Ala Ile Thr Tyr Thr Ser Asn
225 230 235 240

Asp Gln Gly Gln Phe Glu Val Thr Gly Leu Ala Asp Gly Thr Tyr Asn
245 250 255

Leu Glu Glu Thr Leu Ala Pro Ala Gly Phe Ala Lys Leu Ala Gly Asn
260 265 270

Ile Lys Phe Val Val Asn Gln Gly Ser Tyr Ile Thr Gly Gly Asn Ile
275 280 285

Asp Tyr Val Ala Asn Ser Asn Gln Lys Asp Ala Thr Arg Val Glu Asn
290 295 300

Lys Lys Val Thr
305

<210> 51
<211> 226
<212> PRT
<213> Streptococcus agalactiae

<400> 51
Gly Asn Lys Pro Gly Lys Asp Leu Thr Glu Leu Pro Val Thr Pro Ser
1 5 10 15

Lys Gly Glu Val Thr Val Ala Lys Thr Trp Ser Asp Gly Ile Ala Pro
20 25 30

Asp Gly Val Asn Val Val Tyr Thr Leu Lys Asp Lys Asp Lys Thr Val
35 40 45

Ala Ser Val Ser Leu Thr Lys Thr Ser Lys Gly Thr Ile Asp Leu Gly
50 55 60

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

Gly Leu Glu Asn Lys Ser Tyr Met Ile Ser Glu Arg Val Ser Gly Tyr
85 90 95

Gly Ser Ala Ile Asn Leu Glu Asn Gly Lys Val Thr Ile Thr Asn Thr
100 105 110

Lys Asp Ser Asp Asn Pro Thr Pro Leu Asn Pro Thr Glu Pro Lys Val
115 120 125

Glu Thr His Gly Lys Lys Phe Val Lys Thr Asn Glu Gln Gly Asp Arg
130 135 140

Leu Ala Gly Ala Gln Phe Val Val Lys Asn Ser Ala Gly Lys Tyr Leu
145 150 155 160

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

Lys Ile Ala Leu Asp Glu Ala Ile Ala Ala Tyr Asn Lys Leu Ser Ala
180 185 190

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

Thr Lys Gln Ala Asp Tyr Asp Ala Ala Phe Ile Glu Ala Arg Thr Ala
210 215 220

Tyr Glu
225

<210> 52
<211> 502
<212> PRT
<213> Streptococcus agalactiae

<400> 52
Asn Gly Ser Leu Leu Ala Ala Ser Lys Ala Val Pro Val Asn Ile Thr
1 5 10 15

Leu Pro Leu Val Asn Glu Asp Gly Val Val Ala Asp Ala His Val Tyr
20 25 30

Pro Lys Asn Thr Glu Glu Lys Pro Glu Ile Asp Lys Asn Phe Ala Lys
35 40 45

Thr Asn Asp Leu Thr Ala Leu Thr Asp Val Asn Arg Leu Leu Thr Ala
50 55 60

Gly Ala Asn Tyr Gly Asn Tyr Ala Arg Asp Lys Ala Thr Ala Thr Ala
65 70 75 80

Glu Ile Gly Lys Val Val Pro Tyr Glu Val Lys Thr Lys Ile His Lys
85 90 95

Gly Ser Lys Tyr Glu Asn Leu Val Trp Thr Asp Ile Met Ser Asn Gly
100 105 110

Leu Thr Met Gly Ser Thr Val Ser Leu Lys Ala Ser Gly Thr Thr Glu
115 120 125

Thr Phe Ala Lys Asp Thr Asp Tyr Glu Leu Ser Ile Asp Ala Arg Gly
130 135 140

Phe Thr Leu Lys Phe Thr Ala Asp Gly Leu Gly Lys Leu Glu Lys Ala
145 150 155 160

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

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

Ser Tyr Gly Asn Lys Pro Gly Lys Asp Leu Thr Glu Leu Pro Val Thr
        195                 200                 205

Pro Ser Lys Gly Glu Val Thr Val Ala Lys Thr Trp Ser Asp Gly Ile
    210                 215                 220

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

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

Leu Gly Asn Gly Ile Lys Phe Glu Val Ser Gly Asn Phe Ser Gly Lys
            260                 265                 270

Phe Thr Gly Leu Glu Asn Lys Ser Tyr Met Ile Ser Glu Arg Val Ser
        275                 280                 285

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

Asn Thr Lys Asp Ser Asp Asn Pro Thr Pro Leu Asn Pro Thr Glu Pro
305                 310                 315                 320

Lys Val Glu Thr His Gly Lys Lys Phe Val Lys Thr Asn Glu Gln Gly
                325                 330                 335

Asp Arg Leu Ala Gly Ala Gln Phe Val Val Lys Asn Ser Ala Gly Lys
            340                 345                 350

Tyr Leu Ala Leu Lys Ala Asp Gln Ser Glu Gly Gln Lys Thr Leu Ala
        355                 360                 365

Ala Lys Lys Ile Ala Leu Asp Glu Ala Ile Ala Ala Tyr Asn Lys Leu
    370                 375                 380

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

Ile Lys Thr Lys Gln Ala Asp Tyr Asp Ala Ala Phe Ile Glu Ala Arg
                405                 410                 415

Thr Ala Tyr Glu Trp Ile Thr Asp Lys Ala Arg Ala Ile Thr Tyr Thr
            420                 425                 430
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Ser Asn Asp Gln Gly Gln Phe Glu Val Thr Gly Leu Ala Asp Gly Thr
435 440 445

Tyr Asn Leu Glu Glu Thr Leu Ala Pro Ala Gly Phe Ala Lys Leu Ala
450 455 460

Gly Asn Ile Lys Phe Val Val Asn Gln Gly Ser Tyr Ile Thr Gly Gly
465 470 475 480

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

Glu Asn Lys Lys Val Thr
500

<210> 53
<211> 420
<212> PRT
<213> Streptococcus agalactiae

<400> 53
Asn Gly Ser Leu Leu Ala Ala Ser Lys Ala Val Pro Val Asn Ile Thr
1 5 10 15

Leu Pro Leu Val Asn Glu Asp Gly Val Val Ala Asp Ala His Val Tyr
20 25 30

Pro Lys Asn Thr Glu Glu Lys Pro Glu Ile Asp Lys Asn Phe Ala Lys
35 40 45

Thr Asn Asp Leu Thr Ala Leu Thr Asp Val Asn Arg Leu Leu Thr Ala
50 55 60

Gly Ala Asn Tyr Gly Asn Tyr Ala Arg Asp Lys Ala Thr Ala Thr Ala
65 70 75 80

Glu Ile Gly Lys Val Val Pro Tyr Glu Val Lys Thr Lys Ile His Lys
85 90 95

Gly Ser Lys Tyr Glu Asn Leu Val Trp Thr Asp Ile Met Ser Asn Gly
100 105 110

Leu Thr Met Gly Ser Thr Val Ser Leu Lys Ala Ser Gly Thr Thr Glu
115 120 125

Thr Phe Ala Lys Asp Thr Asp Tyr Glu Leu Ser Ile Asp Ala Arg Gly
130 135 140

Phe Thr Leu Lys Phe Thr Ala Asp Gly Leu Gly Lys Leu Glu Lys Ala
145 150 155 160

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

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

Ser Tyr Gly Asn Lys Pro Gly Lys Asp Leu Thr Glu Leu Pro Val Thr
        195                 200                 205

Pro Ser Lys Gly Glu Val Thr Val Ala Lys Thr Trp Ser Asp Gly Ile
    210                 215                 220

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

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

Leu Gly Asn Gly Ile Lys Phe Glu Val Ser Gly Asn Phe Ser Gly Lys
            260                 265                 270

Phe Thr Gly Leu Glu Asn Lys Ser Tyr Met Ile Ser Glu Arg Val Ser
        275                 280                 285

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

Asn Thr Lys Asp Ser Asp Asn Pro Thr Pro Leu Asn Pro Thr Glu Pro
305                 310                 315                 320

Lys Val Glu Thr His Gly Lys Lys Phe Val Lys Thr Asn Glu Gln Gly
                325                 330                 335

Asp Arg Leu Ala Gly Ala Gln Phe Val Val Lys Asn Ser Ala Gly Lys
            340                 345                 350

Tyr Leu Ala Leu Lys Ala Asp Gln Ser Glu Gly Gln Lys Thr Leu Ala
        355                 360                 365

Ala Lys Lys Ile Ala Leu Asp Glu Ala Ile Ala Ala Tyr Asn Lys Leu
    370                 375                 380

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

Ile Lys Thr Lys Gln Ala Asp Tyr Asp Ala Ala Phe Ile Glu Ala Arg
                405                 410                 415

Thr Ala Tyr Glu
            420
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<210> 54
<211> 309
<212> PRT
<213> Streptococcus agalactiae

<400> 54
Gly Asn Asn Pro Thr Ile Glu Asn Glu Pro Lys Glu Gly Ile Pro Val
1 5 10 15

Asp Lys Lys Ile Thr Val Asn Lys Thr Trp Ala Val Asp Gly Asn Glu
20 25 30

Val Asn Lys Ala Asp Glu Thr Val Asp Ala Val Phe Thr Leu Gln Val
35 40 45

Lys Asp Gly Asp Lys Trp Val Asn Val Asp Ser Ala Lys Ala Thr Ala
50 55 60

Ala Thr Ser Phe Lys His Thr Phe Glu Asn Leu Asp Asn Ala Lys Thr
65 70 75 80

Tyr Arg Val Ile Glu Arg Val Ser Gly Tyr Ala Pro Glu Tyr Val Ser
85 90 95

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

Pro Thr Pro Ile Asn Pro Ser Glu Pro Lys Val Val Thr Tyr Gly Arg
115 120 125

Lys Phe Val Lys Thr Asn Lys Asp Gly Lys Glu Arg Leu Ala Gly Ala
130 135 140

Thr Phe Leu Val Lys Lys Asp Gly Lys Tyr Leu Ala Arg Lys Ser Gly
145 150 155 160

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

Leu Asp Ala Ala Val Lys Ala Tyr Asn Asp Leu Thr Lys Glu Lys Gln
180 185 190

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

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

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

Lys Gly Gln Phe Glu Ile Thr Gly Leu Thr Glu Gly Gln Tyr Ser Leu
245 250 255

Glu Glu Thr Gln Ala Pro Thr Gly Tyr Ala Lys Leu Ser Gly Asp Val
260 265 270

Ser Phe Asn Val Asn Ala Thr Ser Tyr Ser Lys Gly Ser Ala Gln Asp
275 280 285

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

Asn Lys Lys Val Thr
305

<210> 55
<211> 223
<212> PRT
<213> Streptococcus agalactiae

<400> 55
Gly Asn Asn Pro Thr Ile Glu Asn Glu Pro Lys Glu Gly Ile Pro Val
1 5 10 15

Asp Lys Lys Ile Thr Val Asn Lys Thr Trp Ala Val Asp Gly Asn Glu
20 25 30

Val Asn Lys Ala Asp Glu Thr Val Asp Ala Val Phe Thr Leu Gln Val
35 40 45

Lys Asp Gly Asp Lys Trp Val Asn Val Asp Ser Ala Lys Ala Thr Ala
50 55 60

Ala Thr Ser Phe Lys His Thr Phe Glu Asn Leu Asp Asn Ala Lys Thr
65 70 75 80

Tyr Arg Val Ile Glu Arg Val Ser Gly Tyr Ala Pro Glu Tyr Val Ser
85 90 95

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

Pro Thr Pro Ile Asn Pro Ser Glu Pro Lys Val Val Thr Tyr Gly Arg
115 120 125

Lys Phe Val Lys Thr Asn Lys Asp Gly Lys Glu Arg Leu Ala Gly Ala
130 135 140

Thr Phe Leu Val Lys Lys Asp Gly Lys Tyr Leu Ala Arg Lys Ser Gly
145 150 155 160

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

Leu Asp Ala Ala Val Lys Ala Tyr Asn Asp Leu Thr Lys Glu Lys Gln
180 185 190

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

Lys Ala Tyr Asn Asp Ala Phe Val Lys Ala Asn Tyr Ser Tyr Glu
210 215 220

<210> 56
<211> 485
<212> PRT
<213> Streptococcus agalactiae

<400> 56
Asp Gly Ser Ile Leu Ala Asp Ser Lys Ala Val Pro Val Lys Ile Thr
1 5 10 15

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

Pro Lys Asn Thr Glu Thr Lys Pro Gln Val Asp Lys Asn Phe Ala Asp
35 40 45

Lys Glu Leu Asp Tyr Ala Asn Asn Lys Lys Asp Lys Gly Thr Val Ser
50 55 60

Ala Ser Val Gly Asp Val Lys Lys Tyr His Val Gly Thr Lys Ile Leu
65 70 75 80

Lys Gly Ser Asp Tyr Lys Lys Leu Ile Trp Thr Asp Ser Met Thr Lys
85 90 95

Gly Leu Thr Phe Asn Asn Asp Ile Ala Val Thr Leu Asp Gly Ala Thr
100 105 110

Leu Asp Ala Thr Asn Tyr Lys Leu Val Ala Asp Asp Gln Gly Phe Arg
115 120 125

Leu Val Leu Thr Asp Lys Gly Leu Glu Ala Val Ala Lys Ala Ala Lys
130 135 140

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

Ser Ala Val Val Glu Val Leu Glu Thr Asn Asp Val Lys Leu Asp Tyr
165 170 175

Gly Asn Asn Pro Thr Ile Glu Asn Glu Pro Lys Glu Gly Ile Pro Val
180 185 190

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

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

Lys Asp Gly Asp Lys Trp Val Asn Val Asp Ser Ala Lys Ala Thr Ala
225                 230                 235                 240

Ala Thr Ser Phe Lys His Thr Phe Glu Asn Leu Asp Asn Ala Lys Thr
                245                 250                 255

Tyr Arg Val Ile Glu Arg Val Ser Gly Tyr Ala Pro Glu Tyr Val Ser
            260                 265                 270

Phe Val Asn Gly Val Val Thr Ile Lys Asn Asn Lys Asp Ser Asn Glu
        275                 280                 285

Pro Thr Pro Ile Asn Pro Ser Glu Pro Lys Val Val Thr Tyr Gly Arg
    290                 295                 300

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

Thr Phe Leu Val Lys Lys Asp Gly Lys Tyr Leu Ala Arg Lys Ser Gly
                325                 330                 335

Val Ala Thr Asp Ala Glu Lys Ala Ala Val Asp Ser Thr Lys Ser Ala
            340                 345                 350

Leu Asp Ala Ala Val Lys Ala Tyr Asn Asp Leu Thr Lys Glu Lys Gln
        355                 360                 365

Glu Gly Gln Asp Gly Lys Ser Ala Leu Ala Thr Val Ser Glu Lys Gln
    370                 375                 380

Lys Ala Tyr Asn Asp Ala Phe Val Lys Ala Asn Tyr Ser Tyr Glu Trp
385                 390                 395                 400

Val Glu Asp Lys Asn Ala Lys Asn Val Val Lys Leu Ile Ser Asn Asp
                405                 410                 415

Lys Gly Gln Phe Glu Ile Thr Gly Leu Thr Glu Gly Gln Tyr Ser Leu
            420                 425                 430

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

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

Ile Glu Tyr Thr Gln Gly Ser Lys Thr Lys Asp Ala Gln Gln Val Ile
465                 470                 475                 480
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Asn Lys Lys Val Thr
485

<210> 57
<211> 399
<212> PRT
<213> Streptococcus agalactiae

<400> 57
Asp Gly Ser Ile Leu Ala Asp Ser Lys Ala Val Pro Val Lys Ile Thr
1 5 10 15

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

Pro Lys Asn Thr Glu Thr Lys Pro Gln Val Asp Lys Asn Phe Ala Asp
35 40 45

Lys Glu Leu Asp Tyr Ala Asn Asn Lys Lys Asp Lys Gly Thr Val Ser
50 55 60

Ala Ser Val Gly Asp Val Lys Lys Tyr His Val Gly Thr Lys Ile Leu
65 70 75 80

Lys Gly Ser Asp Tyr Lys Lys Leu Ile Trp Thr Asp Ser Met Thr Lys
85 90 95

Gly Leu Thr Phe Asn Asn Asp Ile Ala Val Thr Leu Asp Gly Ala Thr
100 105 110

Leu Asp Ala Thr Asn Tyr Lys Leu Val Ala Asp Asp Gln Gly Phe Arg
115 120 125

Leu Val Leu Thr Asp Lys Gly Leu Glu Ala Val Ala Lys Ala Ala Lys
130 135 140

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

Ser Ala Val Val Glu Val Leu Glu Thr Asn Asp Val Lys Leu Asp Tyr
165 170 175

Gly Asn Asn Pro Thr Ile Glu Asn Glu Pro Lys Glu Gly Ile Pro Val
180 185 190

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

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

Lys Asp Gly Asp Lys Trp Val Asn Val Asp Ser Ala Lys Ala Thr Ala
225 230 235 240

Ala Thr Ser Phe Lys His Thr Phe Glu Asn Leu Asp Asn Ala Lys Thr
245 250 255

Tyr Arg Val Ile Glu Arg Val Ser Gly Tyr Ala Pro Glu Tyr Val Ser
260 265 270

Phe Val Asn Gly Val Val Thr Ile Lys Asn Asn Lys Asp Ser Asn Glu
275 280 285

Pro Thr Pro Ile Asn Pro Ser Glu Pro Lys Val Val Thr Tyr Gly Arg
290 295 300

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

Thr Phe Leu Val Lys Lys Asp Gly Lys Tyr Leu Ala Arg Lys Ser Gly
325 330 335

Val Ala Thr Asp Ala Glu Lys Ala Ala Val Asp Ser Thr Lys Ser Ala
340 345 350

Leu Asp Ala Ala Val Lys Ala Tyr Asn Asp Leu Thr Lys Glu Lys Gln
355 360 365

Glu Gly Gln Asp Gly Lys Ser Ala Leu Ala Thr Val Ser Glu Lys Gln
370 375 380

Lys Ala Tyr Asn Asp Ala Phe Val Lys Ala Asn Tyr Ser Tyr Glu
385 390 395

<210> 58
<211> 309
<212> PRT
<213> Streptococcus agalactiae

<400> 58
Gly Asn Asn Pro Thr Glu Glu Ser Glu Pro Gln Glu Gly Thr Pro Ala
1 5 10 15

Asn Gln Glu Ile Lys Val Ile Lys Asp Trp Ala Val Asp Gly Thr Ile
20 25 30

Thr Asp Ala Asn Val Ala Val Lys Ala Ile Phe Thr Leu Gln Glu Lys
35 40 45

Gln Thr Asp Gly Thr Trp Val Asn Val Ala Ser His Glu Ala Thr Lys
50 55 60

Pro Ser Arg Phe Glu His Thr Phe Thr Gly Leu Asp Asn Ala Lys Thr
65 70 75 80

```
Tyr Arg Val Val Glu Arg Val Ser Gly Tyr Thr Pro Glu Tyr Val Ser
                85                  90                  95

Phe Lys Asn Gly Val Val Thr Ile Lys Asn Asn Lys Asn Ser Asn Asp
            100                 105                 110

Pro Thr Pro Ile Asn Pro Ser Glu Pro Lys Val Val Thr Tyr Gly Arg
        115                 120                 125

Lys Phe Val Lys Thr Asn Gln Ala Asn Thr Glu Arg Leu Ala Gly Ala
    130                 135                 140

Thr Phe Leu Val Lys Lys Glu Gly Lys Tyr Leu Ala Arg Lys Ala Gly
145                 150                 155                 160

Ala Ala Thr Ala Glu Ala Lys Ala Ala Val Lys Thr Ala Lys Leu Ala
                165                 170                 175

Leu Asp Glu Ala Val Lys Ala Tyr Asn Asp Leu Thr Lys Glu Lys Gln
            180                 185                 190

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

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

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

Gly Gly Gln Phe Glu Ile Thr Gly Leu Asp Lys Gly Thr Tyr Gly Leu
                245                 250                 255

Glu Glu Thr Gln Ala Pro Ala Gly Tyr Ala Thr Leu Ser Gly Asp Val
            260                 265                 270

Asn Phe Glu Val Thr Ala Thr Ser Tyr Ser Lys Gly Ala Thr Thr Asp
        275                 280                 285

Ile Ala Tyr Asp Lys Gly Ser Val Lys Lys Asp Ala Gln Gln Val Gln
    290                 295                 300

Asn Lys Lys Val Thr
305
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<210> 59
<211> 223
<212> PRT
<213> Streptococcus agalactiae

<400> 59

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

Asn Gln Glu Ile Lys Val Ile Lys Asp Trp Ala Val Asp Gly Thr Ile
20 25 30

Thr Asp Ala Asn Val Ala Val Lys Ala Ile Phe Thr Leu Gln Glu Lys
35 40 45

Gln Thr Asp Gly Thr Trp Val Asn Val Ala Ser His Glu Ala Thr Lys
50 55 60

Pro Ser Arg Phe Glu His Thr Phe Thr Gly Leu Asp Asn Ala Lys Thr
65 70 75 80

Tyr Arg Val Val Glu Arg Val Ser Gly Tyr Thr Pro Glu Tyr Val Ser
85 90 95

Phe Lys Asn Gly Val Val Thr Ile Lys Asn Asn Lys Asn Ser Asn Asp
100 105 110

Pro Thr Pro Ile Asn Pro Ser Glu Pro Lys Val Val Thr Tyr Gly Arg
115 120 125

Lys Phe Val Lys Thr Asn Gln Ala Asn Thr Glu Arg Leu Ala Gly Ala
130 135 140

Thr Phe Leu Val Lys Lys Glu Gly Lys Tyr Leu Ala Arg Lys Ala Gly
145 150 155 160

Ala Ala Thr Ala Glu Ala Lys Ala Ala Val Lys Thr Ala Lys Leu Ala
165 170 175

Leu Asp Glu Ala Val Lys Ala Tyr Asn Asp Leu Thr Lys Glu Lys Gln
180 185 190

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

Lys Ala Tyr Asn Asp Ala Phe Val Lys Ala Asn Tyr Ser Tyr Glu
210 215 220

<210> 60
<211> 485
<212> PRT
<213> Streptococcus agalactiae

<400> 60
Asn Gly Ser Ile Leu Ala Asp Ser Lys Ala Val Pro Val Lys Ile Thr
1 5 10 15

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

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Pro Lys Asn Thr Glu Thr Lys Pro Gln Val Asp Lys Asn Phe Ala Asp
        35                  40                  45

Lys Asp Leu Asp Tyr Thr Asp Asn Arg Lys Asp Lys Gly Val Val Ser
    50                  55                  60

Ala Thr Val Gly Asp Lys Lys Glu Tyr Ile Val Gly Thr Lys Ile Leu
65                  70                  75                  80

Lys Gly Ser Asp Tyr Lys Lys Leu Val Trp Thr Asp Ser Met Thr Lys
                85                  90                  95

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

Phe Pro Val Leu Asn Tyr Lys Leu Val Thr Asp Asp Gln Gly Phe Arg
        115                 120                 125

Leu Ala Leu Asn Ala Thr Gly Leu Ala Ala Val Ala Ala Ala Ala Lys
    130                 135                 140

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

Ser Thr Thr Val Glu Ile Pro Glu Thr Asn Asp Val Lys Leu Asp Tyr
                165                 170                 175

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

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

Thr Asp Ala Asn Val Ala Val Lys Ala Ile Phe Thr Leu Gln Glu Lys
    210                 215                 220

Gln Thr Asp Gly Thr Trp Val Asn Val Ala Ser His Glu Ala Thr Lys
225                 230                 235                 240

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

Tyr Arg Val Val Glu Arg Val Ser Gly Tyr Thr Pro Glu Tyr Val Ser
            260                 265                 270

Phe Lys Asn Gly Val Val Thr Ile Lys Asn Asn Lys Asn Ser Asn Asp
        275                 280                 285

Pro Thr Pro Ile Asn Pro Ser Glu Pro Lys Val Val Thr Tyr Gly Arg
    290                 295                 300
```

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

Thr Phe Leu Val Lys Lys Glu Gly Lys Tyr Leu Ala Arg Lys Ala Gly
325 330 335

Ala Ala Thr Ala Glu Ala Lys Ala Ala Val Lys Thr Ala Lys Leu Ala
340 345 350

Leu Asp Glu Ala Val Lys Ala Tyr Asn Asp Leu Thr Lys Glu Lys Gln
355 360 365

Glu Gly Gln Glu Gly Lys Thr Ala Leu Ala Thr Val Asp Gln Lys Gln
370 375 380

Lys Ala Tyr Asn Asp Ala Phe Val Lys Ala Asn Tyr Ser Tyr Glu Trp
385 390 395 400

Val Ala Asp Lys Lys Ala Asp Asn Val Val Lys Leu Ile Ser Asn Ala
405 410 415

Gly Gly Gln Phe Glu Ile Thr Gly Leu Asp Lys Gly Thr Tyr Gly Leu
420 425 430

Glu Glu Thr Gln Ala Pro Ala Gly Tyr Ala Thr Leu Ser Gly Asp Val
435 440 445

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

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

Asn Lys Lys Val Thr
485

<210> 61
<211> 399
<212> PRT
<213> Streptococcus agalactiae

<400> 61
Asn Gly Ser Ile Leu Ala Asp Ser Lys Ala Val Pro Val Lys Ile Thr
1 5 10 15

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

Pro Lys Asn Thr Glu Thr Lys Pro Gln Val Asp Lys Asn Phe Ala Asp
35 40 45

```
Lys Asp Leu Asp Tyr Thr Asp Asn Arg Lys Asp Lys Gly Val Val Ser
    50                  55                  60

Ala Thr Val Gly Asp Lys Lys Glu Tyr Ile Val Gly Thr Lys Ile Leu
65                  70                  75                  80

Lys Gly Ser Asp Tyr Lys Lys Leu Val Trp Thr Asp Ser Met Thr Lys
                85                  90                  95

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

Phe Pro Val Leu Asn Tyr Lys Leu Val Thr Asp Asp Gln Gly Phe Arg
        115                 120                 125

Leu Ala Leu Asn Ala Thr Gly Leu Ala Ala Val Ala Ala Ala Ala Lys
    130                 135                 140

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

Ser Thr Thr Val Glu Ile Pro Glu Thr Asn Asp Val Lys Leu Asp Tyr
                165                 170                 175

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

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

Thr Asp Ala Asn Val Ala Val Lys Ala Ile Phe Thr Leu Gln Glu Lys
    210                 215                 220

Gln Thr Asp Gly Thr Trp Val Asn Val Ala Ser His Glu Ala Thr Lys
225                 230                 235                 240

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

Tyr Arg Val Val Glu Arg Val Ser Gly Tyr Thr Pro Glu Tyr Val Ser
            260                 265                 270

Phe Lys Asn Gly Val Val Thr Ile Lys Asn Asn Lys Asn Ser Asn Asp
        275                 280                 285

Pro Thr Pro Ile Asn Pro Ser Glu Pro Lys Val Val Thr Tyr Gly Arg
    290                 295                 300

Lys Phe Val Lys Thr Asn Gln Ala Asn Thr Glu Arg Leu Ala Gly Ala
305                 310                 315                 320
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Thr Phe Leu Val Lys Lys Glu Gly Lys Tyr Leu Ala Arg Lys Ala Gly
325 330 335

Ala Ala Thr Ala Glu Ala Lys Ala Ala Val Lys Thr Ala Lys Leu Ala
340 345 350

Leu Asp Glu Ala Val Lys Ala Tyr Asn Asp Leu Thr Lys Glu Lys Gln
355 360 365

Glu Gly Gln Glu Gly Lys Thr Ala Leu Ala Thr Val Asp Gln Lys Gln
370 375 380

Lys Ala Tyr Asn Asp Ala Phe Val Lys Ala Asn Tyr Ser Tyr Glu
385 390 395

<210> 62
<211> 316
<212> PRT
<213> Streptococcus agalactiae

<400> 62
Gly Asn Lys Pro Gly Lys Lys Val Lys Glu Ile Pro Val Thr Pro Ser
1 5 10 15

Asn Gly Glu Ile Thr Val Ser Lys Thr Trp Asp Lys Gly Ser Asp Leu
20 25 30

Glu Asn Ala Asn Val Val Tyr Thr Leu Lys Asp Gly Gly Thr Ala Val
35 40 45

Ala Ser Val Ser Leu Thr Lys Thr Thr Pro Asn Gly Glu Ile Asn Leu
50 55 60

Gly Asn Gly Ile Lys Phe Thr Val Thr Gly Ala Phe Ala Gly Lys Phe
65 70 75 80

Ser Gly Leu Thr Asp Ser Lys Thr Tyr Met Ile Ser Glu Arg Ile Ala
85 90 95

Gly Tyr Gly Asn Thr Ile Thr Thr Gly Ala Gly Ser Ala Ala Ile Thr
100 105 110

Asn Thr Pro Asp Ser Asp Asn Pro Thr Pro Leu Asn Pro Thr Glu Pro
115 120 125

Lys Val Val Thr His Gly Lys Lys Phe Val Lys Thr Ser Ser Thr Glu
130 135 140

Thr Glu Arg Leu Gln Gly Ala Gln Phe Val Val Lys Asp Ser Ala Gly
145 150 155 160

Lys Tyr Leu Ala Leu Lys Ser Ser Ala Thr Ile Ser Ala Gln Thr Thr
165 170 175

Ala Tyr Thr Asn Ala Lys Thr Ala Leu Asp Ala Lys Ile Ala Ala Tyr
180 185 190

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

Lys Ala Glu Ile Lys Thr Ala Gln Asp Ala Tyr Asn Ala Ala Phe Ile
210 215 220

Val Ala Arg Thr Ala Tyr Glu Trp Val Thr Asn Lys Glu Asp Ala Asn
225 230 235 240

Val Val Lys Val Thr Ser Asn Ala Asp Gly Gln Phe Glu Val Ser Gly
245 250 255

Leu Ala Thr Gly Asp Tyr Lys Leu Glu Glu Thr Gln Ala Pro Ala Gly
260 265 270

Tyr Ala Lys Leu Ala Gly Asp Val Asp Phe Lys Val Gly Asn Ser Ser
275 280 285

Lys Ala Asp Asp Ser Gly Asn Ile Asp Tyr Thr Ala Ser Ser Asn Lys
290 295 300

Lys Asp Ala Gln Arg Ile Glu Asn Lys Lys Val Thr
305 310 315

<210> 63
<211> 231
<212> PRT
<213> Streptococcus agalactiae

<400> 63
Gly Asn Lys Pro Gly Lys Lys Val Lys Glu Ile Pro Val Thr Pro Ser
1 5 10 15

Asn Gly Glu Ile Thr Val Ser Lys Thr Trp Asp Lys Gly Ser Asp Leu
20 25 30

Glu Asn Ala Asn Val Val Tyr Thr Leu Lys Asp Gly Gly Thr Ala Val
35 40 45

Ala Ser Val Ser Leu Thr Lys Thr Thr Pro Asn Gly Glu Ile Asn Leu
50 55 60

Gly Asn Gly Ile Lys Phe Thr Val Thr Gly Ala Phe Ala Gly Lys Phe
65 70 75 80

Ser Gly Leu Thr Asp Ser Lys Thr Tyr Met Ile Ser Glu Arg Ile Ala
85 90 95

Gly Tyr Gly Asn Thr Ile Thr Thr Gly Ala Gly Ser Ala Ala Ile Thr
100 105 110

Asn Thr Pro Asp Ser Asp Asn Pro Thr Pro Leu Asn Pro Thr Glu Pro
115 120 125

Lys Val Val Thr His Gly Lys Lys Phe Val Lys Thr Ser Ser Thr Glu
130 135 140

Thr Glu Arg Leu Gln Gly Ala Gln Phe Val Val Lys Asp Ser Ala Gly
145 150 155 160

Lys Tyr Leu Ala Leu Lys Ser Ser Ala Thr Ile Ser Ala Gln Thr Thr
165 170 175

Ala Tyr Thr Asn Ala Lys Thr Ala Leu Asp Ala Lys Ile Ala Ala Tyr
180 185 190

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

Lys Ala Glu Ile Lys Thr Ala Gln Asp Ala Tyr Asn Ala Ala Phe Ile
210 215 220

Val Ala Arg Thr Ala Tyr Glu
225 230

<210> 64
<211> 507
<212> PRT
<213> Streptococcus agalactiae

<400> 64
Gly Asp Lys Val Leu Ala Asp Ser Lys Ala Val Pro Val Lys Ile Thr
1 5 10 15

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

Pro Lys Asn Thr Glu Glu Ala Pro Gln Ile Asp Lys Asn Phe Ala Lys
35 40 45

Ala Asn Lys Leu Leu Asn Asp Ser Asp Asn Ser Ala Ile Ala Gly Gly
50 55 60

Ala Asp Tyr Asp Lys Tyr Gln Ala Glu Lys Ala Lys Ala Thr Ala Glu
65 70 75 80

Ile Gly Gln Glu Ile Pro Tyr Glu Val Lys Thr Lys Ile Gln Lys Gly
85 90 95

Ser Lys Tyr Lys Asn Leu Ala Trp Val Asp Thr Met Ser Asn Gly Leu
100 105 110

```
Thr Met Gly Asn Thr Val Asn Leu Glu Ala Ser Ser Gly Ser Phe Val
        115                 120                 125

Glu Gly Thr Asp Tyr Asn Val Glu Arg Asp Asp Arg Gly Phe Thr Leu
    130                 135                 140

Lys Phe Thr Asp Thr Gly Leu Thr Lys Leu Gln Lys Glu Ala Glu Thr
145                 150                 155                 160

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

Ala Ile Asp Asp Lys Pro Glu Ser Asn Asp Ile Lys Leu Gln Tyr Gly
            180                 185                 190

Asn Lys Pro Gly Lys Lys Val Lys Glu Ile Pro Val Thr Pro Ser Asn
        195                 200                 205

Gly Glu Ile Thr Val Ser Lys Thr Trp Asp Lys Gly Ser Asp Leu Glu
    210                 215                 220

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

Ser Val Ser Leu Thr Lys Thr Thr Pro Asn Gly Glu Ile Asn Leu Gly
                245                 250                 255

Asn Gly Ile Lys Phe Thr Val Thr Gly Ala Phe Ala Gly Lys Phe Ser
            260                 265                 270

Gly Leu Thr Asp Ser Lys Thr Tyr Met Ile Ser Glu Arg Ile Ala Gly
        275                 280                 285

Tyr Gly Asn Thr Ile Thr Thr Gly Ala Gly Ser Ala Ala Ile Thr Asn
    290                 295                 300

Thr Pro Asp Ser Asp Asn Pro Thr Pro Leu Asn Pro Thr Glu Pro Lys
305                 310                 315                 320

Val Val Thr His Gly Lys Lys Phe Val Lys Thr Ser Ser Thr Glu Thr
                325                 330                 335

Glu Arg Leu Gln Gly Ala Gln Phe Val Val Lys Asp Ser Ala Gly Lys
            340                 345                 350

Tyr Leu Ala Leu Lys Ser Ser Ala Thr Ile Ser Ala Gln Thr Thr Ala
        355                 360                 365

Tyr Thr Asn Ala Lys Thr Ala Leu Asp Ala Lys Ile Ala Ala Tyr Asn
    370                 375                 380
```

Lys Leu Ser Ala Asp Asp Gln Lys Gly Thr Lys Gly Glu Thr Ala Lys
385 390 395 400

Ala Glu Ile Lys Thr Ala Gln Asp Ala Tyr Asn Ala Ala Phe Ile Val
405 410 415

Ala Arg Thr Ala Tyr Glu Trp Val Thr Asn Lys Glu Asp Ala Asn Val
420 425 430

Val Lys Val Thr Ser Asn Ala Asp Gly Gln Phe Glu Val Ser Gly Leu
435 440 445

Ala Thr Gly Asp Tyr Lys Leu Glu Glu Thr Gln Ala Pro Ala Gly Tyr
450 455 460

Ala Lys Leu Ala Gly Asp Val Asp Phe Lys Val Gly Asn Ser Ser Lys
465 470 475 480

Ala Asp Asp Ser Gly Asn Ile Asp Tyr Thr Ala Ser Ser Asn Lys Lys
485 490 495

Asp Ala Gln Arg Ile Glu Asn Lys Lys Val Thr
500 505

<210> 65
<211> 422
<212> PRT
<213> Streptococcus agalactiae

<400> 65
Gly Asp Lys Val Leu Ala Asp Ser Lys Ala Val Pro Val Lys Ile Thr
1 5 10 15

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

Pro Lys Asn Thr Glu Glu Ala Pro Gln Ile Asp Lys Asn Phe Ala Lys
35 40 45

Ala Asn Lys Leu Leu Asn Asp Ser Asp Asn Ser Ala Ile Ala Gly Gly
50 55 60

Ala Asp Tyr Asp Lys Tyr Gln Ala Glu Lys Ala Lys Ala Thr Ala Glu
65 70 75 80

Ile Gly Gln Glu Ile Pro Tyr Glu Val Lys Thr Lys Ile Gln Lys Gly
85 90 95

Ser Lys Tyr Lys Asn Leu Ala Trp Val Asp Thr Met Ser Asn Gly Leu
100 105 110

```
Thr Met Gly Asn Thr Val Asn Leu Glu Ala Ser Ser Gly Ser Phe Val
        115                 120                 125

Glu Gly Thr Asp Tyr Asn Val Glu Arg Asp Asp Arg Gly Phe Thr Leu
    130                 135                 140

Lys Phe Thr Asp Thr Gly Leu Thr Lys Leu Gln Lys Glu Ala Glu Thr
145                 150                 155                 160

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

Ala Ile Asp Asp Lys Pro Glu Ser Asn Asp Ile Lys Leu Gln Tyr Gly
            180                 185                 190

Asn Lys Pro Gly Lys Lys Val Lys Glu Ile Pro Val Thr Pro Ser Asn
        195                 200                 205

Gly Glu Ile Thr Val Ser Lys Thr Trp Asp Lys Gly Ser Asp Leu Glu
    210                 215                 220

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

Ser Val Ser Leu Thr Lys Thr Thr Pro Asn Gly Glu Ile Asn Leu Gly
                245                 250                 255

Asn Gly Ile Lys Phe Thr Val Thr Gly Ala Phe Ala Gly Lys Phe Ser
            260                 265                 270

Gly Leu Thr Asp Ser Lys Thr Tyr Met Ile Ser Glu Arg Ile Ala Gly
        275                 280                 285

Tyr Gly Asn Thr Ile Thr Thr Gly Ala Gly Ser Ala Ala Ile Thr Asn
    290                 295                 300

Thr Pro Asp Ser Asp Asn Pro Thr Pro Leu Asn Pro Thr Glu Pro Lys
305                 310                 315                 320

Val Val Thr His Gly Lys Lys Phe Val Lys Thr Ser Ser Thr Glu Thr
                325                 330                 335

Glu Arg Leu Gln Gly Ala Gln Phe Val Val Lys Asp Ser Ala Gly Lys
            340                 345                 350

Tyr Leu Ala Leu Lys Ser Ser Ala Thr Ile Ser Ala Gln Thr Thr Ala
        355                 360                 365

Tyr Thr Asn Ala Lys Thr Ala Leu Asp Ala Lys Ile Ala Ala Tyr Asn
    370                 375                 380
```

Lys Leu Ser Ala Asp Asp Gln Lys Gly Thr Lys Gly Glu Thr Ala Lys
385 390 395 400

Ala Glu Ile Lys Thr Ala Gln Asp Ala Tyr Asn Ala Ala Phe Ile Val
405 410 415

Ala Arg Thr Ala Tyr Glu
420

<210> 66
<211> 311
<212> PRT
<213> Streptococcus agalactiae

<400> 66
Gly Asn Lys Pro Gly Thr Asp Leu Ser Glu Gln Pro Val Thr Pro Glu
1 5 10 15

Asp Gly Glu Val Lys Val Thr Lys Thr Trp Ala Ala Gly Ala Asn Lys
20 25 30

Ala Asp Ala Lys Val Val Tyr Thr Leu Lys Asn Ala Thr Lys Gln Val
35 40 45

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

Leu Gly Lys Gly Met Thr Phe Glu Ile Thr Gly Ala Phe Ser Gly Thr
65 70 75 80

Phe Lys Gly Leu Gln Asn Lys Ala Tyr Thr Val Ser Glu Arg Val Ala
85 90 95

Gly Tyr Thr Asn Ala Ile Asn Val Thr Gly Asn Ala Val Ala Ile Thr
100 105 110

Asn Thr Pro Asp Ser Asp Asn Pro Thr Pro Leu Asn Pro Thr Gln Pro
115 120 125

Lys Val Glu Thr His Gly Lys Lys Phe Val Lys Val Gly Asp Ala Asp
130 135 140

Ala Arg Leu Ala Gly Ala Gln Phe Val Val Lys Asn Ser Ala Gly Lys
145 150 155 160

Phe Leu Ala Leu Lys Glu Asp Ala Ala Val Ser Gly Ala Gln Thr Glu
165 170 175

Leu Ala Thr Ala Lys Thr Asp Leu Asp Asn Ala Ile Lys Ala Tyr Asn
180 185 190

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

Glu Leu Ile Asn Thr Lys Gln Ser Ala Tyr Asp Ala Ala Phe Ile Lys
210 215 220

Ala Arg Thr Ala Tyr Thr Trp Val Asp Glu Lys Thr Lys Ala Ile Thr
225 230 235 240

Phe Thr Ser Asn Asn Gln Gly Gln Phe Glu Val Thr Gly Leu Glu Val
245 250 255

Gly Ser Tyr Lys Leu Glu Glu Thr Leu Ala Pro Ala Gly Tyr Ala Lys
260 265 270

Leu Ser Gly Asp Ile Glu Phe Thr Val Gly His Asp Ser Tyr Thr Ser
275 280 285

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

Val Phe Asn Lys Lys Val Thr
305 310

<210> 67
<211> 230
<212> PRT
<213> Streptococcus agalactiae

<400> 67
Gly Asn Lys Pro Gly Thr Asp Leu Ser Glu Gln Pro Val Thr Pro Glu
1 5 10 15

Asp Gly Glu Val Lys Val Thr Lys Thr Trp Ala Ala Gly Ala Asn Lys
20 25 30

Ala Asp Ala Lys Val Val Tyr Thr Leu Lys Asn Ala Thr Lys Gln Val
35 40 45

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

Leu Gly Lys Gly Met Thr Phe Glu Ile Thr Gly Ala Phe Ser Gly Thr
65 70 75 80

Phe Lys Gly Leu Gln Asn Lys Ala Tyr Thr Val Ser Glu Arg Val Ala
85 90 95

Gly Tyr Thr Asn Ala Ile Asn Val Thr Gly Asn Ala Val Ala Ile Thr
100 105 110

Asn Thr Pro Asp Ser Asp Asn Pro Thr Pro Leu Asn Pro Thr Gln Pro
115 120 125

Lys Val Glu Thr His Gly Lys Lys Phe Val Lys Val Gly Asp Ala Asp
130 135 140

Ala Arg Leu Ala Gly Ala Gln Phe Val Val Lys Asn Ser Ala Gly Lys
145 150 155 160

Phe Leu Ala Leu Lys Glu Asp Ala Ala Val Ser Gly Ala Gln Thr Glu
165 170 175

Leu Ala Thr Ala Lys Thr Asp Leu Asp Asn Ala Ile Lys Ala Tyr Asn
180 185 190

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

Glu Leu Ile Asn Thr Lys Gln Ser Ala Tyr Asp Ala Ala Phe Ile Lys
210 215 220

Ala Arg Thr Ala Tyr Thr
225 230

<210> 68
<211> 504
<212> PRT
<213> Streptococcus agalactiae

<400> 68
Asn Gly Ser Leu Leu Ala Ala Ser Lys Ala Val Pro Val Lys Ile Thr
1 5 10 15

Leu Pro Leu Val Ser Lys Asp Gly Val Val Lys Asp Ala His Val Tyr
20 25 30

Pro Lys Asn Thr Glu Thr Lys Pro Glu Val Asp Lys Asn Phe Ala Lys
35 40 45

Thr Asn Asp Leu Thr Ala Leu Lys Asp Ala Thr Leu Leu Lys Ala Gly
50 55 60

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

Ile Gly Lys Val Ile Pro Tyr Glu Val Lys Thr Lys Val Leu Lys Gly
85 90 95

Ser Lys Tyr Glu Lys Leu Val Trp Thr Asp Thr Met Ser Asn Gly Leu
100 105 110

Thr Met Gly Asp Asp Val Asn Leu Ala Val Ser Gly Thr Thr Thr Thr
115 120 125

Phe Ile Lys Asp Ile Asp Tyr Thr Leu Ser Ile Asp Asp Arg Gly Phe
130 135 140

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Thr Leu Lys Phe Lys Ala Thr Gly Leu Asp Lys Leu Glu Glu Ala Ala
145                 150                 155                 160

Lys Ala Ser Asp Val Glu Phe Thr Leu Thr Tyr Lys Ala Thr Val Asn
                165                 170                 175

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

Tyr Gly Asn Lys Pro Gly Thr Asp Leu Ser Glu Gln Pro Val Thr Pro
        195                 200                 205

Glu Asp Gly Glu Val Lys Val Thr Lys Thr Trp Ala Ala Gly Ala Asn
    210                 215                 220

Lys Ala Asp Ala Lys Val Val Tyr Thr Leu Lys Asn Ala Thr Lys Gln
225                 230                 235                 240

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

Asn Leu Gly Lys Gly Met Thr Phe Glu Ile Thr Gly Ala Phe Ser Gly
            260                 265                 270

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

Ala Gly Tyr Thr Asn Ala Ile Asn Val Thr Gly Asn Ala Val Ala Ile
    290                 295                 300

Thr Asn Thr Pro Asp Ser Asp Asn Pro Thr Pro Leu Asn Pro Thr Gln
305                 310                 315                 320

Pro Lys Val Glu Thr His Gly Lys Lys Phe Val Lys Val Gly Asp Ala
                325                 330                 335

Asp Ala Arg Leu Ala Gly Ala Gln Phe Val Val Lys Asn Ser Ala Gly
            340                 345                 350

Lys Phe Leu Ala Leu Lys Glu Asp Ala Ala Val Ser Gly Ala Gln Thr
        355                 360                 365

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

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

Lys Glu Leu Ile Asn Thr Lys Gln Ser Ala Tyr Asp Ala Ala Phe Ile
                405                 410                 415
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Lys Ala Arg Thr Ala Tyr Thr Trp Val Asp Glu Lys Thr Lys Ala Ile
420 425 430

Thr Phe Thr Ser Asn Asn Gln Gly Gln Phe Glu Val Thr Gly Leu Glu
435 440 445

Val Gly Ser Tyr Lys Leu Glu Glu Thr Leu Ala Pro Ala Gly Tyr Ala
450 455 460

Lys Leu Ser Gly Asp Ile Glu Phe Thr Val Gly His Asp Ser Tyr Thr
465 470 475 480

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

Lys Val Phe Asn Lys Lys Val Thr
500

<210> 69
<211> 423
<212> PRT
<213> Streptococcus agalactiae

<400> 69
Asn Gly Ser Leu Leu Ala Ala Ser Lys Ala Val Pro Val Lys Ile Thr
1 5 10 15

Leu Pro Leu Val Ser Lys Asp Gly Val Val Lys Asp Ala His Val Tyr
20 25 30

Pro Lys Asn Thr Glu Thr Lys Pro Glu Val Asp Lys Asn Phe Ala Lys
35 40 45

Thr Asn Asp Leu Thr Ala Leu Lys Asp Ala Thr Leu Leu Lys Ala Gly
50 55 60

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

Ile Gly Lys Val Ile Pro Tyr Glu Val Lys Thr Lys Val Leu Lys Gly
85 90 95

Ser Lys Tyr Glu Lys Leu Val Trp Thr Asp Thr Met Ser Asn Gly Leu
100 105 110

Thr Met Gly Asp Asp Val Asn Leu Ala Val Ser Gly Thr Thr Thr Thr
115 120 125

Phe Ile Lys Asp Ile Asp Tyr Thr Leu Ser Ile Asp Asp Arg Gly Phe
130 135 140

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Thr Leu Lys Phe Lys Ala Thr Gly Leu Asp Lys Leu Glu Glu Ala Ala
145                 150                 155                 160

Lys Ala Ser Asp Val Glu Phe Thr Leu Thr Tyr Lys Ala Thr Val Asn
                165                 170                 175

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

Tyr Gly Asn Lys Pro Gly Thr Asp Leu Ser Glu Gln Pro Val Thr Pro
        195                 200                 205

Glu Asp Gly Glu Val Lys Val Thr Lys Thr Trp Ala Ala Gly Ala Asn
    210                 215                 220

Lys Ala Asp Ala Lys Val Val Tyr Thr Leu Lys Asn Ala Thr Lys Gln
225                 230                 235                 240

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

Asn Leu Gly Lys Gly Met Thr Phe Glu Ile Thr Gly Ala Phe Ser Gly
            260                 265                 270

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

Ala Gly Tyr Thr Asn Ala Ile Asn Val Thr Gly Asn Ala Val Ala Ile
    290                 295                 300

Thr Asn Thr Pro Asp Ser Asp Asn Pro Thr Pro Leu Asn Pro Thr Gln
305                 310                 315                 320

Pro Lys Val Glu Thr His Gly Lys Lys Phe Val Lys Val Gly Asp Ala
                325                 330                 335

Asp Ala Arg Leu Ala Gly Ala Gln Phe Val Val Lys Asn Ser Ala Gly
            340                 345                 350

Lys Phe Leu Ala Leu Lys Glu Asp Ala Ala Val Ser Gly Ala Gln Thr
        355                 360                 365

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

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

Lys Glu Leu Ile Asn Thr Lys Gln Ser Ala Tyr Asp Ala Ala Phe Ile
                405                 410                 415
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Lys Ala Arg Thr Ala Tyr Thr
420

<210> 70
<211> 310
<212> PRT
<213> Streptococcus agalactiae

<400> 70
Gly Asn Asn Pro Thr Thr Glu Asn Glu Pro Gln Thr Gly Asn Pro Val
1 5 10 15

Asn Lys Glu Ile Thr Val Arg Lys Thr Trp Ala Val Asp Gly Asn Glu
20 25 30

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

Lys Asp Ser Asp Lys Trp Val Asn Val Asp Ser Ala Thr Ala Thr Ala
50 55 60

Ala Thr Asp Phe Lys Tyr Thr Phe Lys Asn Leu Asp Asn Ala Lys Thr
65 70 75 80

Tyr Arg Val Val Glu Arg Val Ser Gly Tyr Ala Pro Ala Tyr Val Ser
85 90 95

Phe Val Gly Gly Val Val Thr Ile Lys Asn Asn Lys Asn Ser Asn Asp
100 105 110

Pro Thr Pro Ile Asn Pro Ser Glu Pro Lys Val Val Thr Tyr Gly Arg
115 120 125

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

Thr Phe Leu Val Lys Asn Ser Gln Ser Gln Tyr Leu Ala Arg Lys Ser
145 150 155 160

Gly Val Ala Thr Asn Glu Ala His Lys Ala Val Thr Asp Ala Lys Val
165 170 175

Gln Leu Asp Glu Ala Val Lys Ala Tyr Asn Lys Leu Thr Lys Glu Gln
180 185 190

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

Gln Thr Ala Tyr Asn Glu Ala Phe Ala Lys Ala Asn Tyr Ser Tyr Glu
210 215 220

Trp Val Val Asp Lys Asn Ala Ala Asn Val Val Lys Leu Ile Ser Asn
225 230 235 240

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

Leu Glu Glu Thr Gln Ala Pro Thr Gly Tyr Ala Lys Leu Ser Ser Asp
260 265 270

Val Ser Phe Lys Val Asn Asp Thr Ser Tyr Ser Glu Gly Ala Ser Asn
275 280 285

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

Val Asn Lys Lys Val Thr
305 310

<210> 71
<211> 224
<212> PRT
<213> Streptococcus agalactiae

<400> 71
Gly Asn Asn Pro Thr Thr Glu Asn Glu Pro Gln Thr Gly Asn Pro Val
1 5 10 15

Asn Lys Glu Ile Thr Val Arg Lys Thr Trp Ala Val Asp Gly Asn Glu
20 25 30

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

Lys Asp Ser Asp Lys Trp Val Asn Val Asp Ser Ala Thr Ala Thr Ala
50 55 60

Ala Thr Asp Phe Lys Tyr Thr Phe Lys Asn Leu Asp Asn Ala Lys Thr
65 70 75 80

Tyr Arg Val Val Glu Arg Val Ser Gly Tyr Ala Pro Ala Tyr Val Ser
85 90 95

Phe Val Gly Gly Val Val Thr Ile Lys Asn Asn Lys Asn Ser Asn Asp
100 105 110

Pro Thr Pro Ile Asn Pro Ser Glu Pro Lys Val Val Thr Tyr Gly Arg
115 120 125

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

Thr Phe Leu Val Lys Asn Ser Gln Ser Gln Tyr Leu Ala Arg Lys Ser
145 150 155 160

Gly Val Ala Thr Asn Glu Ala His Lys Ala Val Thr Asp Ala Lys Val
165 170 175

Gln Leu Asp Glu Ala Val Lys Ala Tyr Asn Lys Leu Thr Lys Glu Gln
180 185 190

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

Gln Thr Ala Tyr Asn Glu Ala Phe Ala Lys Ala Asn Tyr Ser Tyr Glu
210 215 220

<210> 72
<211> 486
<212> PRT
<213> Streptococcus agalactiae

<400> 72
Gly Gly Ala Ile Leu Ala Asp Ser Lys Ala Val Pro Val Lys Ile Thr
1 5 10 15

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

Pro Lys Asn Thr Glu Thr Lys Pro Gln Ile Asp Lys Asn Phe Ala Asp
35 40 45

Lys Asn Leu Asp Tyr Ile Asn Asn Gln Lys Asp Lys Gly Thr Ile Ser
50 55 60

Ala Thr Val Gly Asp Val Lys Lys Tyr Thr Val Gly Thr Lys Ile Leu
65 70 75 80

Lys Gly Ser Asp Tyr Lys Lys Leu Val Trp Thr Asp Ser Met Thr Lys
85 90 95

Gly Leu Thr Phe Asn Asn Asp Val Thr Val Thr Leu Asp Gly Ala Asn
100 105 110

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

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

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

Ser Thr Val Val Glu Lys Ser Glu Asn Asn Asp Val Lys Leu Asp Tyr
165 170 175

Gly Asn Asn Pro Thr Thr Glu Asn Glu Pro Gln Thr Gly Asn Pro Val
180 185 190

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

Val Asn Lys Gly Asp Glu Lys Val Asp Ala Val Phe Thr Leu Gln Val
    210                 215                 220

Lys Asp Ser Asp Lys Trp Val Asn Val Asp Ser Ala Thr Ala Thr Ala
225                 230                 235                 240

Ala Thr Asp Phe Lys Tyr Thr Phe Lys Asn Leu Asp Asn Ala Lys Thr
                245                 250                 255

Tyr Arg Val Val Glu Arg Val Ser Gly Tyr Ala Pro Ala Tyr Val Ser
            260                 265                 270

Phe Val Gly Gly Val Val Thr Ile Lys Asn Asn Lys Asn Ser Asn Asp
        275                 280                 285

Pro Thr Pro Ile Asn Pro Ser Glu Pro Lys Val Val Thr Tyr Gly Arg
    290                 295                 300

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

Thr Phe Leu Val Lys Asn Ser Gln Ser Gln Tyr Leu Ala Arg Lys Ser
                325                 330                 335

Gly Val Ala Thr Asn Glu Ala His Lys Ala Val Thr Asp Ala Lys Val
            340                 345                 350

Gln Leu Asp Glu Ala Val Lys Ala Tyr Asn Lys Leu Thr Lys Glu Gln
        355                 360                 365

Gln Glu Ser Gln Asp Gly Lys Ala Ala Leu Asn Leu Ile Asp Glu Lys
    370                 375                 380

Gln Thr Ala Tyr Asn Glu Ala Phe Ala Lys Ala Asn Tyr Ser Tyr Glu
385                 390                 395                 400

Trp Val Val Asp Lys Asn Ala Ala Asn Val Val Lys Leu Ile Ser Asn
                405                 410                 415

Thr Ala Gly Lys Phe Glu Ile Thr Gly Leu Asn Ala Gly Glu Tyr Ser
            420                 425                 430

Leu Glu Glu Thr Gln Ala Pro Thr Gly Tyr Ala Lys Leu Ser Ser Asp
        435                 440                 445

Val Ser Phe Lys Val Asn Asp Thr Ser Tyr Ser Glu Gly Ala Ser Asn
    450                 455                 460
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Asp Ile Ala Tyr Asp Lys Asp Ser Gly Lys Thr Asp Ala Gln Lys Val
465 470 475 480

Val Asn Lys Lys Val Thr
485

<210> 73
<211> 400
<212> PRT
<213> Streptococcus agalactiae

<400> 73
Gly Gly Ala Ile Leu Ala Asp Ser Lys Ala Val Pro Val Lys Ile Thr
1 5 10 15

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

Pro Lys Asn Thr Glu Thr Lys Pro Gln Ile Asp Lys Asn Phe Ala Asp
35 40 45

Lys Asn Leu Asp Tyr Ile Asn Asn Gln Lys Asp Lys Gly Thr Ile Ser
50 55 60

Ala Thr Val Gly Asp Val Lys Lys Tyr Thr Val Gly Thr Lys Ile Leu
65 70 75 80

Lys Gly Ser Asp Tyr Lys Lys Leu Val Trp Thr Asp Ser Met Thr Lys
85 90 95

Gly Leu Thr Phe Asn Asn Asp Val Thr Val Thr Leu Asp Gly Ala Asn
100 105 110

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

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

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

Ser Thr Val Val Glu Lys Ser Glu Asn Asn Asp Val Lys Leu Asp Tyr
165 170 175

Gly Asn Asn Pro Thr Thr Glu Asn Glu Pro Gln Thr Gly Asn Pro Val
180 185 190

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

Val Asn Lys Gly Asp Glu Lys Val Asp Ala Val Phe Thr Leu Gln Val
210 215 220

Lys Asp Ser Asp Lys Trp Val Asn Val Asp Ser Ala Thr Ala Thr Ala
225 230 235 240

Ala Thr Asp Phe Lys Tyr Thr Phe Lys Asn Leu Asp Asn Ala Lys Thr
245 250 255

Tyr Arg Val Val Glu Arg Val Ser Gly Tyr Ala Pro Ala Tyr Val Ser
260 265 270

Phe Val Gly Gly Val Val Thr Ile Lys Asn Asn Lys Asn Ser Asn Asp
275 280 285

Pro Thr Pro Ile Asn Pro Ser Glu Pro Lys Val Val Thr Tyr Gly Arg
290 295 300

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

Thr Phe Leu Val Lys Asn Ser Gln Ser Gln Tyr Leu Ala Arg Lys Ser
325 330 335

Gly Val Ala Thr Asn Glu Ala His Lys Ala Val Thr Asp Ala Lys Val
340 345 350

Gln Leu Asp Glu Ala Val Lys Ala Tyr Asn Lys Leu Thr Lys Glu Gln
355 360 365

Gln Glu Ser Gln Asp Gly Lys Ala Ala Leu Asn Leu Ile Asp Glu Lys
370 375 380

Gln Thr Ala Tyr Asn Glu Ala Phe Ala Lys Ala Asn Tyr Ser Tyr Glu
385 390 395 400

<210> 74
<211> 309
<212> PRT
<213> Streptococcus agalactiae

<400> 74
Gly Asn Asn Pro Thr Glu Glu Ser Glu Pro Gln Glu Gly Thr Pro Ala
1 5 10 15

Asn Gln Glu Ile Lys Val Ile Lys Asp Trp Ala Val Asp Gly Thr Ile
20 25 30

Thr Asp Val Asn Val Ala Val Lys Ala Ile Phe Thr Leu Gln Glu Lys
35 40 45

Gln Thr Asp Gly Thr Trp Val Asn Val Ala Ser His Glu Ala Thr Lys
50 55 60

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Pro Ser Arg Phe Glu His Thr Phe Thr Gly Leu Asp Asn Thr Lys Thr
65                  70                  75                  80

Tyr Arg Val Val Glu Arg Val Ser Gly Tyr Thr Pro Glu Tyr Val Ser
                85                  90                  95

Phe Lys Asn Gly Val Val Thr Ile Lys Asn Asn Lys Asn Ser Asn Asp
            100                 105                 110

Pro Thr Pro Ile Asn Pro Ser Glu Pro Lys Val Val Thr Tyr Gly Arg
        115                 120                 125

Lys Phe Val Lys Thr Asn Gln Ala Asn Thr Glu Arg Leu Ala Gly Ala
    130                 135                 140

Thr Phe Leu Val Lys Lys Glu Gly Lys Tyr Leu Ala Arg Lys Ala Gly
145                 150                 155                 160

Ala Ala Thr Ala Glu Ala Lys Ala Ala Val Lys Thr Ala Lys Leu Ala
                165                 170                 175

Leu Asp Glu Ala Val Lys Ala Tyr Asn Asp Leu Thr Lys Glu Lys Gln
            180                 185                 190

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

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

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

Gly Gly Gln Phe Glu Ile Thr Gly Leu Asp Lys Gly Thr Tyr Ser Leu
                245                 250                 255

Glu Glu Thr Gln Ala Pro Ala Gly Tyr Ala Thr Leu Ser Gly Asp Val
            260                 265                 270

Asn Phe Glu Val Thr Ala Thr Ser Tyr Ser Lys Gly Ala Thr Thr Asp
        275                 280                 285

Ile Ala Tyr Asp Lys Gly Ser Val Lys Lys Asp Ala Gln Gln Val Gln
    290                 295                 300

Asn Lys Lys Val Thr
305
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<210> 75
<211> 223

<212> PRT
<213> Streptococcus agalactiae

<400> 75
Gly Asn Asn Pro Thr Glu Glu Ser Glu Pro Gln Glu Gly Thr Pro Ala
1   5   10   15

Asn Gln Glu Ile Lys Val Ile Lys Asp Trp Ala Val Asp Gly Thr Ile
            20   25   30

Thr Asp Val Asn Val Ala Val Lys Ala Ile Phe Thr Leu Gln Glu Lys
        35   40   45

Gln Thr Asp Gly Thr Trp Val Asn Val Ala Ser His Glu Ala Thr Lys
    50   55   60

Pro Ser Arg Phe Glu His Thr Phe Thr Gly Leu Asp Asn Thr Lys Thr
65   70   75   80

Tyr Arg Val Val Glu Arg Val Ser Gly Tyr Thr Pro Glu Tyr Val Ser
                85   90   95

Phe Lys Asn Gly Val Val Thr Ile Lys Asn Asn Lys Asn Ser Asn Asp
            100   105   110

Pro Thr Pro Ile Asn Pro Ser Glu Pro Lys Val Val Thr Tyr Gly Arg
        115   120   125

Lys Phe Val Lys Thr Asn Gln Ala Asn Thr Glu Arg Leu Ala Gly Ala
    130   135   140

Thr Phe Leu Val Lys Lys Glu Gly Lys Tyr Leu Ala Arg Lys Ala Gly
145   150   155   160

Ala Ala Thr Ala Glu Ala Lys Ala Ala Val Lys Thr Ala Lys Leu Ala
                165   170   175

Leu Asp Glu Ala Val Lys Ala Tyr Asn Asp Leu Thr Lys Glu Lys Gln
            180   185   190

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

Lys Ala Tyr Asn Asp Ala Phe Val Lys Ala Asn Tyr Ser Tyr Glu
    210   215   220

<210> 76
<211> 485
<212> PRT
<213> Streptococcus agalactiae

<400> 76
Asn Gly Ser Ile Leu Ala Asp Ser Lys Ala Val Pro Val Lys Ile Thr
1   5   10   15

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

Pro Lys Asn Thr Glu Thr Lys Pro Gln Val Asp Lys Asn Phe Ala Asp
        35                  40                  45

Lys Asp Leu Asp Tyr Thr Asp Asn Arg Lys Asp Lys Gly Val Val Ser
    50                  55                  60

Ala Thr Val Gly Asp Lys Lys Glu Tyr Ile Val Gly Thr Lys Ile Leu
65                  70                  75                  80

Lys Gly Ser Asp Tyr Lys Lys Leu Val Trp Thr Asp Ser Met Thr Lys
                85                  90                  95

Gly Leu Thr Phe Asn Asn Asn Val Lys Val Thr Leu Asp Gly Lys Asp
            100                 105                 110

Phe Pro Val Leu Asn Tyr Lys Leu Val Thr Asp Asp Gln Gly Phe Arg
        115                 120                 125

Leu Ala Leu Asn Ala Thr Gly Leu Ala Ala Val Ala Ala Ala Ala Lys
    130                 135                 140

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

Ser Thr Thr Val Glu Val Pro Glu Thr Asn Asp Val Lys Leu Asp Tyr
                165                 170                 175

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

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

Thr Asp Val Asn Val Ala Val Lys Ala Ile Phe Thr Leu Gln Glu Lys
    210                 215                 220

Gln Thr Asp Gly Thr Trp Val Asn Val Ala Ser His Glu Ala Thr Lys
225                 230                 235                 240

Pro Ser Arg Phe Glu His Thr Phe Thr Gly Leu Asp Asn Thr Lys Thr
                245                 250                 255

Tyr Arg Val Val Glu Arg Val Ser Gly Tyr Thr Pro Glu Tyr Val Ser
            260                 265                 270

Phe Lys Asn Gly Val Val Thr Ile Lys Asn Asn Lys Asn Ser Asn Asp
        275                 280                 285
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Pro Thr Pro Ile Asn Pro Ser Glu Pro Lys Val Val Thr Tyr Gly Arg
290 295 300

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

Thr Phe Leu Val Lys Lys Glu Gly Lys Tyr Leu Ala Arg Lys Ala Gly
325 330 335

Ala Ala Thr Ala Glu Ala Lys Ala Ala Val Lys Thr Ala Lys Leu Ala
340 345 350

Leu Asp Glu Ala Val Lys Ala Tyr Asn Asp Leu Thr Lys Glu Lys Gln
355 360 365

Glu Gly Gln Glu Gly Lys Thr Ala Leu Ala Thr Val Asp Gln Lys Gln
370 375 380

Lys Ala Tyr Asn Asp Ala Phe Val Lys Ala Asn Tyr Ser Tyr Glu Trp
385 390 395 400

Val Ala Asp Lys Lys Ala Asp Asn Val Val Lys Leu Ile Ser Asn Ala
405 410 415

Gly Gly Gln Phe Glu Ile Thr Gly Leu Asp Lys Gly Thr Tyr Ser Leu
420 425 430

Glu Glu Thr Gln Ala Pro Ala Gly Tyr Ala Thr Leu Ser Gly Asp Val
435 440 445

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

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

Asn Lys Lys Val Thr
485

<210> 77
<211> 399
<212> PRT
<213> Streptococcus agalactiae

<400> 77
Asn Gly Ser Ile Leu Ala Asp Ser Lys Ala Val Pro Val Lys Ile Thr
1 5 10 15

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

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Pro Lys Asn Thr Glu Thr Lys Pro Gln Val Asp Lys Asn Phe Ala Asp
        35                  40                  45

Lys Asp Leu Asp Tyr Thr Asp Asn Arg Lys Asp Lys Gly Val Val Ser
    50                  55                  60

Ala Thr Val Gly Asp Lys Lys Glu Tyr Ile Val Gly Thr Lys Ile Leu
65                  70                  75                  80

Lys Gly Ser Asp Tyr Lys Lys Leu Val Trp Thr Asp Ser Met Thr Lys
                85                  90                  95

Gly Leu Thr Phe Asn Asn Asn Val Lys Val Thr Leu Asp Gly Lys Asp
            100                 105                 110

Phe Pro Val Leu Asn Tyr Lys Leu Val Thr Asp Asp Gln Gly Phe Arg
        115                 120                 125

Leu Ala Leu Asn Ala Thr Gly Leu Ala Ala Val Ala Ala Ala Ala Lys
    130                 135                 140

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

Ser Thr Thr Val Glu Val Pro Glu Thr Asn Asp Val Lys Leu Asp Tyr
                165                 170                 175

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

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

Thr Asp Val Asn Val Ala Val Lys Ala Ile Phe Thr Leu Gln Glu Lys
    210                 215                 220

Gln Thr Asp Gly Thr Trp Val Asn Val Ala Ser His Glu Ala Thr Lys
225                 230                 235                 240

Pro Ser Arg Phe Glu His Thr Phe Thr Gly Leu Asp Asn Thr Lys Thr
                245                 250                 255

Tyr Arg Val Val Glu Arg Val Ser Gly Tyr Thr Pro Glu Tyr Val Ser
            260                 265                 270

Phe Lys Asn Gly Val Val Thr Ile Lys Asn Asn Lys Asn Ser Asn Asp
        275                 280                 285

Pro Thr Pro Ile Asn Pro Ser Glu Pro Lys Val Val Thr Tyr Gly Arg
    290                 295                 300
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Lys Phe Val Lys Thr Asn Gln Ala Asn Thr Glu Arg Leu Ala Gly Ala
305 310 315 320

Thr Phe Leu Val Lys Lys Glu Gly Lys Tyr Leu Ala Arg Lys Ala Gly
325 330 335

Ala Ala Thr Ala Glu Ala Lys Ala Ala Val Lys Thr Ala Lys Leu Ala
340 345 350

Leu Asp Glu Ala Val Lys Ala Tyr Asn Asp Leu Thr Lys Glu Lys Gln
355 360 365

Glu Gly Gln Glu Gly Lys Thr Ala Leu Ala Thr Val Asp Gln Lys Gln
370 375 380

Lys Ala Tyr Asn Asp Ala Phe Val Lys Ala Asn Tyr Ser Tyr Glu
385 390 395

<210> 78
<211> 26
<212> PRT
<213> Streptococcus agalactiae

<400> 78
Thr Tyr Arg Val Ile Glu Arg Val Ser Gly Tyr Ala Pro Glu Tyr Val
1 5 10 15

Ser Phe Val Asn Gly Val Val Thr Ile Lys
20 25

<210> 79
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic 6xHis tag"

<400> 79
His His His His His His
1 5

<210> 80
<211> 4
<212> PRT
<213> Artificial Sequence

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

<400> 80
Gly Ser Gly Ser
1

<210> 81
<211> 6
<212> PRT
<213> Artificial Sequence

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

<400> 81
Gly Ser Gly Gly Gly Gly
1 5

<210> 82
<211> 8
<212> PRT
<213> Artificial Sequence

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

<400> 82
Gly Ser Gly Ser Gly Gly Gly Gly
1 5

<210> 83
<211> 736
<212> PRT
<213> Streptococcus agalactiae

<400> 83
Met Gly Asn Asn Pro Thr Ile Glu Asn Glu Pro Lys Glu Gly Ile Pro
1 5 10 15

Val Asp Lys Lys Ile Thr Val Asn Lys Thr Trp Ala Val Asp Gly Asn
20 25 30

Glu Val Asn Lys Ala Asp Glu Thr Val Asp Ala Val Phe Thr Leu Gln
35 40 45

Val Lys Asp Gly Asp Lys Trp Val Asn Val Asp Ser Ala Lys Ala Thr
50 55 60

Ala Ala Thr Ser Phe Lys His Thr Phe Glu Asn Leu Asp Asn Ala Lys
65 70 75 80

Thr Tyr Arg Val Ile Glu Arg Val Ser Gly Tyr Ala Pro Glu Tyr Val
85 90 95

Ser Phe Val Asn Gly Val Val Thr Ile Lys Asn Asn Lys Asp Ser Asn
100 105 110

Glu Pro Thr Pro Ile Gly Ser Gly Ser Gly Asn Lys Pro Gly Lys Lys
115 120 125

```
Val Lys Glu Ile Pro Val Thr Pro Ser Asn Gly Glu Ile Thr Val Ser
    130                 135                 140

Lys Thr Trp Asp Lys Gly Ser Asp Leu Glu Asn Ala Asn Val Val Tyr
145                 150                 155                 160

Thr Leu Lys Asp Gly Gly Thr Ala Val Ala Ser Val Ser Leu Thr Lys
                165                 170                 175

Thr Thr Pro Asn Gly Glu Ile Asn Leu Gly Asn Gly Ile Lys Phe Thr
            180                 185                 190

Val Thr Gly Ala Phe Ala Gly Lys Phe Ser Gly Leu Thr Asp Ser Lys
        195                 200                 205

Thr Tyr Met Ile Ser Glu Arg Ile Ala Gly Tyr Gly Asn Thr Ile Thr
    210                 215                 220

Thr Gly Ala Gly Ser Ala Ala Ile Thr Asn Thr Pro Asp Ser Asp Asn
225                 230                 235                 240

Pro Thr Pro Leu Gly Ser Gly Ser Gly Asn Asn Pro Thr Glu Glu Ser
                245                 250                 255

Glu Pro Gln Glu Gly Thr Pro Ala Asn Gln Glu Ile Lys Val Ile Lys
            260                 265                 270

Asp Trp Ala Val Asp Gly Thr Ile Thr Asp Ala Asn Val Ala Val Lys
        275                 280                 285

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

Val Ala Ser His Glu Ala Thr Lys Pro Ser Arg Phe Glu His Thr Phe
305                 310                 315                 320

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

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

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

Gly Asn Lys Pro Gly Lys Asp Leu Thr Glu Leu Pro Val Thr Pro Ser
    370                 375                 380

Lys Gly Glu Val Thr Val Ala Lys Thr Trp Ser Asp Gly Ile Ala Pro
385                 390                 395                 400
```

```
Asp Gly Val Asn Val Val Tyr Thr Leu Lys Asp Lys Asp Lys Thr Val
                405                 410                 415

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

Asn Gly Ile Lys Phe Glu Val Ser Gly Asn Phe Ser Gly Lys Phe Thr
        435                 440                 445

Gly Leu Glu Asn Lys Ser Tyr Met Ile Ser Glu Arg Val Ser Gly Tyr
    450                 455                 460

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

Lys Asp Ser Asp Asn Pro Thr Pro Leu Gly Ser Gly Ser Gly Asn Lys
                485                 490                 495

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

Val Lys Val Thr Lys Thr Trp Ala Ala Gly Ala Asn Lys Ala Asp Ala
        515                 520                 525

Lys Val Val Tyr Thr Leu Lys Asn Ala Thr Lys Gln Val Val Ala Ser
    530                 535                 540

Val Ala Leu Thr Ala Ala Asp Thr Lys Gly Thr Ile Asn Leu Gly Lys
545                 550                 555                 560

Gly Met Thr Phe Glu Ile Thr Gly Ala Phe Ser Gly Thr Phe Lys Gly
                565                 570                 575

Leu Gln Asn Lys Ala Tyr Thr Val Ser Glu Arg Val Ala Gly Tyr Thr
            580                 585                 590

Asn Ala Ile Asn Val Thr Gly Asn Ala Val Ala Ile Thr Asn Thr Pro
        595                 600                 605

Asp Ser Asp Asn Pro Thr Pro Leu Gly Ser Gly Ser Gly Asn Asn Pro
    610                 615                 620

Thr Thr Glu Asn Glu Pro Gln Thr Gly Asn Pro Val Asn Lys Glu Ile
625                 630                 635                 640

Thr Val Arg Lys Thr Trp Ala Val Asp Gly Asn Glu Val Asn Lys Gly
                645                 650                 655

Asp Glu Lys Val Asp Ala Val Phe Thr Leu Gln Val Lys Asp Ser Asp
            660                 665                 670
```

```
Lys Trp Val Asn Val Asp Ser Ala Thr Ala Thr Ala Ala Thr Asp Phe
        675                 680                 685

Lys Tyr Thr Phe Lys Asn Leu Asp Asn Ala Lys Thr Tyr Arg Val Val
    690                 695                 700

Glu Arg Val Ser Gly Tyr Ala Pro Ala Tyr Val Ser Phe Val Gly Gly
705                 710                 715                 720

Val Val Thr Ile Lys Asn Asn Lys Asn Ser Asn Asp Pro Thr Pro Ile
                725                 730                 735
```

<210> 84
<211> 1378
<212> PRT
<213> Streptococcus agalactiae

<400> 84

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Met Gly Asn Asn Pro Thr Ile Glu Asn Glu Pro Lys Glu Gly Ile Pro
1               5                   10                  15

Val Asp Lys Lys Ile Thr Val Asn Lys Thr Trp Ala Val Asp Gly Asn
            20                  25                  30

Glu Val Asn Lys Ala Asp Glu Thr Val Asp Ala Val Phe Thr Leu Gln
        35                  40                  45

Val Lys Asp Gly Asp Lys Trp Val Asn Val Asp Ser Ala Lys Ala Thr
    50                  55                  60

Ala Ala Thr Ser Phe Lys His Thr Phe Glu Asn Leu Asp Asn Ala Lys
65                  70                  75                  80

Thr Tyr Arg Val Ile Glu Arg Val Ser Gly Tyr Ala Pro Glu Tyr Val
                85                  90                  95

Ser Phe Val Asn Gly Val Val Thr Ile Lys Asn Asn Lys Asp Ser Asn
            100                 105                 110

Glu Pro Thr Pro Ile Asn Pro Ser Glu Pro Lys Val Val Thr Tyr Gly
        115                 120                 125

Arg Lys Phe Val Lys Thr Asn Lys Asp Gly Lys Glu Arg Leu Ala Gly
    130                 135                 140

Ala Thr Phe Leu Val Lys Lys Asp Gly Lys Tyr Leu Ala Arg Lys Ser
145                 150                 155                 160

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

Ala Leu Asp Ala Ala Val Lys Ala Tyr Asn Asp Leu Thr Lys Glu Lys
            180                 185                 190
```

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

Gln Lys Ala Tyr Asn Asp Ala Phe Val Lys Ala Asn Tyr Ser Tyr Glu
    210                 215                 220

Gly Ser Gly Ser Gly Asn Asn Pro Thr Glu Glu Ser Glu Pro Gln Glu
225                 230                 235                 240

Gly Thr Pro Ala Asn Gln Glu Ile Lys Val Ile Lys Asp Trp Ala Val
                245                 250                 255

Asp Gly Thr Ile Thr Asp Ala Asn Val Ala Val Lys Ala Ile Phe Thr
            260                 265                 270

Leu Gln Glu Lys Gln Thr Asp Gly Thr Trp Val Asn Val Ala Ser His
        275                 280                 285

Glu Ala Thr Lys Pro Ser Arg Phe Glu His Thr Phe Thr Gly Leu Asp
    290                 295                 300

Asn Ala Lys Thr Tyr Arg Val Val Glu Arg Val Ser Gly Tyr Thr Pro
305                 310                 315                 320

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

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

Thr Tyr Gly Arg Lys Phe Val Lys Thr Asn Gln Ala Asn Thr Glu Arg
        355                 360                 365

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

Arg Lys Ala Gly Ala Ala Thr Ala Glu Ala Lys Ala Ala Val Lys Thr
385                 390                 395                 400

Ala Lys Leu Ala Leu Asp Glu Ala Val Lys Ala Tyr Asn Asp Leu Thr
                405                 410                 415

Lys Glu Lys Gln Glu Gly Gln Glu Gly Lys Thr Ala Leu Ala Thr Val
            420                 425                 430

Asp Gln Lys Gln Lys Ala Tyr Asn Asp Ala Phe Val Lys Ala Asn Tyr
        435                 440                 445

Ser Tyr Glu Gly Ser Gly Ser Gly Asn Lys Pro Gly Thr Asp Leu Ser
    450                 455                 460
```

```
Glu Gln Pro Val Thr Pro Glu Asp Gly Glu Val Lys Val Thr Lys Thr
465                 470                 475                 480

Trp Ala Ala Gly Ala Asn Lys Ala Asp Ala Lys Val Val Tyr Thr Leu
                485                 490                 495

Lys Asn Ala Thr Lys Gln Val Val Ala Ser Val Ala Leu Thr Ala Ala
            500                 505                 510

Asp Thr Lys Gly Thr Ile Asn Leu Gly Lys Gly Met Thr Phe Glu Ile
        515                 520                 525

Thr Gly Ala Phe Ser Gly Thr Phe Lys Gly Leu Gln Asn Lys Ala Tyr
    530                 535                 540

Thr Val Ser Glu Arg Val Ala Gly Tyr Thr Asn Ala Ile Asn Val Thr
545                 550                 555                 560

Gly Asn Ala Val Ala Ile Thr Asn Thr Pro Asp Ser Asp Asn Pro Thr
                565                 570                 575

Pro Leu Asn Pro Thr Gln Pro Lys Val Glu Thr His Gly Lys Lys Phe
            580                 585                 590

Val Lys Val Gly Asp Ala Asp Ala Arg Leu Ala Gly Ala Gln Phe Val
        595                 600                 605

Val Lys Asn Ser Ala Gly Lys Phe Leu Ala Leu Lys Glu Asp Ala Ala
    610                 615                 620

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

Asn Ala Ile Lys Ala Tyr Asn Gly Leu Thr Lys Ala Gln Gln Glu Gly
                645                 650                 655

Ala Asp Gly Thr Ser Ala Lys Glu Leu Ile Asn Thr Lys Gln Ser Ala
            660                 665                 670

Tyr Asp Ala Ala Phe Ile Lys Ala Arg Thr Ala Tyr Thr Gly Ser Gly
        675                 680                 685

Ser Gly Asn Lys Pro Gly Lys Asp Leu Thr Glu Leu Pro Val Thr Pro
    690                 695                 700

Ser Lys Gly Glu Val Thr Val Ala Lys Thr Trp Ser Asp Gly Ile Ala
705                 710                 715                 720

Pro Asp Gly Val Asn Val Val Tyr Thr Leu Lys Asp Lys Asp Lys Thr
                725                 730                 735
```

```
Val Ala Ser Val Ser Leu Thr Lys Thr Ser Lys Gly Thr Ile Asp Leu
            740                 745                 750

Gly Asn Gly Ile Lys Phe Glu Val Ser Gly Asn Phe Ser Gly Lys Phe
        755                 760                 765

Thr Gly Leu Glu Asn Lys Ser Tyr Met Ile Ser Glu Arg Val Ser Gly
    770                 775                 780

Tyr Gly Ser Ala Ile Asn Leu Glu Asn Gly Lys Val Thr Ile Thr Asn
785                 790                 795                 800

Thr Lys Asp Ser Asp Asn Pro Thr Pro Leu Asn Pro Thr Glu Pro Lys
                805                 810                 815

Val Glu Thr His Gly Lys Lys Phe Val Lys Thr Asn Glu Gln Gly Asp
            820                 825                 830

Arg Leu Ala Gly Ala Gln Phe Val Val Lys Asn Ser Ala Gly Lys Tyr
        835                 840                 845

Leu Ala Leu Lys Ala Asp Gln Ser Glu Gly Gln Lys Thr Leu Ala Ala
    850                 855                 860

Lys Lys Ile Ala Leu Asp Glu Ala Ile Ala Ala Tyr Asn Lys Leu Ser
865                 870                 875                 880

Ala Thr Asp Gln Lys Gly Glu Lys Gly Ile Thr Ala Lys Glu Leu Ile
                885                 890                 895

Lys Thr Lys Gln Ala Asp Tyr Asp Ala Ala Phe Ile Glu Ala Arg Thr
            900                 905                 910

Ala Tyr Glu Gly Ser Gly Ser Gly Asn Lys Pro Gly Lys Lys Val Lys
        915                 920                 925

Glu Ile Pro Val Thr Pro Ser Asn Gly Glu Ile Thr Val Ser Lys Thr
    930                 935                 940

Trp Asp Lys Gly Ser Asp Leu Glu Asn Ala Asn Val Val Tyr Thr Leu
945                 950                 955                 960

Lys Asp Gly Gly Thr Ala Val Ala Ser Val Ser Leu Thr Lys Thr Thr
                965                 970                 975

Pro Asn Gly Glu Ile Asn Leu Gly Asn Gly Ile Lys Phe Thr Val Thr
            980                 985                 990

Gly Ala Phe Ala Gly Lys Phe Ser  Gly Leu Thr Asp Ser  Lys Thr Tyr
        995                 1000                1005
```

```
Met Ile  Ser Glu Arg Ile Ala  Gly Tyr Gly Asn Thr  Ile Thr Thr
    1010                 1015                 1020

Gly Ala  Gly Ser Ala Ala Ile  Thr Asn Thr Pro Asp  Ser Asp Asn
    1025                 1030                 1035

Pro Thr  Pro Leu Asn Pro Thr  Glu Pro Lys Val Val  Thr His Gly
    1040                 1045                 1050

Lys Lys  Phe Val Lys Thr Ser  Ser Thr Glu Thr Glu  Arg Leu Gln
    1055                 1060                 1065

Gly Ala  Gln Phe Val Val Lys  Asp Ser Ala Gly Lys  Tyr Leu Ala
    1070                 1075                 1080

Leu Lys  Ser Ser Ala Thr Ile  Ser Ala Gln Thr Thr  Ala Tyr Thr
    1085                 1090                 1095

Asn Ala  Lys Thr Ala Leu Asp  Ala Lys Ile Ala Ala  Tyr Asn Lys
    1100                 1105                 1110

Leu Ser  Ala Asp Asp Gln Lys  Gly Thr Lys Gly Glu  Thr Ala Lys
    1115                 1120                 1125

Ala Glu  Ile Lys Thr Ala Gln  Asp Ala Tyr Asn Ala  Ala Phe Ile
    1130                 1135                 1140

Val Ala  Arg Thr Ala Tyr Glu  Gly Ser Gly Ser Gly  Asn Asn Pro
    1145                 1150                 1155

Thr Thr  Glu Asn Glu Pro Gln  Thr Gly Asn Pro Val  Asn Lys Glu
    1160                 1165                 1170

Ile Thr  Val Arg Lys Thr Trp  Ala Val Asp Gly Asn  Glu Val Asn
    1175                 1180                 1185

Lys Gly  Asp Glu Lys Val Asp  Ala Val Phe Thr Leu  Gln Val Lys
    1190                 1195                 1200

Asp Ser  Asp Lys Trp Val Asn  Val Asp Ser Ala Thr  Ala Thr Ala
    1205                 1210                 1215

Ala Thr  Asp Phe Lys Tyr Thr  Phe Lys Asn Leu Asp  Asn Ala Lys
    1220                 1225                 1230

Thr Tyr  Arg Val Val Glu Arg  Val Ser Gly Tyr Ala  Pro Ala Tyr
    1235                 1240                 1245

Val Ser  Phe Val Gly Gly Val  Val Thr Ile Lys Asn  Asn Lys Asn
    1250                 1255                 1260
```

Ser Asn Asp Pro Thr Pro Ile Asn Pro Ser Glu Pro Lys Val Val
1265 1270 1275

Thr Tyr Gly Arg Lys Phe Val Lys Thr Asn Gln Asp Gly Ser Glu
1280 1285 1290

Arg Leu Ala Gly Ala Thr Phe Leu Val Lys Asn Ser Gln Ser Gln
1295 1300 1305

Tyr Leu Ala Arg Lys Ser Gly Val Ala Thr Asn Glu Ala His Lys
1310 1315 1320

Ala Val Thr Asp Ala Lys Val Gln Leu Asp Glu Ala Val Lys Ala
1325 1330 1335

Tyr Asn Lys Leu Thr Lys Glu Gln Gln Glu Ser Gln Asp Gly Lys
1340 1345 1350

Ala Ala Leu Asn Leu Ile Asp Glu Lys Gln Thr Ala Tyr Asn Glu
1355 1360 1365

Ala Phe Ala Lys Ala Asn Tyr Ser Tyr Glu
1370 1375

<210> 85
<211> 916
<212> PRT
<213> Streptococcus agalactiae

<400> 85
Met Gly Asn Lys Pro Gly Lys Asp Leu Thr Glu Leu Pro Val Thr Pro
1 5 10 15

Ser Lys Gly Glu Val Thr Val Ala Lys Thr Trp Ser Asp Gly Ile Ala
20 25 30

Pro Asp Gly Val Asn Val Val Tyr Thr Leu Lys Asp Lys Asp Lys Thr
35 40 45

Val Ala Ser Val Ser Leu Thr Lys Thr Ser Lys Gly Thr Ile Asp Leu
50 55 60

Gly Asn Gly Ile Lys Phe Glu Val Ser Gly Asn Phe Ser Gly Lys Phe
65 70 75 80

Thr Gly Leu Glu Asn Lys Ser Tyr Met Ile Ser Glu Arg Val Ser Gly
85 90 95

Tyr Gly Ser Ala Ile Asn Leu Glu Asn Gly Lys Val Thr Ile Thr Asn
100 105 110

```
Thr Lys Asp Ser Asp Asn Pro Thr Pro Leu Asn Pro Thr Glu Pro Lys
        115                 120                 125

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

Arg Leu Ala Gly Ala Gln Phe Val Val Lys Asn Ser Ala Gly Lys Tyr
145                 150                 155                 160

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

Lys Lys Ile Ala Leu Asp Glu Ala Ile Ala Ala Tyr Asn Lys Leu Ser
            180                 185                 190

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

Lys Thr Lys Gln Ala Asp Tyr Asp Ala Ala Phe Ile Glu Ala Arg Thr
    210                 215                 220

Ala Tyr Glu Gly Ser Gly Ser Gly Asn Asn Pro Thr Ile Glu Asn Glu
225                 230                 235                 240

Pro Lys Glu Gly Ile Pro Val Asp Lys Lys Ile Thr Val Asn Lys Thr
                245                 250                 255

Trp Ala Val Asp Gly Asn Glu Val Asn Lys Ala Asp Glu Thr Val Asp
            260                 265                 270

Ala Val Phe Thr Leu Gln Val Lys Asp Gly Asp Lys Trp Val Asn Val
        275                 280                 285

Asp Ser Ala Lys Ala Thr Ala Ala Thr Ser Phe Lys His Thr Phe Glu
    290                 295                 300

Asn Leu Asp Asn Ala Lys Thr Tyr Arg Val Ile Glu Arg Val Ser Gly
305                 310                 315                 320

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

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

Lys Val Val Thr Tyr Gly Arg Lys Phe Val Lys Thr Asn Lys Asp Gly
        355                 360                 365

Lys Glu Arg Leu Ala Gly Ala Thr Phe Leu Val Lys Lys Asp Gly Lys
    370                 375                 380
```

```
Tyr Leu Ala Arg Lys Ser Gly Val Ala Thr Asp Ala Glu Lys Ala Ala
385                 390                 395                 400

Val Asp Ser Thr Lys Ser Ala Leu Asp Ala Ala Val Lys Ala Tyr Asn
                405                 410                 415

Asp Leu Thr Lys Glu Lys Gln Glu Gly Gln Asp Gly Lys Ser Ala Leu
            420                 425                 430

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

Ala Asn Tyr Ser Tyr Glu Gly Ser Gly Ser Gly Asn Lys Pro Gly Lys
    450                 455                 460

Lys Val Lys Glu Ile Pro Val Thr Pro Ser Asn Gly Glu Ile Thr Val
465                 470                 475                 480

Ser Lys Thr Trp Asp Lys Gly Ser Asp Leu Glu Asn Ala Asn Val Val
                485                 490                 495

Tyr Thr Leu Lys Asp Gly Gly Thr Ala Val Ala Ser Val Ser Leu Thr
            500                 505                 510

Lys Thr Thr Pro Asn Gly Glu Ile Asn Leu Gly Asn Gly Ile Lys Phe
        515                 520                 525

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

Lys Thr Tyr Met Ile Ser Glu Arg Ile Ala Gly Tyr Gly Asn Thr Ile
545                 550                 555                 560

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

Asn Pro Thr Pro Leu Asn Pro Thr Glu Pro Lys Val Val Thr His Gly
            580                 585                 590

Lys Lys Phe Val Lys Thr Ser Ser Thr Glu Thr Glu Arg Leu Gln Gly
        595                 600                 605

Ala Gln Phe Val Val Lys Asp Ser Ala Gly Lys Tyr Leu Ala Leu Lys
    610                 615                 620

Ser Ser Ala Thr Ile Ser Ala Gln Thr Thr Ala Tyr Thr Asn Ala Lys
625                 630                 635                 640

Thr Ala Leu Asp Ala Lys Ile Ala Ala Tyr Asn Lys Leu Ser Ala Asp
                645                 650                 655
```

```
Asp Gln Lys Gly Thr Lys Gly Glu Thr Ala Lys Ala Glu Ile Lys Thr
            660                 665                 670

Ala Gln Asp Ala Tyr Asn Ala Ala Phe Ile Val Ala Arg Thr Ala Tyr
        675                 680                 685

Glu Gly Ser Gly Ser Gly Asn Asn Pro Thr Glu Glu Ser Glu Pro Gln
    690                 695                 700

Glu Gly Thr Pro Ala Asn Gln Glu Ile Lys Val Ile Lys Asp Trp Ala
705                 710                 715                 720

Val Asp Gly Thr Ile Thr Asp Ala Asn Val Ala Val Lys Ala Ile Phe
                725                 730                 735

Thr Leu Gln Glu Lys Gln Thr Asp Gly Thr Trp Val Asn Val Ala Ser
            740                 745                 750

His Glu Ala Thr Lys Pro Ser Arg Phe Glu His Thr Phe Thr Gly Leu
        755                 760                 765

Asp Asn Ala Lys Thr Tyr Arg Val Val Glu Arg Val Ser Gly Tyr Thr
    770                 775                 780

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

Lys Asn Ser Asn Asp Pro Thr Pro Ile Asn Pro Ser Glu Pro Lys Val
                805                 810                 815

Val Thr Tyr Gly Arg Lys Phe Val Lys Thr Asn Gln Ala Asn Thr Glu
            820                 825                 830

Arg Leu Ala Gly Ala Thr Phe Leu Val Lys Lys Glu Gly Lys Tyr Leu
        835                 840                 845

Ala Arg Lys Ala Gly Ala Ala Thr Ala Glu Ala Lys Ala Ala Val Lys
    850                 855                 860

Thr Ala Lys Leu Ala Leu Asp Glu Ala Val Lys Ala Tyr Asn Asp Leu
865                 870                 875                 880

Thr Lys Glu Lys Gln Glu Gly Gln Glu Gly Lys Thr Ala Leu Ala Thr
                885                 890                 895

Val Asp Gln Lys Gln Lys Ala Tyr Asn Asp Ala Phe Val Lys Ala Asn
            900                 905                 910

Tyr Ser Tyr Glu
        915
```

<210> 86
<211> 916
<212> PRT
<213> Streptococcus agalactiae

<400> 86
Met Gly Asn Asn Pro Thr Glu Glu Ser Glu Pro Gln Glu Gly Thr Pro
1 5 10 15

Ala Asn Gln Glu Ile Lys Val Ile Lys Asp Trp Ala Val Asp Gly Thr
20 25 30

Ile Thr Asp Ala Asn Val Ala Val Lys Ala Ile Phe Thr Leu Gln Glu
35 40 45

Lys Gln Thr Asp Gly Thr Trp Val Asn Val Ala Ser His Glu Ala Thr
50 55 60

Lys Pro Ser Arg Phe Glu His Thr Phe Thr Gly Leu Asp Asn Ala Lys
65 70 75 80

Thr Tyr Arg Val Val Glu Arg Val Ser Gly Tyr Thr Pro Glu Tyr Val
85 90 95

Ser Phe Lys Asn Gly Val Val Thr Ile Lys Asn Asn Lys Asn Ser Asn
100 105 110

Asp Pro Thr Pro Ile Asn Pro Ser Glu Pro Lys Val Val Thr Tyr Gly
115 120 125

Arg Lys Phe Val Lys Thr Asn Gln Ala Asn Thr Glu Arg Leu Ala Gly
130 135 140

Ala Thr Phe Leu Val Lys Lys Glu Gly Lys Tyr Leu Ala Arg Lys Ala
145 150 155 160

Gly Ala Ala Thr Ala Glu Ala Lys Ala Ala Val Lys Thr Ala Lys Leu
165 170 175

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

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

Gln Lys Ala Tyr Asn Asp Ala Phe Val Lys Ala Asn Tyr Ser Tyr Glu
210 215 220

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

Val Thr Pro Ser Asn Gly Glu Ile Thr Val Ser Lys Thr Trp Asp Lys
245 250 255

```
Gly Ser Asp Leu Glu Asn Ala Asn Val Val Tyr Thr Leu Lys Asp Gly
            260                 265                 270

Gly Thr Ala Val Ala Ser Val Ser Leu Thr Lys Thr Thr Pro Asn Gly
        275                 280                 285

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

Ala Gly Lys Phe Ser Gly Leu Thr Asp Ser Lys Thr Tyr Met Ile Ser
305                 310                 315                 320

Glu Arg Ile Ala Gly Tyr Gly Asn Thr Ile Thr Thr Gly Ala Gly Ser
                325                 330                 335

Ala Ala Ile Thr Asn Thr Pro Asp Ser Asp Asn Pro Thr Pro Leu Asn
            340                 345                 350

Pro Thr Glu Pro Lys Val Val Thr His Gly Lys Lys Phe Val Lys Thr
        355                 360                 365

Ser Ser Thr Glu Thr Glu Arg Leu Gln Gly Ala Gln Phe Val Val Lys
    370                 375                 380

Asp Ser Ala Gly Lys Tyr Leu Ala Leu Lys Ser Ser Ala Thr Ile Ser
385                 390                 395                 400

Ala Gln Thr Thr Ala Tyr Thr Asn Ala Lys Thr Ala Leu Asp Ala Lys
                405                 410                 415

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

Gly Glu Thr Ala Lys Ala Glu Ile Lys Thr Ala Gln Asp Ala Tyr Asn
        435                 440                 445

Ala Ala Phe Ile Val Ala Arg Thr Ala Tyr Glu Gly Ser Gly Ser Gly
    450                 455                 460

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

Gly Glu Val Thr Val Ala Lys Thr Trp Ser Asp Gly Ile Ala Pro Asp
                485                 490                 495

Gly Val Asn Val Val Tyr Thr Leu Lys Asp Lys Asp Lys Thr Val Ala
            500                 505                 510

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

```
Gly Ile Lys Phe Glu Val Ser Gly Asn Phe Ser Gly Lys Phe Thr Gly
    530                 535                 540

Leu Glu Asn Lys Ser Tyr Met Ile Ser Glu Arg Val Ser Gly Tyr Gly
545                 550                 555                 560

Ser Ala Ile Asn Leu Glu Asn Gly Lys Val Thr Ile Thr Asn Thr Lys
                565                 570                 575

Asp Ser Asp Asn Pro Thr Pro Leu Asn Pro Thr Glu Pro Lys Val Glu
            580                 585                 590

Thr His Gly Lys Lys Phe Val Lys Thr Asn Glu Gln Gly Asp Arg Leu
        595                 600                 605

Ala Gly Ala Gln Phe Val Val Lys Asn Ser Ala Gly Lys Tyr Leu Ala
    610                 615                 620

Leu Lys Ala Asp Gln Ser Glu Gly Gln Lys Thr Leu Ala Ala Lys Lys
625                 630                 635                 640

Ile Ala Leu Asp Glu Ala Ile Ala Ala Tyr Asn Lys Leu Ser Ala Thr
                645                 650                 655

Asp Gln Lys Gly Glu Lys Gly Ile Thr Ala Lys Glu Leu Ile Lys Thr
            660                 665                 670

Lys Gln Ala Asp Tyr Asp Ala Ala Phe Ile Glu Ala Arg Thr Ala Tyr
        675                 680                 685

Glu Gly Ser Gly Ser Gly Asn Asn Pro Thr Ile Glu Asn Glu Pro Lys
    690                 695                 700

Glu Gly Ile Pro Val Asp Lys Lys Ile Thr Val Asn Lys Thr Trp Ala
705                 710                 715                 720

Val Asp Gly Asn Glu Val Asn Lys Ala Asp Glu Thr Val Asp Ala Val
                725                 730                 735

Phe Thr Leu Gln Val Lys Asp Gly Asp Lys Trp Val Asn Val Asp Ser
            740                 745                 750

Ala Lys Ala Thr Ala Ala Thr Ser Phe Lys His Thr Phe Glu Asn Leu
        755                 760                 765

Asp Asn Ala Lys Thr Tyr Arg Val Ile Glu Arg Val Ser Gly Tyr Ala
    770                 775                 780

Pro Glu Tyr Val Ser Phe Val Asn Gly Val Val Thr Ile Lys Asn Asn
785                 790                 795                 800
```

```
Lys Asp Ser Asn Glu Pro Thr Pro Ile Asn Pro Ser Glu Pro Lys Val
                805                 810                 815

Val Thr Tyr Gly Arg Lys Phe Val Lys Thr Asn Lys Asp Gly Lys Glu
            820                 825                 830

Arg Leu Ala Gly Ala Thr Phe Leu Val Lys Lys Asp Gly Lys Tyr Leu
        835                 840                 845

Ala Arg Lys Ser Gly Val Ala Thr Asp Ala Glu Lys Ala Ala Val Asp
    850                 855                 860

Ser Thr Lys Ser Ala Leu Asp Ala Ala Val Lys Ala Tyr Asn Asp Leu
865                 870                 875                 880

Thr Lys Glu Lys Gln Glu Gly Gln Asp Gly Lys Ser Ala Leu Ala Thr
                885                 890                 895

Val Ser Glu Lys Gln Lys Ala Tyr Asn Asp Ala Phe Val Lys Ala Asn
            900                 905                 910

Tyr Ser Tyr Glu
        915


<210> 87
<211> 1227
<212> PRT
<213> Streptococcus agalactiae

<400> 87
Met Asp Gly Ser Ile Leu Ala Asp Ser Lys Ala Val Pro Val Lys Ile
1               5                   10                  15

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

Tyr Pro Lys Asn Thr Glu Thr Lys Pro Gln Val Asp Lys Asn Phe Ala
        35                  40                  45

Asp Lys Glu Leu Asp Tyr Ala Asn Asn Lys Lys Asp Lys Gly Thr Val
    50                  55                  60

Ser Ala Ser Val Gly Asp Val Lys Lys Tyr His Val Gly Thr Lys Ile
65                  70                  75                  80

Leu Lys Gly Ser Asp Tyr Lys Lys Leu Ile Trp Thr Asp Ser Met Thr
                85                  90                  95

Lys Gly Leu Thr Phe Asn Asn Asp Ile Ala Val Thr Leu Asp Gly Ala
            100                 105                 110
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Thr Leu Asp Ala Thr Asn Tyr Lys Leu Val Ala Asp Asp Gln Gly Phe
        115                 120                 125

Arg Leu Val Leu Thr Asp Lys Gly Leu Glu Ala Val Ala Lys Ala Ala
    130                 135                 140

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

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

Tyr Gly Asn Asn Pro Thr Ile Glu Asn Glu Pro Lys Glu Gly Ile Pro
            180                 185                 190

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

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

Val Lys Asp Gly Asp Lys Trp Val Asn Val Asp Ser Ala Lys Ala Thr
225                 230                 235                 240

Ala Ala Thr Ser Phe Lys His Thr Phe Glu Asn Leu Asp Asn Ala Lys
                245                 250                 255

Thr Tyr Arg Val Ile Glu Arg Val Ser Gly Tyr Ala Pro Glu Tyr Val
            260                 265                 270

Ser Phe Val Asn Gly Val Val Thr Ile Lys Asn Asn Lys Asp Ser Asn
        275                 280                 285

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

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

Ala Thr Phe Leu Val Lys Lys Asp Gly Lys Tyr Leu Ala Arg Lys Ser
                325                 330                 335

Gly Val Ala Thr Asp Ala Glu Lys Ala Ala Val Asp Ser Thr Lys Ser
            340                 345                 350

Ala Leu Asp Ala Ala Val Lys Ala Tyr Asn Asp Leu Thr Lys Glu Lys
        355                 360                 365

Gln Glu Gly Gln Asp Gly Lys Ser Ala Leu Ala Thr Val Ser Glu Lys
    370                 375                 380
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Gln Lys Ala Tyr Asn Asp Ala Phe Val Lys Ala Asn Tyr Ser Tyr Glu
385                 390                 395                 400

Gly Ser Gly Ser Asn Gly Ser Leu Leu Ala Ala Ser Lys Ala Val Pro
                405                 410                 415

Val Asn Ile Thr Leu Pro Leu Val Asn Glu Asp Gly Val Val Ala Asp
            420                 425                 430

Ala His Val Tyr Pro Lys Asn Thr Glu Glu Lys Pro Glu Ile Asp Lys
        435                 440                 445

Asn Phe Ala Lys Thr Asn Asp Leu Thr Ala Leu Thr Asp Val Asn Arg
    450                 455                 460

Leu Leu Thr Ala Gly Ala Asn Tyr Gly Asn Tyr Ala Arg Asp Lys Ala
465                 470                 475                 480

Thr Ala Thr Ala Glu Ile Gly Lys Val Val Pro Tyr Glu Val Lys Thr
                485                 490                 495

Lys Ile His Lys Gly Ser Lys Tyr Glu Asn Leu Val Trp Thr Asp Ile
            500                 505                 510

Met Ser Asn Gly Leu Thr Met Gly Ser Thr Val Ser Leu Lys Ala Ser
        515                 520                 525

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

Asp Ala Arg Gly Phe Thr Leu Lys Phe Thr Ala Asp Gly Leu Gly Lys
545                 550                 555                 560

Leu Glu Lys Ala Ala Lys Thr Ala Asp Ile Glu Phe Thr Leu Thr Tyr
                565                 570                 575

Ser Ala Thr Val Asn Gly Gln Ala Ile Ile Asp Asn Pro Glu Ser Asn
            580                 585                 590

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

Leu Pro Val Thr Pro Ser Lys Gly Glu Val Thr Val Ala Lys Thr Trp
    610                 615                 620

Ser Asp Gly Ile Ala Pro Asp Gly Val Asn Val Val Tyr Thr Leu Lys
625                 630                 635                 640

Asp Lys Asp Lys Thr Val Ala Ser Val Ser Leu Thr Lys Thr Ser Lys
                645                 650                 655
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Gly Thr Ile Asp Leu Gly Asn Gly Ile Lys Phe Glu Val Ser Gly Asn
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Phe Ser Gly Lys Phe Thr Gly Leu Glu Asn Lys Ser Tyr Met Ile Ser
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Glu Arg Val Ser Gly Tyr Gly Ser Ala Ile Asn Leu Glu Asn Gly Lys
    690                 695                 700

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

Pro Thr Glu Pro Lys Val Glu Thr His Gly Lys Lys Phe Val Lys Thr
                725                 730                 735

Asn Glu Gln Gly Asp Arg Leu Ala Gly Ala Gln Phe Val Val Lys Asn
            740                 745                 750

Ser Ala Gly Lys Tyr Leu Ala Leu Lys Ala Asp Gln Ser Glu Gly Gln
        755                 760                 765

Lys Thr Leu Ala Ala Lys Lys Ile Ala Leu Asp Glu Ala Ile Ala Ala
    770                 775                 780

Tyr Asn Lys Leu Ser Ala Thr Asp Gln Lys Gly Glu Lys Gly Ile Thr
785                 790                 795                 800

Ala Lys Glu Leu Ile Lys Thr Lys Gln Ala Asp Tyr Asp Ala Ala Phe
                805                 810                 815

Ile Glu Ala Arg Thr Ala Tyr Glu Gly Ser Gly Ser Asn Gly Ser Ile
            820                 825                 830

Leu Ala Asp Ser Lys Ala Val Pro Val Lys Ile Thr Leu Pro Leu Val
        835                 840                 845

Asn Asn Gln Gly Val Val Lys Asp Ala His Ile Tyr Pro Lys Asn Thr
    850                 855                 860

Glu Thr Lys Pro Gln Val Asp Lys Asn Phe Ala Asp Lys Asp Leu Asp
865                 870                 875                 880

Tyr Thr Asp Asn Arg Lys Asp Lys Gly Val Val Ser Ala Thr Val Gly
                885                 890                 895

Asp Lys Lys Glu Tyr Ile Val Gly Thr Lys Ile Leu Lys Gly Ser Asp
            900                 905                 910

Tyr Lys Lys Leu Val Trp Thr Asp Ser Met Thr Lys Gly Leu Thr Phe
        915                 920                 925
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Asn Asn Asn Val Lys Val Thr Leu Asp Gly Glu Asp Phe Pro Val Leu
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Asn Tyr Lys Leu Val Thr Asp Asp Gln Gly Phe Arg Leu Ala Leu Asn
945                 950                 955                 960

Ala Thr Gly Leu Ala Ala Val Ala Ala Ala Ala Lys Asp Lys Asp Val
                965                 970                 975

Glu Ile Lys Ile Thr Tyr Ser Ala Thr Val Asn Gly Ser Thr Thr Val
            980                 985                 990

Glu Ile Pro Glu Thr Asn Asp Val  Lys Leu Asp Tyr Gly  Asn Asn Pro
        995                 1000                1005

Thr Glu  Glu Ser Glu Pro Gln  Glu Gly Thr Pro Ala  Asn Gln Glu
    1010                1015                1020

Ile Lys  Val Ile Lys Asp Trp  Ala Val Asp Gly Thr  Ile Thr Asp
    1025                1030                1035

Ala Asn  Val Ala Val Lys Ala  Ile Phe Thr Leu Gln  Glu Lys Gln
    1040                1045                1050

Thr Asp  Gly Thr Trp Val Asn  Val Ala Ser His Glu  Ala Thr Lys
    1055                1060                1065

Pro Ser  Arg Phe Glu His Thr  Phe Thr Gly Leu Asp  Asn Ala Lys
    1070                1075                1080

Thr Tyr  Arg Val Val Glu Arg  Val Ser Gly Tyr Thr  Pro Glu Tyr
    1085                1090                1095

Val Ser  Phe Lys Asn Gly Val  Val Thr Ile Lys Asn  Asn Lys Asn
    1100                1105                1110

Ser Asn  Asp Pro Thr Pro Ile  Asn Pro Ser Glu Pro  Lys Val Val
    1115                1120                1125

Thr Tyr  Gly Arg Lys Phe Val  Lys Thr Asn Gln Ala  Asn Thr Glu
    1130                1135                1140

Arg Leu  Ala Gly Ala Thr Phe  Leu Val Lys Lys Glu  Gly Lys Tyr
    1145                1150                1155

Leu Ala  Arg Lys Ala Gly Ala  Ala Thr Ala Glu Ala  Lys Ala Ala
    1160                1165                1170

Val Lys  Thr Ala Lys Leu Ala  Leu Asp Glu Ala Val  Lys Ala Tyr
    1175                1180                1185
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Asn Asp  Leu Thr Lys Glu Lys  Gln Glu Gly Gln Glu  Gly Lys Thr
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Ala Leu  Ala Thr Val Asp Gln  Lys Gln Lys Ala Tyr  Asn Asp Ala
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Phe Val  Lys Ala Asn Tyr Ser  Tyr Glu
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gctaaagcaa cagctgcaac tagcttcaaa cacacttttg aaaacttgga taatgctaaa      240
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gattcaaaag cagttccagt taaaatcact ctgccattgg taaacaacca aggtgttgtt 540

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ccagaaacca atgatgttaa attggactat ggtaataacc caacggaaga aagtgaacca 1020

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acaattactg atgctaatgt tgcagttaaa gctatcttta ccttgcaaga aaaacaaacg 1140

gatggtacat gggtgaacgt tgcttcacac gaagcaacaa aaccatcacg ctttgaacat 1200

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<210> 103
<211> 2082
<212> DNA
<213> Streptococcus agalactiae

<400> 103
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ttacacaaaa ttgttcaaac atccgataat ttggctaagc caaatttccc aggaataaat 180

ggattgaatg gaacgaagta tatgggtcaa aaacttactg acatttcagg atattttggg 240

caaggttcta aagaaatcgc cggtgctttc tttgcggtta tgaatgaaag tcagacaaaa 300

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<210> 104
<211> 2115
<212> DNA
<213> Streptococcus agalactiae

<400> 104
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aagatcttgc aaactgaatc aaatcttaat aaaagtaact tcccaggaac tacaggcctt 180

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tctaaagaaa ttgacggtgc tttctttgct ttggctttag aagaggaaaa agatggtgtc 300

gtacaatatg ttaaggcaaa agcaaatgac aaattaacac cagacttaat tactaaaggt 360

acacctgcaa caacaacaaa agttgaagaa gctgtaggtg gtttgacaac tggtacgggt 420

attgttttca atacagctgg tttgaaaggt aatttcaaaa ttattgaatt gaaagacaaa 480

tcaacttaca acaataatgg ttccctctta gcagcttcaa aagcagttcc ggtgaaaatc 540

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gaaactcttg caccagcagg ttatgctaaa ttgtcaggcg acattgagtt tacagttgga 1920

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tcagaggaag cttaa 2115

<210> 105
<211> 2049
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<213> Streptococcus agalactiae

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cataaaattt tacaaactga gacaaacctt aagaatagtg ctttccctgg tacaaaaggg 180

ctagatggaa ctgaatatga cgggaaagct attgataaat tggatagcta ctttggcaat 240

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aaagctaatg ataaaaataa attaaagcct gagtttagtg ggaacactcc gaaaacgacc 360

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ccgcaaattg acaagaactt tgctgataaa aatcttgatt atattaacaa ccaaaaagac 660

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gcagaagctg caaaaacaaa agatgttgaa atcaaaatca actattcagc tacagtaaac 960

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actaatgaag ctcacaaagc agtaacagat gctaaagtac aactggatga agctgttaaa 1560

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gaatgggttg tagataaaaa cgctgcaaac gttgttaaat tgatttctaa tacagctggt 1740

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<213> Streptococcus agalactiae

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gctaaagaaa ttaagggtgc tttctttgtt ttcaaaaatg aaactggtac aaaattcatt 300

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taccaaatcg ttgaattgaa agaaaaatca aactacgata acaacggttc tatcttggct 480

gattcaaaag cagttccagt taaaatcact ctgccattgg taaacaacca aggtgttgtt 540

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gcagataaag atcttgatta tactgacaac cgaaaagaca aaggtgttgt ctcagcgaca 660

gttggtgaca aaaaagaata catagttgga acaaaaattc ttaaaggctc agactataag 720

aaactggttt ggactgatag catgactaaa ggtttgacgt tcaacaacaa cgttaaagta 780

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caagaaggta ctccagctaa ccaagaaatt aaagtcatta aagactgggc agtagatggt 1080

acaattactg atgttaatgt tgcagttaaa gctatcttta ccttgcaaga aaaacaaacg 1140

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ccacaaacag gtggtattgg tacaattctt ttcacaatta ttggtttaag cattatgctt 1980

ggagcagtag ttgtcatgaa aaaacgtcaa tcagaggaag cttaa 2025

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<212> DNA
<213> Streptococcus agalactiae

<400> 107

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aacaaattaa caccagcctt aattaataaa gatggtactc ctgaaataac agtaaatatt 300

gatgaggccg tgtctggatt gacaccagag ggagatactg gacttgtttt caacaccaaa 360

ggattgaaag gcgagtttaa aattgttgaa gttaaatcaa aatctactta caacaataat 420

ggttccctcc tggctgct 438

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<211> 603
<212> DNA
<213> Streptococcus agalactiae

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gaaaacttgg tttggacaga tataatgtca aatggtttga caatgggttc aactgttagc 360

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gatgcccgtg gtttcacatt aaaattcaca gctgatggat tgggcaaatt ggaaaaagca 480

gctaaaacag ctgatattga atttacattg acttatagtg ctactgttaa tggtcaagca 540

attattgata atccagaatc caatgatatc aaattgtcgt atggtaacaa accaggtaaa 600

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<211> 441
<212> DNA
<213> Streptococcus agalactiae

<400> 109
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ttgaaagata aagataaaac tgttgcttca gtatcattga caaaaacatc taaaggtaca 180

atcgaccttg gaaatggtat caaatttgaa gtatctggta acttctcggg taaattcact 240

ggtctagaaa acaaatcata catgatctca gaacgtgttt ctggttacgg aagtgcaata 300

aatctagaaa atggtaaagt aaccattacc aataccaaag attctgataa cccaacacca 360

ttgaacccaa ctgaaccaaa agttgaaact catggtaaga aatttgtcaa aactaatgaa 420

caaggtgacc gtttggctgg t 441

<210> 110
<211> 504
<212> DNA
<213> Streptococcus agalactiae

<400> 110
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gctcttaaag cagatcaatc agaaggtcaa aaaactttag ctgctaagaa aatagcttta 120

gatgaagcta tcgctgctta taacaagttg tctgcaacag accaaaaagg tgaaaaagga 180

attactgcaa aagaacttat caaaactaaa caagcagatt acgatgcagc cttcattgag 240

gctcgtacag cttatgagtg gataacagat aaggctagag ccattaccta cacttcaaac 300

gatcaaggtc aatttgaagt tacaggtctt gcagacggta cttacaacct tgaagaaaca 360

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<210> 111
<211> 399
<212> DNA
<213> Streptococcus agalactiae

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tttgctttca aaaatgaagc tggtactaaa tacatcactg aaaatggtga agaagttgat 240

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<210> 112
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<212> DNA
<213> Streptococcus agalactiae

<400> 112
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caagtagata agaacttcgc agataaagaa cttgattatg cgaacaacaa aaaagacaaa 180

gggactgtct cagcatctgt tggtgatgtt aaaaaatacc atgttggaac aaaaatcctt 240

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acaattgaa 549

<210> 113
<211> 504
<212> DNA
<213> Streptococcus agalactiae

<400> 113
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gatgctgtct tcaccttgca agttaaagat ggtgacaaat gggtgaatgt tgattcagct 180

aaagcaacag ctgcaactag cttcaaacac acttttgaaa acttggataa tgctaaaact 240

taccgcgtta tcgaacgtgt tagcggctac gctccagaat acgtctcatt tgtaaatggc 300

gttgtaacca tcaagaacaa caaagactca aatgagccaa ctccaatcaa cccatcagaa 360

ccaaaagtgg tgacttatgg acgtaaattt gtgaaaacaa ataaagatgg aaaagaacgc 420

ttggcaggag ctaccttcct tgttaagaaa gatggcaagt acttggcacg taaatcaggt 480

gttgcaacag atgcagaaaa agct 504

<210> 114
<211> 507
<212> DNA
<213> Streptococcus agalactiae

<400> 114
ttggcaggag ctaccttcct tgttaagaaa gatggcaagt acttggcacg taaatcaggt 60

gttgcaacag atgcagaaaa agctgctgta gattcaacta aatcagcatt ggatgctgct 120

gttaaagctt acaatgattt gactaaagaa aaacaagaag gtcaagatgg taaatcagca 180

ttggctaccg ttagtgaaaa acaaaaagct tacaatgatg cctttgttaa agctaactac 240

tcatacgaat gggttgaaga taaaaatgct aagaatgttg ttaaattgat ttctaacgat 300

aaaggtcaat ttgaaattac tggcttgact gaaggtcaat actcattgga agaaacacaa 360

gcaccaactg gttatgctaa attatcaggt gatgtttcgt ttaatgttaa tgctacttca 420

tacagtaaag gttctgctca agatattgag tatacccaag gttctaaaac taaagatgca 480

caacaagtta tcaataagaa ggttact 507

<210> 115
<211> 399
<212> DNA
<213> Streptococcus agalactiae

<400> 115
gacgacgcaa caactgatac tgtgaccttg cacaagattg tcatgccaca agctgcattt 60

gataacttta ctgaaggtac aaaaggtaag aatgatagcg attatgttgg taaacaaatt 120

aatgacctta aatcttattt tggctcaacc gatgctaaag aaatcaaggg tgctttcttt 180

gttttcaaaa atgaaactgg tacaaaattc attactgaaa atggtaagga agtcgatact 240

ttggaagcta aagatgctga aggtggtgct gttctttcag ggttaacaaa agacaatggt 300

tttgttttta acactgctaa gttaaaagga atttaccaaa tcgttgaatt gaaagaaaaa 360

tcaaactacg ataacaacgg ttctatcttg gctgattca 399

<210> 116
<211> 549
<212> DNA
<213> Streptococcus agalactiae

<400> 116
aacggttcta tcttggctga ttcaaaagca gttccagtta aaatcactct gccattggta 60

aacaaccaag gtgttgttaa agatgctcac atttatccaa agaatactga aacaaaacca 120

caagtagata agaactttgc agataaagat cttgattata ctgacaaccg aaaagacaaa 180

ggtgttgtct cagcgacagt tggtgacaaa aaagaataca tagttggaac aaaaattctt 240

aaaggctcag actataagaa actggtttgg actgatagca tgactaaagg tttgacgttc 300

aacaacaacg ttaaagtaac attggatggt gaagattttc ctgttttaaa ctacaaactc 360

gtaacagatg accaaggttt ccgtcttgcc ttgaatgcaa caggtcttgc agcagtagca 420

gcagctgcaa aagacaaaga tgttgaaatc aagatcactt actcagctac ggtgaacggc 480

tccactactg ttgaaattcc agaaaccaat gatgttaaat tggactatgg taataaccca 540

acggaagaa 549

<210> 117
<211> 432
<212> DNA
<213> Streptococcus agalactiae

<400> 117
ggtaataacc caacggaaga aagtgaacca caagaaggta ctccagctaa ccaagaaatt 60

aaagtcatta aagactgggc agtagatggt acaattactg atgctaatgt tgcagttaaa 120

gctatcttta ccttgcaaga aaaacaaacg gatggtacat gggtgaacgt tgcttcacac 180

gaagcaacaa aaccatcacg ctttgaacat actttcacag gtttggataa tgctaaaact 240

taccgcgttg tcgaacgtgt tagcggctac actccagaat acgtatcatt taaaaatggt 300

gttgtgacta tcaagaacaa caaaaactca aatgatccaa ctccaatcaa cccatcagaa 360

ccaaaagtgg tgacttatgg acgtaaattt gtgaaaacaa atcaagctaa cactgaacgc 420

ttggcaggag ct 432

<210> 118
<211> 516
<212> DNA
<213> Streptococcus agalactiae

<400> 118
actgaacgct tggcaggagc taccttcctc gttaagaaag aaggcaaata cttggcacgt 60

aaagcaggtg cagcaactgc tgaagcaaag gcagctgtaa aaactgctaa actagcattg 120

gatgaagctg ttaaagctta taacgacttg actaaagaaa aacaagaagg ccaagaaggt 180

aaaacagcat tggctactgt tgatcaaaaa caaaaagctt acaatgacgc ttttgttaaa 240

gctaactact catatgaatg ggttgcagat aaaaaggctg ataatgttgt taaattgatc 300

tctaacgccg gtggtcaatt tgaaattact ggtttggata aaggcactta tggcttggaa 360

gaaactcaag caccagcagg ttatgcgaca ttgtcaggtg atgtaaactt tgaagtaact 420

gccacatcat atagcaaagg ggctacaact gacatcgcat atgataaagg ctctgtaaaa 480

aaagatgccc aacaagttca aaacaaaaaa gtaacc 516

<210> 119
<211> 387
<212> DNA
<213> Streptococcus agalactiae

<400> 119
gctgagatgg gaaatatcac taaaacagta accttacaca aaattgttca aacatccgat 60

aatttggcta agccaaattt cccaggaata aatggattga atggaacgaa gtatatgggt 120

caaaaactta ctgacatttc aggatatttt gggcaaggtt ctaaagaaat cgccggtgct 180

ttctttgcgg ttatgaatga aagtcagaca aaatatatca cagaaagtgg tactgaagta 240

gaaagtatcg atgcagcagg tgtccttaaa ggtttgacaa ctgaaaacgg cattacattt 300

aatactgcaa acttaaaagg aacataccaa atcgttgagt tgcttgacaa atctaattat 360

aaaaatggtg acaaagttct tgctgac 387

<210> 120
<211> 597
<212> DNA
<213> Streptococcus agalactiae

<400> 120
ggtgacaaag ttcttgctga ctcaaaagct gtcccagtga aaatcactct tcctttgtat 60

aacgaagaag gaattgtcgt ggacgctgaa gtgtatccaa agaatacaga agaagcacca 120

caaatcgaca aaaactttgc taaagcaaat aaattgttga atgacagtga taattcagct 180

attgcaggtg gggcagacta cgacaaatat caggcagaaa aagcaaaagc tactgctgaa 240

atcggtcaag aaatccctta cgaagttaaa acaaaaatcc aaaaagggtc taaatacaaa 300

aaccttgctt gggtcgatac catgtcaaat ggtttgacaa tgggtaacac tgttaactta 360

gaagcatcgt caggctcttt tgtagaaggt acagattaca atgttgaacg tgatgaccgt 420

ggtttcactt tgaaattcac agatacaggt ttgactaagc tacaaaaaga agcggaaaca 480

caagctgttg aattcacatt gacatatagc gcaacagtta acggtgcggc tattgatgac 540

aagccagaaa gcaatgatat caaacttcaa tacggtaaca aaccaggtaa aaaagta 597

<210> 121
<211> 453
<212> DNA
<213> Streptococcus agalactiae

<400> 121
ggtaacaaac caggtaaaaa agtaaaagaa atcccagtaa caccgtcaaa tggcgaaatc 60

actgttagca aaacttggga caaaggttca gatttagaga atgcgaatgt tgtttatacc 120

cttaaagatg gtggaacagc tgttgcctca gtttcattga caaaaacaac accaaatggc 180

gaaatcaact taggtaatgg tattaaattt acagttactg gagcgtttgc tggtaaattc 240

agtggtctga ctgatagtaa aacatacatg atctcagaac gtatcgctgg ttatggtaat 300

acaatcacta ctggtgctgg tagtgcagct atcaccaata ctccagattc agacaaccca 360

acaccactta atccaactga accaaaagtt gtgacacacg gtaaaaaatt cgtcaaaaca 420

agttcgactg aaacagaacg cttgcaaggt gca 453

<210> 122
<211> 516
<212> DNA
<213> Streptococcus agalactiae

<400> 122
acagaacgct tgcaaggtgc acagttcgtt gttaaagatt cagctggtaa ataccttgca 60

ttgaaatcat ctgcgacaat atcagctcaa acaacagctt acacaaatgc taaaactgct 120

cttgacgcta aaatcgcagc ttacaacaaa ctttcagcag acgatcaaaa aggtactaaa 180

ggtgaaacag ctaaagcaga aatcaaaact gctcaagacg cttacaatgc agccttcatc 240

gtagctcgta cagcttacga gtgggtaact aataaagaag atgctaacgt tgttaaagtg 300

acttcaaacg ctgacggtca atttgaagtt agcggtcttg caactggtga ttataaactt 360

gaagaaacac aagctccagc tggttacgct aaattagcag gtgatgttga tttcaaagtt 420

ggaaacagct caaaagcaga cgactcaggt aacattgatt acactgctag cagcaataaa 480

aaagacgctc aacgcataga aaacaaaaaa gtgact 516

<210> 123
<211> 429
<212> DNA
<213> Streptococcus agalactiae

<400> 123
gacgaagcaa caactaatac agtgactttg cacaagatct tgcaaactga atcaaatctt 60

aataaaagta acttcccagg aactacaggc cttaacggag atgactataa aggtgaatct 120

atttctgacc ttgctgaata ctttggatca ggttctaaag aaattgacgg tgctttcttt 180

gctttggctt tagaagagga aaaagatggt gtcgtacaat atgttaaggc aaaagcaaat 240

gacaaattaa caccagactt aattactaaa ggtacacctg caacaacaac aaaagttgaa 300

gaagctgtag gtggtttgac aactggtacg ggtattgttt tcaatacagc tggtttgaaa 360

ggtaatttca aaattattga attgaaagac aaatcaactt acaacaataa tggttccctc 420

ttagcagct 429

<210> 124

<211> 600
<212> DNA
<213> Streptococcus agalactiae

<400> 124
aatggttccc tcttagcagc ttcaaaagca gttccggtga aaatcactct tccattggta 60

agcaaagatg gtgttgttaa agatgcacac gtttatccaa agaacactga aacaaaacca 120

gaagtagaca agaacttcgc taaaacaaac gatttgacag ctctcaaaga cgctactctt 180

cttaaggctg gtgcagacta caaaaactat tcagcgacta aagctactgt aacagctgaa 240

atcggtaaag ttatccctta cgaagttaaa acaaaagttc ttaaaggttc taaatacgaa 300

aaactggttt ggaccgatac catgtcaaat ggtttgacaa tgggtgatga tgttaacctt 360

gcagtttcag ggactacaac aactttcatt aaagatatag attacactct tagcattgat 420

gaccgtggtt tcacattgaa attcaaagct actggattgg acaaattgga agaagcagct 480

aaagcatctg atgttgaatt tacattgact tataaagcta ctgttaatgg ccaagcaatt 540

attgacaacc cagaagtcaa tgacatcaaa ttggactatg gtaataaacc tggtacagat 600

<210> 125
<211> 447
<212> DNA
<213> Streptococcus agalactiae

<400> 125
ggtaataaac ctggtacaga tttatcagaa caacctgtga cacctgaaga tggtgaagtt 60

aaagtcacta aaacatgggc agcaggtgct aataaagcag acgctaaagt tgtctacaca 120

cttaaaaatg ctactaaaca agtcgtagct tctgtcgcat tgaccgcagc tgatacaaaa 180

ggtacgatta atcttggtaa aggcatgacc tttgaaatca caggagcttt ctcaggtaca 240

ttcaaaggcc ttcaaaataa agcttacact gtttctgaac gtgttgcagg ttatactaat 300

gctattaatg ttactggtaa tgctgttgct atcaccaata caccagacag tgacaatcca 360

acgccactta acccaactca accaaaagtt gaaacacatg gtaagaaatt tgtcaaagtt 420

ggcgatgcag atgcccgctt agctggt 447

<210> 126
<211> 507
<212> DNA
<213> Streptococcus agalactiae

<400> 126
gcagatgccc gcttagctgg tgcacaattc gttgtgaaaa attcagctgg taaattcctt 60

gctcttaaag aagatgcagc tgtatcagga gctcaaactg aattggcaac tgctaaaaca 120

gacttggata atgccatcaa agcttacaac ggtttgacaa aagcgcagca agaaggtgct 180

gatggtacat cagcaaaaga acttatcaac actaaacagt cagcttacga cgcagccttc 240

atcaaagcac gtacagctta tacatgggta gatgaaaaaa ctaaagctat taccttcact 300

tcaaataatc aaggtcaatt tgaagttact ggtcttgaag taggttctta caaacttgaa 360

gaaactcttg caccagcagg ttatgctaaa ttgtcaggcg acattgagtt tacagttgga 420

cacgattctt acacaagtgg tgacatcaag tacaagacag atgatgctag caacaatgca 480

caaaaagttt tcaataaaaa agtaacc 507

<210> 127
<211> 417
<212> DNA
<213> Streptococcus agalactiae

<400> 127
gaagaagaaa gaacaactga gactgttact ttgcataaaa ttttacaaac tgagacaaac 60

cttaagaata gtgctttccc tggtacaaaa gggctagatg gaactgaata tgacgggaaa 120

gctattgata aattggatag ctactttggc aatgactcaa aagatattgg tggggcttac 180

tttatattgg caaatagcaa gggtgaatat atcaaagcta atgataaaaa taaattaaag 240

cctgagttta gtgggaacac tccgaaaacg accctcaata ttagtgaagc tgtaggtggt 300

ttgacagaag aaaacgcagg tattaagttt gaaaccactg gtttaagagg ggatttccag 360

attattgaat tgaaagacaa gtcaacttac aataatggtg gggccatctt ggctgat 417

<210> 128
<211> 549
<212> DNA
<213> Streptococcus agalactiae

<400> 128
ggtggggcca tcttggctga ttcaaaagcg gttccagtga aaatcactct tccattgata 60

aacaaggatg gtgttgttaa agatgcacac gtctatccaa agaacactga aacaaaaccg 120

caaattgaca agaactttgc tgataaaaat cttgattata ttaacaacca aaaagacaaa 180

ggtactatat cagcaactgt tggtgatgtt aaaaaatata ctgttgggac aaaaatcctt 240

aaaggatctg actataaaaa attagtttgg accgatagca tgacgaaagg attgacgttt 300

aacaacgatg ttactgtaac attggatggt gcaaattttg aacaatcaaa ttacacctta 360

gtagctgatg accaaggttt ccgtcttgtc ttgaatgcaa caggtctttc taaagtagca 420

gaagctgcaa aaacaaaaga tgttgaaatc aaaatcaact attcagctac agtaaacggt 480

tctactgtcg ttgaaaagtc agaaaataat gatgtcaaac tagattatgg taacaaccca 540

acaactgaa 549

<210> 129
<211> 429
<212> DNA
<213> Streptococcus agalactiae

<400> 129
ggtaacaacc caacaactga aaacgaacca caaactggta atccagttaa caaagaaatc 60

acagttcgaa agacttgggc agtggatggt aatgaagtga ataagggaga tgaaaaagtt 120

gacgctgtct tcacgttgca agttaaagat agtgacaaat gggtgaatgt cgattcagca 180

acagcaacag cagcaactga cttcaaatac actttcaaaa acttggataa tgccaaaact 240

taccgtgttg tagaacgtgt tagcggctac gctccagcct acgtttcatt tgtgggtgga 300

gttgtgacta ttaagaataa caaaaactca aatgacccaa ctccaatcaa tccatcagaa 360

ccaaaagttg tgacttatgg acgtaaattt gtgaaaacaa atcaagatgg ctctgaacgt 420

ctagcagga 429

<210> 130
<211> 519
<212> DNA
<213> Streptococcus agalactiae

<400> 130
tctgaacgtc tagcaggagc tactttcctt gttaagaact cacaaagtca atacttggca 60

cgtaaatcag gtgttgcaac taatgaagct cacaaagcag taacagatgc taaagtacaa 120

ctggatgaag ctgttaaagc ttataacaaa ttgactaaag aacaacaaga aagtcaagat 180

ggtaaagcag cattgaatct tattgatgaa aaacaaacag cttacaatga agcttttgct 240

aaagcaaact actcatatga atgggttgta gataaaaacg ctgcaaacgt tgttaaattg 300

atttctaata cagctggtaa atttgaaatt acaggtttga atgcaggcga gtatagtttg 360

gaagagactc aagcaccaac aggttatgct aaattgtcaa gtgatgtatc atttaaagta 420

aatgatacat cgtatagcga aggggcttca aatgatattg catacgataa agactccggt 480

aaaacagatg cacaaaaagt tgtcaacaaa aaagtaaca 519

<210> 131
<211> 399
<212> DNA
<213> Streptococcus agalactiae

<400> 131
gacgacgtaa caactgatac tgtgaccttg cacaagattg tcatgccaca agctgcattt 60

gataacttta ctgaaggtac aaaaggtaag aatgatagcg attatgttgg taaacaaatt 120

aatgacctta aatcttattt tggctcaacc gatgctaaag aaattaaggg tgctttcttt 180

gttttcaaaa atgaaactgg tacaaaattc attactgaaa atggtaagga agtcgatact 240

ttggaagcta aagatgctga aggtggtgct gttctttcag ggttaacaaa agacactggt 300

tttgctttta acactgctaa gttaaaagga acttaccaaa tcgttgaatt gaaagaaaaa 360

tcaaactacg ataacaacgg ttctatcttg gctgattca 399

<210> 132
<211> 549
<212> DNA
<213> Streptococcus agalactiae

<400> 132
aacggttcta tcttggctga ttcaaaagca gttccagtta aaatcactct gccattggta 60

aacaaccaag gtgttgttaa agatgctcac atttatccaa agaatactga aacaaaacca 120

caagtagata agaactttgc agataaagat cttgattata ctgacaaccg aaaagacaaa 180

ggtgttgtct cagcgacagt tggtgacaaa aaagaataca tagttggaac aaaaattctt 240

aaaggctcag actataagaa actggtttgg actgatagca tgactaaagg tttgacgttc 300

aacaacaacg ttaaagtaac attggatggt aaagattttc ctgttttaaa ctacaaactc 360

gtaacagatg accaaggttt ccgtcttgcc ttgaatgcaa caggtcttgc agcagtagca 420

gctgctgcaa aagacaaaga tgttgaaatc aagatcactt actcagctac ggtgaacggc 480

tccactactg ttgaagttcc agaaaccaat gatgttaaat tggactatgg taataaccca 540

acggaagaa 549

<210> 133
<211> 432
<212> DNA
<213> Streptococcus agalactiae

<400> 133
ggtaataacc caacggaaga aagtgaacca caagaaggta ctccagctaa ccaagaaatt 60

aaagtcatta aagactgggc agtagatggt acaattactg atgttaatgt tgcagttaaa 120

gctatcttta ccttgcaaga aaaacaaacg gatggtacat gggtgaacgt tgcttcacac 180

gaagcaacaa aaccatcacg ctttgaacat actttcacag gtttggataa tactaaaact 240

taccgcgttg tcgaacgtgt tagcggctac actccagaat atgtatcatt taaaaatggt 300

gttgtgacta tcaagaacaa caaaaactca aatgatccaa ctccaatcaa cccatcagaa 360

ccaaaagtgg tgacttatgg acgtaaattt gtgaaaacaa atcaagctaa cactgaacgc 420

ttggcaggag ct 432

<210> 134
<211> 516
<212> DNA
<213> Streptococcus agalactiae

<400> 134
actgaacgct tggcaggagc taccttcctt gttaagaaag aaggaaaata cttggcacgt 60

aaagcaggtg cagcaactgc tgaagcaaag gcagctgtaa aaactgctaa actagcattg 120

gatgaagctg ttaaagctta taacgacttg actaaagaaa aacaagaagg ccaagaaggt 180

aaaacagcat tggctactgt tgatcaaaaa caaaaagctt acaatgacgc ttttgttaaa 240

gctaactact catatgaatg ggttgcagat aaaaaggctg ataatgttgt taaattgatc 300

tctaacgccg gtggtcaatt tgaaattact ggtttggata aaggcactta tagcttggaa 360

gaaactcaag caccagcagg ttatgcgaca ttgtcaggtg atgtaaactt tgaagtaact 420

gccacatcat atagcaaagg ggctacaact gacatcgcat atgataaagg atctgtaaaa 480

aaagatgccc aacaagttca aaacaaaaaa gtaacc 516

<210> 135
<211> 363
<212> DNA
<213> Streptococcus agalactiae

<400> 135

ggtaacaaac caggtaaaga cttgactgaa cttcctgtta caccttcaaa gggtgaagta 60

acagttgcta aaacttggtc tgacggaatt gcacctgatg gtgtaaacgt tgtttacaca 120

ttgaaagata aagataaaac tgttgcttca gtatcattga caaaaacatc taaaggtaca 180

atcgaccttg gaaatggtat caaatttgaa gtatctggta acttctcggg taaattcact 240

ggtctagaaa acaaatcata catgatctca gaacgtgttt ctggttacgg aagtgcaata 300

aatctagaaa atggtaaagt aaccattacc aataccaaag attctgataa cccaacacca 360

ttg 363

<210> 136
<211> 315
<212> DNA
<213> Streptococcus agalactiae

<400> 136
aacccaactg aaccaaaagt tgaaactcat ggtaagaaat ttgtcaaaac taatgaacaa 60

ggtgaccgtt tggctggtgc acaattcgtt gtgaaaaact cagcaggtaa ataccttgct 120

cttaaagcag atcaatcaga aggtcaaaaa actttagctg ctaagaaaat agctttagat 180

gaagctatcg ctgcttataa caagttgtct gcaacagacc aaaaaggtga aaaaggaatt 240

actgcaaaag aacttatcaa aactaaacaa gcagattacg atgcagcctt cattgaggct 300

cgtacagctt atgag 315

<210> 137
<211> 348
<212> DNA
<213> Streptococcus agalactiae

<400> 137
ggcaacaacc caacaattga aaatgaacca aaagaaggta ttccagttga taagaaaatc 60

actgttaaca aaacatgggc agtagatggc aatgaagtga ataaagcaga tgaaacagtt 120

gatgctgtct tcaccttgca agttaaagat ggtgacaaat gggtgaatgt tgattcagct 180

aaagcaacag ctgcaactag cttcaaacac acttttgaaa acttggataa tgctaaaact 240

taccgcgtta tcgaacgtgt tagcggctac gctccagaat acgtctcatt tgtaaatggc 300

gttgtaacca tcaagaacaa caaagactca aatgagccaa ctccaatc 348

<210> 138
<211> 321
<212> DNA
<213> Streptococcus agalactiae

<400> 138
aacccatcag aaccaaaagt ggtgacttat ggacgtaaat ttgtgaaaac aaataaagat 60

ggaaaagaac gcttggcagg agctaccttc cttgttaaga aagatggcaa gtacttggca 120

cgtaaatcag gtgttgcaac agatgcagaa aaagctgctg tagattcaac taaatcagca 180

ttggatgctg ctgttaaagc ttacaatgat ttgactaaag aaaaacaaga aggtcaagat 240

ggtaaatcag cattggctac cgttagtgaa aaacaaaaag cttacaatga tgcctttgtt 300

aaagctaact actcatacga a 321

<210> 139
<211> 348
<212> DNA
<213> Streptococcus agalactiae

<400> 139
ggtaataacc caacggaaga aagtgaacca caagaaggta ctccagctaa ccaagaaatt 60

aaagtcatta aagactgggc agtagatggt acaattactg atgctaatgt tgcagttaaa 120

gctatcttta ccttgcaaga aaaacaaacg gatggtacat gggtgaacgt tgcttcacac 180

gaagcaacaa aaccatcacg ctttgaacat actttcacag gtttggataa tgctaaaact 240

taccgcgttg tcgaacgtgt tagcggctac actccagaat acgtatcatt taaaaatggt 300

gttgtgacta tcaagaacaa caaaaactca aatgatccaa ctccaatc 348

<210> 140
<211> 321
<212> DNA
<213> Streptococcus agalactiae

<400> 140
aacccatcag aaccaaaagt ggtgacttat ggacgtaaat ttgtgaaaac aaatcaagct 60

aacactgaac gcttggcagg agctaccttc ctcgttaaga aagaaggcaa atacttggca 120

cgtaaagcag gtgcagcaac tgctgaagca aaggcagctg taaaaactgc taaactagca 180

ttggatgaag ctgttaaagc ttataacgac ttgactaaag aaaaacaaga aggccaagaa 240

ggtaaaacag cattggctac tgttgatcaa aaacaaaaag cttacaatga cgcttttgtt 300

aaagctaact actcatatga a 321

<210> 141
<211> 369
<212> DNA
<213> Streptococcus agalactiae

<400> 141
ggtaacaaac caggtaaaaa agtaaaagaa atcccagtaa caccgtcaaa tggcgaaatc 60

actgttagca aaacttggga caaaggttca gatttagaga atgcgaatgt tgtttatacc 120

cttaaagatg gtggaacagc tgttgcctca gtttcattga caaaaacaac accaaatggc 180

gaaatcaact taggtaatgg tattaaattt acagttactg gagcgtttgc tggtaaattc 240

agtggtctga ctgatagtaa aacatacatg atctcagaac gtatcgctgg ttatggtaat 300

acaatcacta ctggtgctgg tagtgcagct atcaccaata ctccagattc agacaaccca 360

acaccactt 369

<210> 142
<211> 321
<212> DNA
<213> Streptococcus agalactiae

<400> 142
aatccaactg aaccaaaagt tgtgacacac ggtaaaaaat tcgtcaaaac aagttcgact 60

gaaacagaac gcttgcaagg tgcacagttc gttgttaaag attcagctgg taaatacctt 120

gcattgaaat catctgcgac aatatcagct caaacaacag cttacacaaa tgctaaaact 180

gctcttgacg ctaaaatcgc agcttacaac aaactttcag cagacgatca aaaaggtact 240

aaaggtgaaa cagctaaagc agaaatcaaa actgctcaag acgcttacaa tgcagccttc 300

atcgtagctc gtacagctta c 321

<210> 143
<211> 369
<212> DNA
<213> Streptococcus agalactiae

<400> 143
ggtaataaac ctggtacaga tttatcagaa caacctgtga cacctgaaga tggtgaagtt 60

aaagtcacta aaacatgggc agcaggtgct aataaagcag acgctaaagt tgtctacaca 120

cttaaaaatg ctactaaaca agtcgtagct tctgtcgcat tgaccgcagc tgatacaaaa 180

ggtacgatta atcttggtaa aggcatgacc tttgaaatca caggagcttt ctcaggtaca 240

ttcaaaggcc ttcaaaataa agcttacact gtttctgaac gtgttgcagg ttatactaat 300

gctattaatg ttactggtaa tgctgttgct atcaccaata caccagacag tgacaatcca 360

acgccactt 369

<210> 144
<211> 321
<212> DNA
<213> Streptococcus agalactiae

<400> 144
aacccaactc aaccaaaagt tgaaacacat ggtaagaaat ttgtcaaagt tggcgatgca 60

gatgcccgct tagctggtgc acaattcgtt gtgaaaaatt cagctggtaa attccttgct 120

cttaaagaag atgcagctgt atcaggagct caaactgaat tggcaactgc taaaacagac 180

ttggataatg ccatcaaagc ttacaacggt ttgacaaaag cgcagcaaga aggtgctgat 240

ggtacatcag caaaagaact tatcaacact aaacagtcag cttacgacgc agccttcatc 300

aaagcacgta cagcttatac a 321

<210> 145
<211> 348
<212> DNA
<213> Streptococcus agalactiae

<400> 145
ggtaacaacc caacaactga aaacgaacca caaactggta atccagttaa caaagaaatc 60

acagttcgaa agacttgggc agtggatggt aatgaagtga ataagggaga tgaaaaagtt 120

gacgctgtct tcacgttgca agttaaagat agtgacaaat gggtgaatgt cgattcagca 180

acagcaacag cagcaactga cttcaaatac actttcaaaa acttggataa tgccaaaact 240

taccgtgttg tagaacgtgt tagcggctac gctccagcct acgtttcatt tgtgggtgga 300

gttgtgacta ttaagaataa caaaaactca aatgacccaa ctccaatc 348

<210> 146
<211> 324
<212> DNA
<213> Streptococcus agalactiae

<400> 146
aatccatcag aaccaaaagt tgtgacttat ggacgtaaat ttgtgaaaac aaatcaagat 60

ggctctgaac gtctagcagg agctactttc cttgttaaga actcacaaag tcaatacttg 120

gcacgtaaat caggtgttgc aactaatgaa gctcacaaag cagtaacaga tgctaaagta 180

caactggatg aagctgttaa agcttataac aaattgacta aagaacaaca agaaagtcaa 240

gatggtaaag cagcattgaa tcttattgat gaaaaacaaa cagcttacaa tgaagctttt 300

gctaaagcaa actactcata tgaa 324

<210> 147
<211> 348
<212> DNA
<213> Streptococcus agalactiae

<400> 147
ggtaataacc caacggaaga aagtgaacca caagaaggta ctccagctaa ccaagaaatt 60

aaagtcatta aagactgggc agtagatggt acaattactg atgttaatgt tgcagttaaa 120

gctatcttta ccttgcaaga aaaacaaacg gatggtacat gggtgaacgt tgcttcacac 180

gaagcaacaa aaccatcacg ctttgaacat actttcacag gtttggataa tactaaaact 240

taccgcgttg tcgaacgtgt tagcggctac actccagaat atgtatcatt taaaaatggt 300

gttgtgacta tcaagaacaa caaaaactca aatgatccaa ctccaatc 348

<210> 148
<211> 321
<212> DNA
<213> Streptococcus agalactiae

<400> 148
aacccatcag aaccaaaagt ggtgacttat ggacgtaaat ttgtgaaaac aaatcaagct 60

aacactgaac gcttggcagg agctaccttc cttgttaaga aagaaggaaa atacttggca 120

cgtaaagcag gtgcagcaac tgctgaagca aaggcagctg taaaaactgc taaactagca 180

ttggatgaag ctgttaaagc ttataacgac ttgactaaag aaaaacaaga aggccaagaa 240

ggtaaaacag cattggctac tgttgatcaa aaacaaaaag cttacaatga cgcttttgtt 300

aaagctaact actcatatga a 321

<210> 149
<211> 924
<212> DNA
<213> Streptococcus agalactiae

<400> 149

ggtaacaaac caggtaaaga cttgactgaa cttcctgtta caccttcaaa gggtgaagta 60

acagttgcta aaacttggtc tgacggaatt gcacctgatg gtgtaaacgt tgtttacaca 120

ttgaaagata aagataaaac tgttgcttca gtatcattga caaaaacatc taaaggtaca 180

atcgaccttg gaaatggtat caaatttgaa gtatctggta acttctcggg taaattcact 240

ggtctagaaa acaaatcata catgatctca gaacgtgttt ctggttacgg aagtgcaata 300

aatctagaaa atggtaaagt aaccattacc aataccaaag attctgataa cccaacacca 360

ttgaacccaa ctgaaccaaa agttgaaact catggtaaga aatttgtcaa aactaatgaa 420

caaggtgacc gtttggctgg tgcacaattc gttgtgaaaa actcagcagg taaatacctt 480

gctcttaaag cagatcaatc agaaggtcaa aaaactttag ctgctaagaa aatagcttta 540

gatgaagcta tcgctgctta taacaagttg tctgcaacag accaaaaagg tgaaaaagga 600

attactgcaa aagaacttat caaaactaaa caagcagatt acgatgcagc cttcattgag 660

gctcgtacag cttatgagtg gataacagat aaggctagag ccattaccta cacttcaaac 720

gatcaaggtc aatttgaagt tacaggtctt gcagacggta cttacaacct tgaagaaaca 780

cttgctccag caggatttgc taagttggca ggtaatatta agtttgtagt taatcaaggg 840

tcatacataa caggtggtaa cattgactac gttgctaaca gcaaccaaaa agatgcgaca 900

cgtgtagaaa ataaaaaggt aaca 924

<210> 150
<211> 678
<212> DNA
<213> Streptococcus agalactiae

<400> 150
ggtaacaaac caggtaaaga cttgactgaa cttcctgtta caccttcaaa gggtgaagta 60

acagttgcta aaacttggtc tgacggaatt gcacctgatg gtgtaaacgt tgtttacaca 120

ttgaaagata aagataaaac tgttgcttca gtatcattga caaaaacatc taaaggtaca 180

atcgaccttg gaaatggtat caaatttgaa gtatctggta acttctcggg taaattcact 240

ggtctagaaa acaaatcata catgatctca gaacgtgttt ctggttacgg aagtgcaata 300

aatctagaaa atggtaaagt aaccattacc aataccaaag attctgataa cccaacacca 360

ttgaacccaa ctgaaccaaa agttgaaact catggtaaga aatttgtcaa aactaatgaa 420

caaggtgacc gtttggctgg tgcacaattc gttgtgaaaa actcagcagg taaatacctt 480

gctcttaaag cagatcaatc agaaggtcaa aaaactttag ctgctaagaa aatagcttta 540

gatgaagcta tcgctgctta taacaagttg tctgcaacag accaaaaagg tgaaaaagga 600

attactgcaa aagaacttat caaaactaaa caagcagatt acgatgcagc cttcattgag 660

gctcgtacag cttatgag 678

<210> 151
<211> 1506
<212> DNA
<213> Streptococcus agalactiae

<400> 151
aatggttccc tcctggctgc ttcaaaagcg gttccagtta acatcactct tccattggta 60

aatgaagatg gtgttgttgc tgatgcccat gtttatccaa agaacactga agaaaaacca 120

gaaattgata aaaactttgc taaaacaaac gatttgacag cattgacaga tgttaataga 180

cttttgacag ctggcgcaaa ttatggtaat tatgcacgtg acaaagcaac tgctactgct 240

gaaatcggta aagttgttcc ttatgaagtt aaaacaaaaa ttcacaaagg ttctaaatac 300

gaaaacttgg tttggacaga tataatgtca aatggtttga caatgggttc aactgttagc 360

cttaaagctt caggaactac agaaactttt gctaaggata cagactatga acttagcatt 420

gatgcccgtg gtttcacatt aaaattcaca gctgatggat tgggcaaatt ggaaaaagca 480

gctaaaacag ctgatattga atttacattg acttatagtg ctactgttaa tggtcaagca 540

attattgata atccagaatc caatgatatc aaattgtcgt atggtaacaa accaggtaaa 600

gacttgactg aacttcctgt tacaccttca aagggtgaag taacagttgc taaaacttgg 660

tctgacggaa ttgcacctga tggtgtaaac gttgtttaca cattgaaaga taaagataaa 720

actgttgctt cagtatcatt gacaaaaaca tctaaaggta caatcgacct tggaaatggt 780

atcaaatttg aagtatctgg taacttctcg ggtaaattca ctggtctaga aaacaaatca 840

tacatgatct cagaacgtgt ttctggttac ggaagtgcaa taaatctaga aaatggtaaa 900

gtaaccatta ccaataccaa agattctgat aacccaacac cattgaaccc aactgaacca 960

aaagttgaaa ctcatggtaa gaaatttgtc aaaactaatg aacaaggtga ccgtttggct 1020

ggtgcacaat tcgttgtgaa aaactcagca ggtaaatacc ttgctcttaa agcagatcaa 1080

tcagaaggtc aaaaaacttt agctgctaag aaaatagctt tagatgaagc tatcgctgct 1140

tataacaagt tgtctgcaac agaccaaaaa ggtgaaaaag gaattactgc aaaagaactt 1200

atcaaaacta aacaagcaga ttacgatgca gccttcattg aggctcgtac agcttatgag 1260

tggataacag ataaggctag agccattacc tacacttcaa acgatcaagg tcaatttgaa 1320

gttacaggtc ttgcagacgg tacttacaac cttgaagaaa cacttgctcc agcaggattt 1380

gctaagttgg caggtaatat taagtttgta gttaatcaag ggtcatacat aacaggtggt 1440

aacattgact acgttgctaa cagcaaccaa aaagatgcga cacgtgtaga aaataaaaag 1500

gtaaca 1506

<210> 152
<211> 1260
<212> DNA
<213> Streptococcus agalactiae

<400> 152
aatggttccc tcctggctgc ttcaaaagcg gttccagtta acatcactct tccattggta 60

aatgaagatg gtgttgttgc tgatgcccat gtttatccaa agaacactga agaaaaacca 120

gaaattgata aaaactttgc taaaacaaac gatttgacag cattgacaga tgttaataga 180

cttttgacag ctggcgcaaa ttatggtaat tatgcacgtg acaaagcaac tgctactgct 240

gaaatcggta aagttgttcc ttatgaagtt aaaacaaaaa ttcacaaagg ttctaaatac 300

gaaaacttgg tttggacaga tataatgtca aatggtttga caatgggttc aactgttagc 360

cttaaagctt caggaactac agaaactttt gctaaggata cagactatga acttagcatt 420

gatgcccgtg gtttcacatt aaaattcaca gctgatggat tgggcaaatt ggaaaaagca 480

gctaaaacag ctgatattga atttacattg acttatagtg ctactgttaa tggtcaagca 540

attattgata atccagaatc caatgatatc aaattgtcgt atggtaacaa accaggtaaa 600

gacttgactg aacttcctgt tacaccttca aagggtgaag taacagttgc taaaacttgg 660

tctgacggaa ttgcacctga tggtgtaaac gttgtttaca cattgaaaga taaagataaa 720

actgttgctt cagtatcatt gacaaaaaca tctaaaggta caatcgacct tggaaatggt 780

atcaaatttg aagtatctgg taacttctcg ggtaaattca ctggtctaga aaacaaatca 840

tacatgatct cagaacgtgt ttctggttac ggaagtgcaa taaatctaga aaatggtaaa 900

gtaaccatta ccaataccaa agattctgat aacccaacac cattgaaccc aactgaacca 960

aaagttgaaa ctcatggtaa gaaatttgtc aaaactaatg aacaaggtga ccgtttggct 1020

ggtgcacaat tcgttgtgaa aaactcagca ggtaaatacc ttgctcttaa agcagatcaa 1080

tcagaaggtc aaaaaacttt agctgctaag aaaatagctt tagatgaagc tatcgctgct 1140

tataacaagt tgtctgcaac agaccaaaaa ggtgaaaaag gaattactgc aaaagaactt 1200

atcaaaacta aacaagcaga ttacgatgca gccttcattg aggctcgtac agcttatgag 1260

<210> 153
<211> 927
<212> DNA
<213> Streptococcus agalactiae

<400> 153
ggcaacaacc caacaattga aaatgaacca aaagaaggta ttccagttga taagaaaatc 60

actgttaaca aaacatgggc agtagatggc aatgaagtga ataaagcaga tgaaacagtt 120

gatgctgtct tcaccttgca agttaaagat ggtgacaaat gggtgaatgt tgattcagct 180

aaagcaacag ctgcaactag cttcaaacac acttttgaaa acttggataa tgctaaaact 240

taccgcgtta tcgaacgtgt tagcggctac gctccagaat acgtctcatt tgtaaatggc 300

gttgtaacca tcaagaacaa caaagactca aatgagccaa ctccaatcaa cccatcagaa 360

ccaaaagtgg tgacttatgg acgtaaattt gtgaaaacaa ataaagatgg aaaagaacgc 420

ttggcaggag ctaccttcct tgttaagaaa gatggcaagt acttggcacg taaatcaggt 480

gttgcaacag atgcagaaaa agctgctgta gattcaacta aatcagcatt ggatgctgct 540

gttaaagctt acaatgattt gactaaagaa aaacaagaag gtcaagatgg taaatcagca 600

ttggctaccg ttagtgaaaa acaaaaagct tacaatgatg cctttgttaa agctaactac 660

tcatacgaat gggttgaaga taaaaatgct aagaatgttg ttaaattgat ttctaacgat 720

aaaggtcaat ttgaaattac tggcttgact gaaggtcaat actcattgga agaaacacaa 780

gcaccaactg gttatgctaa attatcaggt gatgtttcgt ttaatgttaa tgctacttca 840

tacagtaaag gttctgctca agatattgag tatacccaag gttctaaaac taaagatgca 900

caacaagtta tcaataagaa ggttact 927

<210> 154
<211> 669
<212> DNA
<213> Streptococcus agalactiae

<400> 154
ggcaacaacc caacaattga aaatgaacca aaagaaggta ttccagttga taagaaaatc 60

actgttaaca aaacatgggc agtagatggc aatgaagtga ataaagcaga tgaaacagtt 120

gatgctgtct tcaccttgca agttaaagat ggtgacaaat gggtgaatgt tgattcagct 180

aaagcaacag ctgcaactag cttcaaacac acttttgaaa acttggataa tgctaaaact 240

taccgcgtta tcgaacgtgt tagcggctac gctccagaat acgtctcatt tgtaaatggc 300

gttgtaacca tcaagaacaa caaagactca aatgagccaa ctccaatcaa cccatcagaa 360

ccaaaagtgg tgacttatgg acgtaaattt gtgaaaacaa ataaagatgg aaaagaacgc 420

ttggcaggag ctaccttcct tgttaagaaa gatggcaagt acttggcacg taaatcaggt 480

gttgcaacag atgcagaaaa agctgctgta gattcaacta aatcagcatt ggatgctgct 540

gttaaagctt acaatgattt gactaaagaa aaacaagaag gtcaagatgg taaatcagca 600

ttggctaccg ttagtgaaaa acaaaaagct tacaatgatg cctttgttaa agctaactac 660

tcatacgaa 669

<210> 155
<211> 1455
<212> DNA
<213> Streptococcus agalactiae

<400> 155
gatggttcta tcttggctga ttcaaaagca gttccagtta aaatcactct tccattggta 60

aacgacaatg gtgttgttaa agacgctcac gtttatccaa agaacactga aacaaaacca 120

caagtagata agaacttcgc agataaagaa cttgattatg cgaacaacaa aaaagacaaa 180

gggactgtct cagcatctgt tggtgatgtt aaaaaatacc atgttggaac aaaaatcctt 240

aaaggttcag actataagaa attaatctgg accgatagca tgaccaaagg tttgactttc 300

aacaacgata ttgctgtaac attggatggt gcaactcttg atgctacaaa ttacaaactt 360

gtagcagatg accaaggttt ccgccttgtc ttgactgaca aaggtcttga agcagtggca 420

aaagccgcaa aaacaaaaga tgttgaaatc aagatcactt actcagctac tttgaacggt 480

tctgctgtcg ttgaagttct agaaaccaat gatgttaaat tggactacgg caacaaccca 540

acaattgaaa atgaaccaaa agaaggtatt ccagttgata agaaaatcac tgttaacaaa 600

acatgggcag tagatggcaa tgaagtgaat aaagcagatg aaacagttga tgctgtcttc 660

accttgcaag ttaaagatgg tgacaaatgg gtgaatgttg attcagctaa agcaacagct 720

gcaactagct tcaaacacac ttttgaaaac ttggataatg ctaaaactta ccgcgttatc 780

gaacgtgtta gcggctacgc tccagaatac gtctcatttg taaatggcgt tgtaaccatc 840

aagaacaaca aagactcaaa tgagccaact ccaatcaacc catcagaacc aaaagtggtg 900

acttatggac gtaaatttgt gaaaacaaat aaagatggaa aagaacgctt ggcaggagct 960

accttccttg ttaagaaaga tggcaagtac ttggcacgta aatcaggtgt tgcaacagat 1020

gcagaaaaag ctgctgtaga ttcaactaaa tcagcattgg atgctgctgt taaagcttac 1080

aatgatttga ctaaagaaaa acaagaaggt caagatggta aatcagcatt ggctaccgtt 1140

agtgaaaaac aaaaagctta caatgatgcc tttgttaaag ctaactactc atacgaatgg 1200

gttgaagata aaaatgctaa gaatgttgtt aaattgattt ctaacgataa aggtcaattt 1260

gaaattactg gcttgactga aggtcaatac tcattggaag aaacacaagc accaactggt 1320

tatgctaaat tatcaggtga tgtttcgttt aatgttaatg ctacttcata cagtaaaggt 1380

tctgctcaag atattgagta tacccaaggt tctaaaacta aagatgcaca acaagttatc 1440

aataagaagg ttact 1455

<210> 156
<211> 1197
<212> DNA
<213> Streptococcus agalactiae

<400> 156
gatggttcta tcttggctga ttcaaaagca gttccagtta aaatcactct tccattggta 60

aacgacaatg gtgttgttaa agacgctcac gtttatccaa agaacactga aacaaaacca 120

caagtagata agaacttcgc agataaagaa cttgattatg cgaacaacaa aaaagacaaa 180

gggactgtct cagcatctgt tggtgatgtt aaaaaatacc atgttggaac aaaaatcctt 240

aaaggttcag actataagaa attaatctgg accgatagca tgaccaaagg tttgactttc 300

aacaacgata ttgctgtaac attggatggt gcaactcttg atgctacaaa ttacaaactt 360

gtagcagatg accaaggttt ccgccttgtc ttgactgaca aaggtcttga agcagtggca 420

aaagccgcaa aaacaaaaga tgttgaaatc aagatcactt actcagctac tttgaacggt 480

tctgctgtcg ttgaagttct agaaaccaat gatgttaaat tggactacgg caacaaccca 540

acaattgaaa atgaaccaaa agaaggtatt ccagttgata agaaaatcac tgttaacaaa 600

acatgggcag tagatggcaa tgaagtgaat aaagcagatg aaacagttga tgctgtcttc 660

accttgcaag ttaaagatgg tgacaaatgg gtgaatgttg attcagctaa agcaacagct 720

gcaactagct tcaaacacac ttttgaaaac ttggataatg ctaaaactta ccgcgttatc 780

gaacgtgtta gcggctacgc tccagaatac gtctcatttg taaatggcgt tgtaaccatc 840

aagaacaaca aagactcaaa tgagccaact ccaatcaacc catcagaacc aaaagtggtg 900

acttatggac gtaaatttgt gaaaacaaat aaagatggaa aagaacgctt ggcaggagct 960

accttccttg ttaagaaaga tggcaagtac ttggcacgta aatcaggtgt tgcaacagat 1020

gcagaaaaag ctgctgtaga ttcaactaaa tcagcattgg atgctgctgt taaagcttac 1080

aatgatttga ctaaagaaaa acaagaaggt caagatggta aatcagcatt ggctaccgtt 1140

agtgaaaaac aaaaagctta caatgatgcc tttgttaaag ctaactactc atacgaa 1197

<210> 157
<211> 927
<212> DNA
<213> Streptococcus agalactiae

<400> 157
ggtaataacc caacggaaga aagtgaacca caagaaggta ctccagctaa ccaagaaatt 60

aaagtcatta aagactgggc agtagatggt acaattactg atgctaatgt tgcagttaaa 120

gctatcttta ccttgcaaga aaaacaaacg gatggtacat gggtgaacgt tgcttcacac 180

gaagcaacaa aaccatcacg ctttgaacat actttcacag gtttggataa tgctaaaact 240

taccgcgttg tcgaacgtgt tagcggctac actccagaat acgtatcatt taaaaatggt 300

gttgtgacta tcaagaacaa caaaaactca aatgatccaa ctccaatcaa cccatcagaa 360

ccaaaagtgg tgacttatgg acgtaaattt gtgaaaacaa atcaagctaa cactgaacgc 420

ttggcaggag ctaccttcct cgttaagaaa gaaggcaaat acttggcacg taaagcaggt 480

gcagcaactg ctgaagcaaa ggcagctgta aaaactgcta aactagcatt ggatgaagct 540

gttaaagctt ataacgactt gactaaagaa aaacaagaag gccaagaagg taaaacagca 600

ttggctactg ttgatcaaaa acaaaaagct tacaatgacg cttttgttaa agctaactac 660

tcatatgaat gggttgcaga taaaaaggct gataatgttg ttaaattgat ctctaacgcc 720

ggtggtcaat ttgaaattac tggtttggat aaaggcactt atggcttgga agaaactcaa 780

gcaccagcag gttatgcgac attgtcaggt gatgtaaact ttgaagtaac tgccacatca 840

tatagcaaag gggctacaac tgacatcgca tatgataaag gctctgtaaa aaaagatgcc 900

caacaagttc aaaacaaaaa agtaacc 927

<210> 158
<211> 669
<212> DNA
<213> Streptococcus agalactiae

<400> 158
ggtaataacc caacggaaga aagtgaacca caagaaggta ctccagctaa ccaagaaatt 60

aaagtcatta aagactgggc agtagatggt acaattactg atgctaatgt tgcagttaaa 120

gctatcttta ccttgcaaga aaaacaaacg gatggtacat gggtgaacgt tgcttcacac 180

gaagcaacaa aaccatcacg ctttgaacat actttcacag gtttggataa tgctaaaact 240

taccgcgttg tcgaacgtgt tagcggctac actccagaat acgtatcatt taaaaatggt 300

gttgtgacta tcaagaacaa caaaaactca aatgatccaa ctccaatcaa cccatcagaa 360

ccaaaagtgg tgacttatgg acgtaaattt gtgaaaacaa atcaagctaa cactgaacgc 420

ttggcaggag ctaccttcct cgttaagaaa gaaggcaaat acttggcacg taaagcaggt 480

gcagcaactg ctgaagcaaa ggcagctgta aaaactgcta aactagcatt ggatgaagct 540

gttaaagctt ataacgactt gactaaagaa aaacaagaag gccaagaagg taaaacagca 600

ttggctactg ttgatcaaaa acaaaaagct tacaatgacg cttttgttaa agctaactac 660

tcatatgaa 669

<210> 159
<211> 1455
<212> DNA
<213> Streptococcus agalactiae

<400> 159
aacggttcta tcttggctga ttcaaaagca gttccagtta aaatcactct gccattggta 60

aacaaccaag gtgttgttaa agatgctcac atttatccaa agaatactga aacaaaacca 120

caagtagata agaactttgc agataaagat cttgattata ctgacaaccg aaaagacaaa 180

ggtgttgtct cagcgacagt tggtgacaaa aaagaataca tagttggaac aaaaattctt 240

aaaggctcag actataagaa actggtttgg actgatagca tgactaaagg tttgacgttc 300

aacaacaacg ttaaagtaac attggatggt gaagattttc ctgttttaaa ctacaaactc 360

gtaacagatg accaaggttt ccgtcttgcc ttgaatgcaa caggtcttgc agcagtagca 420

gcagctgcaa aagacaaaga tgttgaaatc aagatcactt actcagctac ggtgaacggc 480

tccactactg ttgaaattcc agaaaccaat gatgttaaat tggactatgg taataaccca 540

acggaagaaa gtgaaccaca agaaggtact ccagctaacc aagaaattaa agtcattaaa 600

gactgggcag tagatggtac aattactgat gctaatgttg cagttaaagc tatctttacc 660

ttgcaagaaa aacaaacgga tggtacatgg gtgaacgttg cttcacacga agcaacaaaa 720

ccatcacgct ttgaacatac tttcacaggt ttggataatg ctaaaactta ccgcgttgtc 780

gaacgtgtta gcggctacac tccagaatac gtatcattta aaaatggtgt tgtgactatc 840

aagaacaaca aaaactcaaa tgatccaact ccaatcaacc catcagaacc aaaagtggtg 900

acttatggac gtaaatttgt gaaaacaaat caagctaaca ctgaacgctt ggcaggagct 960

accttcctcg ttaagaaaga aggcaaatac ttggcacgta aagcaggtgc agcaactgct 1020

gaagcaaagg cagctgtaaa aactgctaaa ctagcattgg atgaagctgt taaagcttat 1080

aacgacttga ctaaagaaaa acaagaaggc caagaaggta aaacagcatt ggctactgtt 1140

gatcaaaaac aaaaagctta caatgacgct tttgttaaag ctaactactc atatgaatgg 1200

gttgcagata aaaaggctga taatgttgtt aaattgatct ctaacgccgg tggtcaattt 1260

gaaattactg gtttggataa aggcacttat ggcttggaag aaactcaagc accagcaggt 1320

tatgcgacat tgtcaggtga tgtaaacttt gaagtaactg ccacatcata tagcaaaggg 1380

gctacaactg acatcgcata tgataaaggc tctgtaaaaa aagatgccca acaagttcaa 1440

aacaaaaaag taacc 1455

<210> 160
<211> 1197
<212> DNA

<213> Streptococcus agalactiae

<400> 160
aacggttcta tcttggctga ttcaaaagca gttccagtta aaatcactct gccattggta 60

aacaaccaag gtgttgttaa agatgctcac atttatccaa agaatactga aacaaaacca 120

caagtagata agaactttgc agataaagat cttgattata ctgacaaccg aaaagacaaa 180

ggtgttgtct cagcgacagt tggtgacaaa aaagaataca tagttggaac aaaaattctt 240

aaaggctcag actataagaa actggtttgg actgatagca tgactaaagg tttgacgttc 300

aacaacaacg ttaaagtaac attggatggt gaagattttc ctgttttaaa ctacaaactc 360

gtaacagatg accaaggttt ccgtcttgcc ttgaatgcaa caggtcttgc agcagtagca 420

gcagctgcaa aagacaaaga tgttgaaatc aagatcactt actcagctac ggtgaacggc 480

tccactactg ttgaaattcc agaaaccaat gatgttaaat tggactatgg taataaccca 540

acggaagaaa gtgaaccaca agaaggtact ccagctaacc aagaaattaa agtcattaaa 600

gactgggcag tagatggtac aattactgat gctaatgttg cagttaaagc tatctttacc 660

ttgcaagaaa aacaaacgga tggtacatgg gtgaacgttg cttcacacga agcaacaaaa 720

ccatcacgct ttgaacatac tttcacaggt ttggataatg ctaaaactta ccgcgttgtc 780

gaacgtgtta gcggctacac tccagaatac gtatcattta aaaatggtgt tgtgactatc 840

aagaacaaca aaaactcaaa tgatccaact ccaatcaacc catcagaacc aaaagtggtg 900

acttatggac gtaaatttgt gaaaacaaat caagctaaca ctgaacgctt ggcaggagct 960

accttcctcg ttaagaaaga aggcaaatac ttggcacgta aagcaggtgc agcaactgct 1020

gaagcaaagg cagctgtaaa aactgctaaa ctagcattgg atgaagctgt taaagcttat 1080

aacgacttga ctaaagaaaa acaagaaggc caagaaggta aaacagcatt ggctactgtt 1140

gatcaaaaac aaaaagctta caatgacgct tttgttaaag ctaactactc atatgaa 1197

<210> 161
<211> 948
<212> DNA
<213> Streptococcus agalactiae

<400> 161
ggtaacaaac caggtaaaaa agtaaaagaa atcccagtaa caccgtcaaa tggcgaaatc 60

actgttagca aaacttggga caaaggttca gatttagaga atgcgaatgt tgtttatacc 120

cttaaagatg gtggaacagc tgttgcctca gtttcattga caaaaacaac accaaatggc 180

gaaatcaact taggtaatgg tattaaattt acagttactg gagcgtttgc tggtaaattc 240

agtggtctga ctgatagtaa aacatacatg atctcagaac gtatcgctgg ttatggtaat 300

acaatcacta ctggtgctgg tagtgcagct atcaccaata ctccagattc agacaaccca 360

acaccactta atccaactga accaaaagtt gtgacacacg gtaaaaaatt cgtcaaaaca 420

agttcgactg aaacagaacg cttgcaaggt gcacagttcg ttgttaaaga ttcagctggt 480

aaataccttg cattgaaatc atctgcgaca atatcagctc aaacaacagc ttacacaaat 540

gctaaaactg ctcttgacgc taaaatcgca gcttacaaca aactttcagc agacgatcaa 600

aaaggtacta aaggtgaaac agctaaagca gaaatcaaaa ctgctcaaga cgcttacaat 660

gcagccttca tcgtagctcg tacagcttac gagtgggtaa ctaataaaga agatgctaac 720

gttgttaaag tgacttcaaa cgctgacggt caatttgaag ttagcggtct tgcaactggt 780

gattataaac ttgaagaaac acaagctcca gctggttacg ctaaattagc aggtgatgtt 840

gatttcaaag ttggaaacag ctcaaaagca gacgactcag gtaacattga ttacactgct 900

agcagcaata aaaaagacgc tcaacgcata gaaaacaaaa aagtgact 948

<210> 162
<211> 693
<212> DNA
<213> Streptococcus agalactiae

<400> 162
ggtaacaaac caggtaaaaa agtaaaagaa atcccagtaa caccgtcaaa tggcgaaatc 60

actgttagca aaacttggga caaaggttca gatttagaga atgcgaatgt tgtttatacc 120

cttaaagatg gtggaacagc tgttgcctca gtttcattga caaaaacaac accaaatggc 180

gaaatcaact taggtaatgg tattaaattt acagttactg gagcgtttgc tggtaaattc 240

agtggtctga ctgatagtaa aacatacatg atctcagaac gtatcgctgg ttatggtaat 300

acaatcacta ctggtgctgg tagtgcagct atcaccaata ctccagattc agacaaccca 360

acaccactta atccaactga accaaaagtt gtgacacacg gtaaaaaatt cgtcaaaaca 420

agttcgactg aaacagaacg cttgcaaggt gcacagttcg ttgttaaaga ttcagctggt 480

aaataccttg cattgaaatc atctgcgaca atatcagctc aaacaacagc ttacacaaat 540

gctaaaactg ctcttgacgc taaaatcgca gcttacaaca aactttcagc agacgatcaa 600

aaaggtacta aaggtgaaac agctaaagca gaaatcaaaa ctgctcaaga cgcttacaat 660

gcagccttca tcgtagctcg tacagcttac gag 693

<210> 163
<211> 1521
<212> DNA
<213> Streptococcus agalactiae

<400> 163
ggtgacaaag ttcttgctga ctcaaaagct gtcccagtga aaatcactct tcctttgtat 60

aacgaagaag gaattgtcgt ggacgctgaa gtgtatccaa agaatacaga agaagcacca 120

caaatcgaca aaaactttgc taaagcaaat aaattgttga atgacagtga taattcagct 180

attgcaggtg gggcagacta cgacaaatat caggcagaaa aagcaaaagc tactgctgaa 240

atcggtcaag aaatccctta cgaagttaaa acaaaaatcc aaaaagggtc taaatacaaa 300

aaccttgctt gggtcgatac catgtcaaat ggtttgacaa tgggtaacac tgttaactta 360

gaagcatcgt caggctcttt tgtagaaggt acagattaca atgttgaacg tgatgaccgt 420

ggtttcactt tgaaattcac agatacaggt ttgactaagc tacaaaaaga agcggaaaca 480

caagctgttg aattcacatt gacatatagc gcaacagtta acggtgcggc tattgatgac 540

aagccagaaa gcaatgatat caaacttcaa tacggtaaca aaccaggtaa aaaagtaaaa 600

gaaatcccag taacaccgtc aaatggcgaa atcactgtta gcaaaacttg ggacaaaggt 660

tcagatttag agaatgcgaa tgttgtttat acccttaaag atggtggaac agctgttgcc 720

tcagtttcat tgacaaaaac aacaccaaat ggcgaaatca acttaggtaa tggtattaaa 780

tttacagtta ctggagcgtt tgctggtaaa ttcagtggtc tgactgatag taaaacatac 840

atgatctcag aacgtatcgc tggttatggt aatacaatca ctactggtgc tggtagtgca 900

gctatcacca atactccaga ttcagacaac ccaacaccac ttaatccaac tgaaccaaaa 960

gttgtgacac acggtaaaaa attcgtcaaa acaagttcga ctgaaacaga acgcttgcaa 1020

ggtgcacagt tcgttgttaa agattcagct ggtaaatacc ttgcattgaa atcatctgcg 1080

acaatatcag ctcaaacaac agcttacaca aatgctaaaa ctgctcttga cgctaaaatc 1140

gcagcttaca acaaactttc agcagacgat caaaaaggta ctaaaggtga aacagctaaa 1200

gcagaaatca aaactgctca agacgcttac aatgcagcct tcatcgtagc tcgtacagct 1260

tacgagtggg taactaataa agaagatgct aacgttgtta aagtgacttc aaacgctgac 1320

ggtcaatttg aagttagcgg tcttgcaact ggtgattata aacttgaaga aacacaagct 1380

ccagctggtt acgctaaatt agcaggtgat gttgatttca aagttggaaa cagctcaaaa 1440

gcagacgact caggtaacat tgattacact gctagcagca ataaaaaaga cgctcaacgc 1500

atagaaaaca aaaaagtgac t 1521

<210> 164
<211> 1263
<212> DNA
<213> Streptococcus agalactiae

<400> 164
ggtgacaaag ttcttgctga ctcaaaagct gtcccagtga aaatcactct tcctttgtat 60

aacgaagaag gaattgtcgt ggacgctgaa gtgtatccaa agaatacaga agaagcacca 120

caaatcgaca aaaactttgc taaagcaaat aaattgttga atgacagtga taattcagct 180

attgcaggtg gggcagacta cgacaaatat caggcagaaa aagcaaaagc tactgctgaa 240

atcggtcaag aaatccctta cgaagttaaa acaaaaatcc aaaaagggtc taaatacaaa 300

aaccttgctt gggtcgatac catgtcaaat ggtttgacaa tgggtaacac tgttaactta 360

gaagcatcgt caggctcttt tgtagaaggt acagattaca atgttgaacg tgatgaccgt 420

ggtttcactt tgaaattcac agatacaggt ttgactaagc tacaaaaaga agcggaaaca 480

caagctgttg aattcacatt gacatatagc gcaacagtta acggtgcggc tattgatgac 540

aagccagaaa gcaatgatat caaacttcaa tacggtaaca aaccaggtaa aaaagtaaaa 600

gaaatcccag taacaccgtc aaatggcgaa atcactgtta gcaaaacttg ggacaaaggt 660

tcagatttag agaatgcgaa tgttgtttat acccttaaag atggtggaac agctgttgcc 720

tcagtttcat tgacaaaaac aacaccaaat ggcgaaatca acttaggtaa tggtattaaa 780

tttacagtta ctggagcgtt tgctggtaaa ttcagtggtc tgactgatag taaaacatac 840

atgatctcag aacgtatcgc tggttatggt aatacaatca ctactggtgc tggtagtgca 900

gctatcacca atactccaga ttcagacaac ccaacaccac ttaatccaac tgaaccaaaa 960

gttgtgacac acggtaaaaa attcgtcaaa acaagttcga ctgaaacaga acgcttgcaa 1020

ggtgcacagt tcgttgttaa agattcagct ggtaaatacc ttgcattgaa atcatctgcg 1080

acaatatcag ctcaaacaac agcttacaca aatgctaaaa ctgctcttga cgctaaaatc 1140

gcagcttaca acaaactttc agcagacgat caaaaaggta ctaaaggtga aacagctaaa 1200

gcagaaatca aaactgctca agacgcttac aatgcagcct tcatcgtagc tcgtacagct 1260

tac 1263

<210> 165
<211> 933
<212> DNA
<213> Streptococcus agalactiae

<400> 165
ggtaataaac ctggtacaga tttatcagaa caacctgtga cacctgaaga tggtgaagtt 60

aaagtcacta aaacatgggc agcaggtgct aataaagcag acgctaaagt tgtctacaca 120

cttaaaaatg ctactaaaca agtcgtagct tctgtcgcat tgaccgcagc tgatacaaaa 180

ggtacgatta atcttggtaa aggcatgacc tttgaaatca caggagcttt ctcaggtaca 240

ttcaaaggcc ttcaaaataa agcttacact gtttctgaac gtgttgcagg ttatactaat 300

gctattaatg ttactggtaa tgctgttgct atcaccaata caccagacag tgacaatcca 360

acgccactta acccaactca accaaaagtt gaaacacatg gtaagaaatt tgtcaaagtt 420

ggcgatgcag atgcccgctt agctggtgca caattcgttg tgaaaaattc agctggtaaa 480

ttccttgctc ttaaagaaga tgcagctgta tcaggagctc aaactgaatt ggcaactgct 540

aaaacagact tggataatgc catcaaagct tacaacggtt tgacaaaagc gcagcaagaa 600

ggtgctgatg gtacatcagc aaaagaactt atcaacacta aacagtcagc ttacgacgca 660

gccttcatca aagcacgtac agcttataca tgggtagatg aaaaaactaa agctattacc 720

ttcacttcaa ataatcaagg tcaatttgaa gttactggtc ttgaagtagg ttcttacaaa 780

cttgaagaaa ctcttgcacc agcaggttat gctaaattgt caggcgacat tgagtttaca 840

gttggacacg attcttacac aagtggtgac atcaagtaca agacagatga tgctagcaac 900

aatgcacaaa aagttttcaa taaaaaagta acc 933

<210> 166
<211> 690
<212> DNA
<213> Streptococcus agalactiae

<400> 166
ggtaataaac ctggtacaga tttatcagaa caacctgtga cacctgaaga tggtgaagtt 60

aaagtcacta aaacatgggc agcaggtgct aataaagcag acgctaaagt tgtctacaca 120

cttaaaaatg ctactaaaca agtcgtagct tctgtcgcat tgaccgcagc tgatacaaaa 180

ggtacgatta atcttggtaa aggcatgacc tttgaaatca caggagcttt ctcaggtaca 240

ttcaaaggcc ttcaaaataa agcttacact gtttctgaac gtgttgcagg ttatactaat 300

gctattaatg ttactggtaa tgctgttgct atcaccaata caccagacag tgacaatcca 360

acgccactta acccaactca accaaaagtt gaaacacatg gtaagaaatt tgtcaaagtt 420

ggcgatgcag atgcccgctt agctggtgca caattcgttg tgaaaaattc agctggtaaa 480

ttccttgctc ttaaagaaga tgcagctgta tcaggagctc aaactgaatt ggcaactgct 540

aaaacagact tggataatgc catcaaagct tacaacggtt tgacaaaagc gcagcaagaa 600

ggtgctgatg gtacatcagc aaaagaactt atcaacacta aacagtcagc ttacgacgca 660

gccttcatca aagcacgtac agcttataca 690

<210> 167
<211> 1512
<212> DNA
<213> Streptococcus agalactiae

<400> 167
aatggttccc tcttagcagc ttcaaaagca gttccggtga aaatcactct tccattggta 60

agcaaagatg gtgttgttaa agatgcacac gtttatccaa agaacactga aacaaaacca 120

gaagtagaca agaacttcgc taaaacaaac gatttgacag ctctcaaaga cgctactctt 180

cttaaggctg gtgcagacta caaaaactat tcagcgacta aagctactgt aacagctgaa 240

atcggtaaag ttatccctta cgaagttaaa acaaaagttc ttaaaggttc taaatacgaa 300

aaactggttt ggaccgatac catgtcaaat ggtttgacaa tgggtgatga tgttaacctt 360

gcagtttcag ggactacaac aactttcatt aaagatatag attacactct tagcattgat 420

gaccgtggtt tcacattgaa attcaaagct actggattgg acaaattgga agaagcagct 480

aaagcatctg atgttgaatt tacattgact tataaagcta ctgttaatgg ccaagcaatt 540

attgacaacc cagaagtcaa tgacatcaaa ttggactatg gtaataaacc tggtacagat 600

ttatcagaac aacctgtgac acctgaagat ggtgaagtta aagtcactaa aacatgggca 660

gcaggtgcta ataaagcaga cgctaaagtt gtctacacac ttaaaaatgc tactaaacaa 720

gtcgtagctt ctgtcgcatt gaccgcagct gatacaaaag gtacgattaa tcttggtaaa 780

ggcatgacct ttgaaatcac aggagctttc tcaggtacat tcaaaggcct tcaaaataaa 840

gcttacactg tttctgaacg tgttgcaggt tatactaatg ctattaatgt tactggtaat 900

gctgttgcta tcaccaatac accagacagt gacaatccaa cgccacttaa cccaactcaa 960

ccaaaagttg aaacacatgg taagaaattt gtcaaagttg gcgatgcaga tgcccgctta 1020

gctggtgcac aattcgttgt gaaaaattca gctggtaaat tccttgctct taaagaagat 1080

gcagctgtat caggagctca aactgaattg gcaactgcta aaacagactt ggataatgcc 1140

atcaaagctt acaacggttt gacaaaagcg cagcaagaag gtgctgatgg tacatcagca 1200

aaagaactta tcaacactaa acagtcagct tacgacgcag ccttcatcaa agcacgtaca 1260

gcttatacat gggtagatga aaaaactaaa gctattacct tcacttcaaa taatcaaggt 1320

caatttgaag ttactggtct tgaagtaggt tcttacaaac ttgaagaaac tcttgcacca 1380

gcaggttatg ctaaattgtc aggcgacatt gagtttacag ttggacacga ttcttacaca 1440

agtggtgaca tcaagtacaa gacagatgat gctagcaaca atgcacaaaa agttttcaat 1500

aaaaaagtaa cc 1512

<210> 168
<211> 1269
<212> DNA
<213> Streptococcus agalactiae

<400> 168
aatggttccc tcttagcagc ttcaaaagca gttccggtga aaatcactct tccattggta 60

agcaaagatg gtgttgttaa agatgcacac gtttatccaa agaacactga aacaaaacca 120

gaagtagaca agaacttcgc taaaacaaac gatttgacag ctctcaaaga cgctactctt 180

cttaaggctg gtgcagacta caaaaactat tcagcgacta aagctactgt aacagctgaa 240

atcggtaaag ttatccctta cgaagttaaa acaaaagttc ttaaaggttc taaatacgaa 300

aaactggttt ggaccgatac catgtcaaat ggtttgacaa tgggtgatga tgttaacctt 360

gcagtttcag ggactacaac aactttcatt aaagatatag attacactct tagcattgat 420

gaccgtggtt tcacattgaa attcaaagct actggattgg acaaattgga agaagcagct 480

aaagcatctg atgttgaatt tacattgact tataaagcta ctgttaatgg ccaagcaatt 540

attgacaacc cagaagtcaa tgacatcaaa ttggactatg gtaataaacc tggtacagat 600

ttatcagaac aacctgtgac acctgaagat ggtgaagtta aagtcactaa aacatgggca 660

gcaggtgcta ataaagcaga cgctaaagtt gtctacacac ttaaaaatgc tactaaacaa 720

gtcgtagctt ctgtcgcatt gaccgcagct gatacaaaag gtacgattaa tcttggtaaa 780

ggcatgacct ttgaaatcac aggagctttc tcaggtacat tcaaaggcct tcaaaataaa 840

gcttacactg tttctgaacg tgttgcaggt tatactaatg ctattaatgt tactggtaat 900

gctgttgcta tcaccaatac accagacagt gacaatccaa cgccacttaa cccaactcaa 960

ccaaaagttg aaacacatgg taagaaattt gtcaaagttg gcgatgcaga tgcccgctta 1020

gctggtgcac aattcgttgt gaaaaattca gctggtaaat tccttgctct taaagaagat 1080

gcagctgtat caggagctca aactgaattg gcaactgcta aaacagactt ggataatgcc 1140

atcaaagctt acaacggttt gacaaaagcg cagcaagaag gtgctgatgg tacatcagca 1200

aaagaactta tcaacactaa acagtcagct tacgacgcag ccttcatcaa agcacgtaca 1260

gcttataca 1269

<210> 169
<211> 930
<212> DNA
<213> Streptococcus agalactiae

<400> 169
ggtaacaacc caacaactga aaacgaacca caaactggta atccagttaa caaagaaatc 60

acagttcgaa agacttgggc agtggatggt aatgaagtga ataagggaga tgaaaaagtt 120

gacgctgtct tcacgttgca agttaaagat agtgacaaat gggtgaatgt cgattcagca 180

acagcaacag cagcaactga cttcaaatac actttcaaaa acttggataa tgccaaaact 240

taccgtgttg tagaacgtgt tagcggctac gctccagcct acgtttcatt tgtgggtgga 300

gttgtgacta ttaagaataa caaaaactca aatgacccaa ctccaatcaa tccatcagaa 360

ccaaaagttg tgacttatgg acgtaaattt gtgaaaacaa atcaagatgg ctctgaacgt 420

ctagcaggag ctactttcct tgttaagaac tcacaaagtc aatacttggc acgtaaatca 480

ggtgttgcaa ctaatgaagc tcacaaagca gtaacagatg ctaaagtaca actggatgaa 540

gctgttaaag cttataacaa attgactaaa gaacaacaag aaagtcaaga tggtaaagca 600

gcattgaatc ttattgatga aaaacaaaca gcttacaatg aagcttttgc taaagcaaac 660

tactcatatg aatgggttgt agataaaaac gctgcaaacg ttgttaaatt gatttctaat 720

acagctggta aatttgaaat tacaggtttg aatgcaggcg agtatagttt ggaagagact 780

caagcaccaa caggttatgc taaattgtca agtgatgtat catttaaagt aaatgataca 840

tcgtatagcg aaggggcttc aaatgatatt gcatacgata aagactccgg taaaacagat 900

gcacaaaaag ttgtcaacaa aaaagtaaca 930

<210> 170
<211> 672
<212> DNA
<213> Streptococcus agalactiae

<400> 170
ggtaacaacc caacaactga aaacgaacca caaactggta atccagttaa caaagaaatc 60

acagttcgaa agacttgggc agtggatggt aatgaagtga ataagggaga tgaaaaagtt 120

gacgctgtct tcacgttgca agttaaagat agtgacaaat gggtgaatgt cgattcagca 180

acagcaacag cagcaactga cttcaaatac actttcaaaa acttggataa tgccaaaact 240

taccgtgttg tagaacgtgt tagcggctac gctccagcct acgtttcatt tgtgggtgga 300

gttgtgacta ttaagaataa caaaaactca aatgacccaa ctccaatcaa tccatcagaa 360

ccaaaagttg tgacttatgg acgtaaattt gtgaaaacaa atcaagatgg ctctgaacgt 420

ctagcaggag ctactttcct tgttaagaac tcacaaagtc aatacttggc acgtaaatca 480

ggtgttgcaa ctaatgaagc tcacaaagca gtaacagatg ctaaagtaca actggatgaa 540

gctgttaaag cttataacaa attgactaaa gaacaacaag aaagtcaaga tggtaaagca 600

gcattgaatc ttattgatga aaaacaaaca gcttacaatg aagcttttgc taaagcaaac 660

tactcatatg aa 672

<210> 171
<211> 1458

<212> DNA
<213> Streptococcus agalactiae

<400> 171
ggtggggcca tcttggctga ttcaaaagcg gttccagtga aaatcactct tccattgata 60

aacaaggatg gtgttgttaa agatgcacac gtctatccaa agaacactga aacaaaaccg 120

caaattgaca agaactttgc tgataaaaat cttgattata ttaacaacca aaaagacaaa 180

ggtactatat cagcaactgt tggtgatgtt aaaaaatata ctgttgggac aaaaatcctt 240

aaaggatctg actataaaaa attagtttgg accgatagca tgacgaaagg attgacgttt 300

aacaacgatg ttactgtaac attggatggt gcaaattttg aacaatcaaa ttacacctta 360

gtagctgatg accaaggttt ccgtcttgtc ttgaatgcaa caggtctttc taaagtagca 420

gaagctgcaa aaacaaaaga tgttgaaatc aaaatcaact attcagctac agtaaacggt 480

tctactgtcg ttgaaaagtc agaaaataat gatgtcaaac tagattatgg taacaaccca 540

acaactgaaa acgaaccaca aactggtaat ccagttaaca aagaaatcac agttcgaaag 600

acttgggcag tggatggtaa tgaagtgaat aagggagatg aaaaagttga cgctgtcttc 660

acgttgcaag ttaaagatag tgacaaatgg gtgaatgtcg attcagcaac agcaacagca 720

gcaactgact tcaaatacac tttcaaaaac ttggataatg ccaaaactta ccgtgttgta 780

gaacgtgtta gcggctacgc tccagcctac gtttcatttg tgggtggagt tgtgactatt 840

aagaataaca aaaactcaaa tgacccaact ccaatcaatc catcagaacc aaaagttgtg 900

acttatggac gtaaatttgt gaaaacaaat caagatggct ctgaacgtct agcaggagct 960

actttccttg ttaagaactc acaaagtcaa tacttggcac gtaaatcagg tgttgcaact 1020

aatgaagctc acaaagcagt aacagatgct aaagtacaac tggatgaagc tgttaaagct 1080

tataacaaat tgactaaaga acaacaagaa agtcaagatg gtaaagcagc attgaatctt 1140

attgatgaaa aacaaacagc ttacaatgaa gcttttgcta aagcaaacta ctcatatgaa 1200

tgggttgtag ataaaaacgc tgcaaacgtt gttaaattga tttctaatac agctggtaaa 1260

tttgaaatta caggtttgaa tgcaggcgag tatagtttgg aagagactca agcaccaaca 1320

ggttatgcta aattgtcaag tgatgtatca tttaaagtaa atgatacatc gtatagcgaa 1380

ggggcttcaa atgatattgc atacgataaa gactccggta aaacagatgc acaaaaagtt 1440

gtcaacaaaa aagtaaca 1458

<210> 172
<211> 1200
<212> DNA
<213> Streptococcus agalactiae

<400> 172
ggtggggcca tcttggctga ttcaaaagcg gttccagtga aaatcactct tccattgata 60

aacaaggatg gtgttgttaa agatgcacac gtctatccaa agaacactga aacaaaaccg 120

caaattgaca agaactttgc tgataaaaat cttgattata ttaacaacca aaaagacaaa 180

ggtactatat cagcaactgt tggtgatgtt aaaaaatata ctgttgggac aaaaatcctt 240

aaaggatctg actataaaaa attagtttgg accgatagca tgacgaaagg attgacgttt 300

aacaacgatg ttactgtaac attggatggt gcaaattttg aacaatcaaa ttacacctta 360

gtagctgatg accaaggttt ccgtcttgtc ttgaatgcaa caggtctttc taaagtagca 420

gaagctgcaa aaacaaaaga tgttgaaatc aaaatcaact attcagctac agtaaacggt 480

tctactgtcg ttgaaaagtc agaaaataat gatgtcaaac tagattatgg taacaaccca 540

acaactgaaa acgaaccaca aactggtaat ccagttaaca aagaaatcac agttcgaaag 600

acttgggcag tggatggtaa tgaagtgaat aagggagatg aaaaagttga cgctgtcttc 660

acgttgcaag ttaaagatag tgacaaatgg gtgaatgtcg attcagcaac agcaacagca 720

gcaactgact tcaaatacac tttcaaaaac ttggataatg ccaaaactta ccgtgttgta 780

gaacgtgtta gcggctacgc tccagcctac gtttcatttg tgggtggagt tgtgactatt 840

aagaataaca aaaactcaaa tgacccaact ccaatcaatc catcagaacc aaaagttgtg 900

acttatggac gtaaatttgt gaaaacaaat caagatggct ctgaacgtct agcaggagct 960

actttccttg ttaagaactc acaaagtcaa tacttggcac gtaaatcagg tgttgcaact 1020

aatgaagctc acaaagcagt aacagatgct aaagtacaac tggatgaagc tgttaaagct 1080

tataacaaat tgactaaaga acaacaagaa agtcaagatg gtaaagcagc attgaatctt 1140

attgatgaaa aacaaacagc ttacaatgaa gcttttgcta aagcaaacta ctcatatgaa 1200

<210> 173
<211> 927
<212> DNA
<213> Streptococcus agalactiae

<400> 173
ggtaataacc caacggaaga aagtgaacca caagaaggta ctccagctaa ccaagaaatt 60

aaagtcatta aagactgggc agtagatggt acaattactg atgttaatgt tgcagttaaa 120

gctatcttta ccttgcaaga aaaacaaacg gatggtacat gggtgaacgt tgcttcacac 180

gaagcaacaa aaccatcacg ctttgaacat actttcacag gtttggataa tactaaaact 240

taccgcgttg tcgaacgtgt tagcggctac actccagaat atgtatcatt taaaaatggt 300

gttgtgacta tcaagaacaa caaaaactca aatgatccaa ctccaatcaa cccatcagaa 360

ccaaaagtgg tgacttatgg acgtaaattt gtgaaaacaa atcaagctaa cactgaacgc 420

ttggcaggag ctaccttcct tgttaagaaa gaaggaaaat acttggcacg taaagcaggt 480

gcagcaactg ctgaagcaaa ggcagctgta aaaactgcta aactagcatt ggatgaagct 540

gttaaagctt ataacgactt gactaaagaa aaacaagaag gccaagaagg taaaacagca 600

ttggctactg ttgatcaaaa acaaaaagct tacaatgacg cttttgttaa agctaactac 660

tcatatgaat gggttgcaga taaaaaggct gataatgttg ttaaattgat ctctaacgcc 720

ggtggtcaat ttgaaattac tggtttggat aaaggcactt atagcttgga agaaactcaa 780

gcaccagcag gttatgcgac attgtcaggt gatgtaaact ttgaagtaac tgccacatca 840

tatagcaaag gggctacaac tgacatcgca tatgataaag gatctgtaaa aaaagatgcc 900

caacaagttc aaaacaaaaa agtaacc 927

<210> 174
<211> 669
<212> DNA
<213> Streptococcus agalactiae

<400> 174
ggtaataacc caacggaaga aagtgaacca caagaaggta ctccagctaa ccaagaaatt 60

aaagtcatta aagactgggc agtagatggt acaattactg atgttaatgt tgcagttaaa 120

gctatcttta ccttgcaaga aaaacaaacg gatggtacat gggtgaacgt tgcttcacac 180

gaagcaacaa aaccatcacg ctttgaacat actttcacag gtttggataa tactaaaact 240

taccgcgttg tcgaacgtgt tagcggctac actccagaat atgtatcatt taaaaatggt 300

gttgtgacta tcaagaacaa caaaaactca aatgatccaa ctccaatcaa cccatcagaa 360

ccaaaagtgg tgacttatgg acgtaaattt gtgaaaacaa atcaagctaa cactgaacgc 420

ttggcaggag ctaccttcct tgttaagaaa gaaggaaaat acttggcacg taaagcaggt 480

gcagcaactg ctgaagcaaa ggcagctgta aaaactgcta aactagcatt ggatgaagct 540

gttaaagctt ataacgactt gactaaagaa aaacaagaag gccaagaagg taaaacagca 600

ttggctactg ttgatcaaaa acaaaaagct tacaatgacg cttttgttaa agctaactac 660

tcatatgaa 669

<210> 175
<211> 1455
<212> DNA
<213> Streptococcus agalactiae

<400> 175
aacggttcta tcttggctga ttcaaaagca gttccagtta aaatcactct gccattggta 60

aacaaccaag gtgttgttaa agatgctcac atttatccaa agaatactga aacaaaacca 120

caagtagata agaactttgc agataaagat cttgattata ctgacaaccg aaaagacaaa 180

ggtgttgtct cagcgacagt tggtgacaaa aaagaataca tagttggaac aaaaattctt 240

aaaggctcag actataagaa actggtttgg actgatagca tgactaaagg tttgacgttc 300

aacaacaacg ttaaagtaac attggatggt aaagattttc ctgttttaaa ctacaaactc 360

gtaacagatg accaaggttt ccgtcttgcc ttgaatgcaa caggtcttgc agcagtagca 420

gctgctgcaa aagacaaaga tgttgaaatc aagatcactt actcagctac ggtgaacggc 480

tccactactg ttgaagttcc agaaaccaat gatgttaaat tggactatgg taataaccca 540

acggaagaaa gtgaaccaca agaaggtact ccagctaacc aagaaattaa agtcattaaa 600

gactgggcag tagatggtac aattactgat gttaatgttg cagttaaagc tatctttacc 660

ttgcaagaaa aacaaacgga tggtacatgg gtgaacgttg cttcacacga agcaacaaaa 720

ccatcacgct ttgaacatac tttcacaggt ttggataata ctaaaactta ccgcgttgtc 780

gaacgtgtta gcggctacac tccagaatat gtatcattta aaaatggtgt tgtgactatc 840

aagaacaaca aaaactcaaa tgatccaact ccaatcaacc catcagaacc aaaagtggtg 900

acttatggac gtaaatttgt gaaaacaaat caagctaaca ctgaacgctt ggcaggagct 960

accttccttg ttaagaaaga aggaaaatac ttggcacgta aagcaggtgc agcaactgct 1020

gaagcaaagg cagctgtaaa aactgctaaa ctagcattgg atgaagctgt taaagcttat 1080

aacgacttga ctaaagaaaa acaagaaggc caagaaggta aaacagcatt ggctactgtt 1140

gatcaaaaac aaaaagctta caatgacgct tttgttaaag ctaactactc atatgaatgg 1200

gttgcagata aaaaggctga taatgttgtt aaattgatct ctaacgccgg tggtcaattt 1260

gaaattactg gtttggataa aggcacttat agcttggaag aaactcaagc accagcaggt 1320

tatgcgacat tgtcaggtga tgtaaacttt gaagtaactg ccacatcata tagcaaaggg 1380

gctacaactg acatcgcata tgataaagga tctgtaaaaa aagatgccca acaagttcaa 1440

aacaaaaaag taacc 1455

<210> 176
<211> 1197
<212> DNA
<213> Streptococcus agalactiae

<400> 176
aacggttcta tcttggctga ttcaaaagca gttccagtta aaatcactct gccattggta 60

aacaaccaag gtgttgttaa agatgctcac atttatccaa agaatactga aacaaaacca 120

caagtagata agaactttgc agataaagat cttgattata ctgacaaccg aaaagacaaa 180

ggtgttgtct cagcgacagt tggtgacaaa aaagaataca tagttggaac aaaaattctt 240

aaaggctcag actataagaa actggtttgg actgatagca tgactaaagg tttgacgttc 300

aacaacaacg ttaaagtaac attggatggt aaagattttc ctgttttaaa ctacaaactc 360

gtaacagatg accaaggttt ccgtcttgcc ttgaatgcaa caggtcttgc agcagtagca 420

gctgctgcaa aagacaaaga tgttgaaatc aagatcactt actcagctac ggtgaacggc 480

tccactactg ttgaagttcc agaaaccaat gatgttaaat tggactatgg taataaccca 540

acggaagaaa gtgaaccaca agaaggtact ccagctaacc aagaaattaa agtcattaaa 600

gactgggcag tagatggtac aattactgat gttaatgttg cagttaaagc tatctttacc 660

ttgcaagaaa aacaaacgga tggtacatgg gtgaacgttg cttcacacga agcaacaaaa 720

ccatcacgct ttgaacatac tttcacaggt ttggataata ctaaaactta ccgcgttgtc 780

gaacgtgtta gcggctacac tccagaatat gtatcattta aaaatggtgt tgtgactatc 840

aagaacaaca aaaactcaaa tgatccaact ccaatcaacc catcagaacc aaaagtggtg 900

acttatggac gtaaatttgt gaaaacaaat caagctaaca ctgaacgctt ggcaggagct 960

accttccttg ttaagaaaga aggaaaatac ttggcacgta aagcaggtgc agcaactgct 1020

gaagcaaagg cagctgtaaa aactgctaaa ctagcattgg atgaagctgt taaagcttat 1080

aacgacttga ctaaagaaaa acaagaaggc caagaaggta aaacagcatt ggctactgtt 1140

gatcaaaaac aaaaagctta caatgacgct tttgttaaag ctaactactc atatgaa 1197

<210> 177
<211> 554
<212> PRT
<213> Streptococcus agalactiae

<400> 177
Met Lys Leu Ser Lys Lys Leu Leu Phe Ser Ala Ala Val Leu Thr Met
1 5 10 15

Val Ala Gly Ser Thr Val Glu Pro Val Ala Gln Phe Ala Thr Gly Met
20 25 30

Ser Ile Val Arg Ala Ala Glu Val Ser Gln Glu Arg Pro Ala Lys Thr
35 40 45

Thr Val Asn Ile Tyr Lys Leu Gln Ala Asp Ser Tyr Lys Ser Glu Ile
50 55 60

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

Tyr Ala Lys Leu Gly Asp Asn Val Lys Gly Leu Gln Gly Val Gln Phe
85 90 95

Lys Arg Tyr Lys Val Lys Thr Asp Ile Ser Val Asp Glu Leu Lys Lys
100 105 110

Leu Thr Thr Val Glu Ala Ala Asp Ala Lys Val Gly Thr Ile Leu Glu
115 120 125

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

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

Leu Lys Asn Ser Pro Ser Asn Ile Thr Lys Ala Tyr Ala Val Pro Phe
165 170 175

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

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

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

Gly Glu Glu Phe Lys Trp Phe Leu Lys Ser Thr Ile Pro Ala Asn Leu
225 230 235 240

```
Gly Asp Tyr Glu Lys Phe Glu Ile Thr Asp Lys Phe Ala Asp Gly Leu
                245                 250                 255

Thr Tyr Lys Ser Val Gly Lys Ile Lys Ile Gly Ser Lys Thr Leu Asn
            260                 265                 270

Arg Asp Glu His Tyr Thr Ile Asp Glu Pro Thr Val Asp Asn Gln Asn
        275                 280                 285

Thr Leu Lys Ile Thr Phe Lys Pro Glu Lys Phe Lys Glu Ile Ala Glu
    290                 295                 300

Leu Leu Lys Gly Met Thr Leu Val Lys Asn Gln Asp Ala Leu Asp Lys
305                 310                 315                 320

Ala Thr Ala Asn Thr Asp Asp Ala Ala Phe Leu Glu Ile Pro Val Ala
                325                 330                 335

Ser Thr Ile Asn Glu Lys Ala Val Leu Gly Lys Ala Ile Glu Asn Thr
            340                 345                 350

Phe Glu Leu Gln Tyr Asp His Thr Pro Asp Lys Ala Asp Asn Pro Lys
        355                 360                 365

Pro Ser Asn Pro Pro Arg Lys Pro Glu Val His Thr Gly Gly Lys Arg
    370                 375                 380

Phe Val Lys Lys Asp Ser Thr Glu Thr Gln Thr Leu Gly Gly Ala Glu
385                 390                 395                 400

Phe Asp Leu Leu Ala Ser Asp Gly Thr Ala Val Lys Trp Thr Asp Ala
                405                 410                 415

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

Thr Gly Gln Pro Ile Lys Leu Lys Ser His Thr Asp Gly Thr Phe Glu
        435                 440                 445

Ile Lys Gly Leu Ala Tyr Ala Val Asp Ala Asn Ala Glu Gly Thr Ala
    450                 455                 460

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

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

Lys Pro Thr Asp Ile Thr Val Asp Ser Ala Asp Ala Thr Pro Asp Thr
            500                 505                 510
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Ile Lys Asn Asn Lys Arg Pro Ser Ile Pro Asn Thr Gly Gly Ile Gly
515 520 525

Thr Ala Ile Phe Val Ala Ile Gly Ala Ala Val Met Ala Phe Ala Val
530 535 540

Lys Gly Met Lys Arg Arg Thr Lys Asp Asn
545 550

<210> 178
<211> 517
<212> PRT
<213> Streptococcus agalactiae

<400> 178
Ala Glu Val Ser Gln Glu Arg Pro Ala Lys Thr Thr Val Asn Ile Tyr
1 5 10 15

Lys Leu Gln Ala Asp Ser Tyr Lys Ser Glu Ile Thr Ser Asn Gly Gly
20 25 30

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

Asp Asn Val Lys Gly Leu Gln Gly Val Gln Phe Lys Arg Tyr Lys Val
50 55 60

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

Ala Ala Asp Ala Lys Val Gly Thr Ile Leu Glu Glu Gly Val Ser Leu
85 90 95

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

Lys Ser Asn Val Arg Tyr Leu Tyr Val Glu Asp Leu Lys Asn Ser Pro
115 120 125

Ser Asn Ile Thr Lys Ala Tyr Ala Val Pro Phe Val Leu Glu Leu Pro
130 135 140

Val Ala Asn Ser Thr Gly Thr Gly Phe Leu Ser Glu Ile Asn Ile Tyr
145 150 155 160

Pro Lys Asn Val Val Thr Asp Glu Pro Lys Thr Asp Lys Asp Val Lys
165 170 175

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

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Trp Phe Leu Lys Ser Thr Ile Pro Ala Asn Leu Gly Asp Tyr Glu Lys
        195                 200                 205

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

Gly Lys Ile Lys Ile Gly Ser Lys Thr Leu Asn Arg Asp Glu His Tyr
225                 230                 235                 240

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

Phe Lys Pro Glu Lys Phe Lys Glu Ile Ala Glu Leu Leu Lys Gly Met
            260                 265                 270

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

Asp Asp Ala Ala Phe Leu Glu Ile Pro Val Ala Ser Thr Ile Asn Glu
    290                 295                 300

Lys Ala Val Leu Gly Lys Ala Ile Glu Asn Thr Phe Glu Leu Gln Tyr
305                 310                 315                 320

Asp His Thr Pro Asp Lys Ala Asp Asn Pro Lys Pro Ser Asn Pro Pro
                325                 330                 335

Arg Lys Pro Glu Val His Thr Gly Gly Lys Arg Phe Val Lys Lys Asp
            340                 345                 350

Ser Thr Glu Thr Gln Thr Leu Gly Gly Ala Glu Phe Asp Leu Leu Ala
        355                 360                 365

Ser Asp Gly Thr Ala Val Lys Trp Thr Asp Ala Leu Ile Lys Ala Asn
    370                 375                 380

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

Lys Leu Lys Ser His Thr Asp Gly Thr Phe Glu Ile Lys Gly Leu Ala
                405                 410                 415

Tyr Ala Val Asp Ala Asn Ala Glu Gly Thr Ala Val Thr Tyr Lys Leu
            420                 425                 430

Lys Glu Thr Lys Ala Pro Glu Gly Tyr Val Ile Pro Asp Lys Glu Ile
        435                 440                 445

Glu Phe Thr Val Ser Gln Thr Ser Tyr Asn Thr Lys Pro Thr Asp Ile
    450                 455                 460
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Thr Val Asp Ser Ala Asp Ala Thr Pro Asp Thr Ile Lys Asn Asn Lys
465 470 475 480

Arg Pro Ser Ile Pro Asn Thr Gly Gly Ile Gly Thr Ala Ile Phe Val
485 490 495

Ala Ile Gly Ala Ala Val Met Ala Phe Ala Val Lys Gly Met Lys Arg
500 505 510

Arg Thr Lys Asp Asn
515

<210> 179
<211> 525
<212> PRT
<213> Streptococcus agalactiae

<400> 179
Met Lys Leu Ser Lys Lys Leu Leu Phe Ser Ala Ala Val Leu Thr Met
1 5 10 15

Val Ala Gly Ser Thr Val Glu Pro Val Ala Gln Phe Ala Thr Gly Met
20 25 30

Ser Ile Val Arg Ala Ala Glu Val Ser Gln Glu Arg Pro Ala Lys Thr
35 40 45

Thr Val Asn Ile Tyr Lys Leu Gln Ala Asp Ser Tyr Lys Ser Glu Ile
50 55 60

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

Tyr Ala Lys Leu Gly Asp Asn Val Lys Gly Leu Gln Gly Val Gln Phe
85 90 95

Lys Arg Tyr Lys Val Lys Thr Asp Ile Ser Val Asp Glu Leu Lys Lys
100 105 110

Leu Thr Thr Val Glu Ala Ala Asp Ala Lys Val Gly Thr Ile Leu Glu
115 120 125

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

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

Leu Lys Asn Ser Pro Ser Asn Ile Thr Lys Ala Tyr Ala Val Pro Phe
165 170 175

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

```
Glu Ile Asn Ile Tyr Pro Lys Asn Val Val Thr Asp Glu Pro Lys Thr
        195                 200                 205

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

Gly Glu Glu Phe Lys Trp Phe Leu Lys Ser Thr Ile Pro Ala Asn Leu
225                 230                 235                 240

Gly Asp Tyr Glu Lys Phe Glu Ile Thr Asp Lys Phe Ala Asp Gly Leu
                245                 250                 255

Thr Tyr Lys Ser Val Gly Lys Ile Lys Ile Gly Ser Lys Thr Leu Asn
            260                 265                 270

Arg Asp Glu His Tyr Thr Ile Asp Glu Pro Thr Val Asp Asn Gln Asn
        275                 280                 285

Thr Leu Lys Ile Thr Phe Lys Pro Glu Lys Phe Lys Glu Ile Ala Glu
    290                 295                 300

Leu Leu Lys Gly Met Thr Leu Val Lys Asn Gln Asp Ala Leu Asp Lys
305                 310                 315                 320

Ala Thr Ala Asn Thr Asp Asp Ala Ala Phe Leu Glu Ile Pro Val Ala
                325                 330                 335

Ser Thr Ile Asn Glu Lys Ala Val Leu Gly Lys Ala Ile Glu Asn Thr
            340                 345                 350

Phe Glu Leu Gln Tyr Asp His Thr Pro Asp Lys Ala Asp Asn Pro Lys
        355                 360                 365

Pro Ser Asn Pro Pro Arg Lys Pro Glu Val His Thr Gly Gly Lys Arg
    370                 375                 380

Phe Val Lys Lys Asp Ser Thr Glu Thr Gln Thr Leu Gly Gly Ala Glu
385                 390                 395                 400

Phe Asp Leu Leu Ala Ser Asp Gly Thr Ala Val Lys Trp Thr Asp Ala
                405                 410                 415

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

Thr Gly Gln Pro Ile Lys Leu Lys Ser His Thr Asp Gly Thr Phe Glu
        435                 440                 445

Ile Lys Gly Leu Ala Tyr Ala Val Asp Ala Asn Ala Glu Gly Thr Ala
    450                 455                 460
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Val Thr Tyr Lys Leu Lys Glu Thr Lys Ala Pro Glu Gly Tyr Val Ile
465                 470                 475                 480

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

Lys Pro Thr Asp Ile Thr Val Asp Ser Ala Asp Ala Thr Pro Asp Thr
            500                 505                 510

Ile Lys Asn Asn Lys Arg Pro Ser Ile Pro Asn Thr Gly
        515                 520                 525
```

<210> 180
<211> 520
<212> PRT
<213> Streptococcus agalactiae

<400> 180

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

Val Ala Gly Ser Thr Val Glu Pro Val Ala Gln Phe Ala Thr Gly Met
            20                  25                  30

Ser Ile Val Arg Ala Ala Glu Val Ser Gln Glu Arg Pro Ala Lys Thr
        35                  40                  45

Thr Val Asn Ile Tyr Lys Leu Gln Ala Asp Ser Tyr Lys Ser Glu Ile
    50                  55                  60

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

Tyr Ala Lys Leu Gly Asp Asn Val Lys Gly Leu Gln Gly Val Gln Phe
                85                  90                  95

Lys Arg Tyr Lys Val Lys Thr Asp Ile Ser Val Asp Glu Leu Lys Lys
            100                 105                 110

Leu Thr Thr Val Glu Ala Ala Asp Ala Lys Val Gly Thr Ile Leu Glu
        115                 120                 125

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

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

Leu Lys Asn Ser Pro Ser Asn Ile Thr Lys Ala Tyr Ala Val Pro Phe
                165                 170                 175
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Val Leu Glu Leu Pro Val Ala Asn Ser Thr Gly Thr Gly Phe Leu Ser
            180                 185                 190

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

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

Gly Glu Glu Phe Lys Trp Phe Leu Lys Ser Thr Ile Pro Ala Asn Leu
225                 230                 235                 240

Gly Asp Tyr Glu Lys Phe Glu Ile Thr Asp Lys Phe Ala Asp Gly Leu
                245                 250                 255

Thr Tyr Lys Ser Val Gly Lys Ile Lys Ile Gly Ser Lys Thr Leu Asn
            260                 265                 270

Arg Asp Glu His Tyr Thr Ile Asp Glu Pro Thr Val Asp Asn Gln Asn
        275                 280                 285

Thr Leu Lys Ile Thr Phe Lys Pro Glu Lys Phe Lys Glu Ile Ala Glu
    290                 295                 300

Leu Leu Lys Gly Met Thr Leu Val Lys Asn Gln Asp Ala Leu Asp Lys
305                 310                 315                 320

Ala Thr Ala Asn Thr Asp Asp Ala Ala Phe Leu Glu Ile Pro Val Ala
                325                 330                 335

Ser Thr Ile Asn Glu Lys Ala Val Leu Gly Lys Ala Ile Glu Asn Thr
            340                 345                 350

Phe Glu Leu Gln Tyr Asp His Thr Pro Asp Lys Ala Asp Asn Pro Lys
        355                 360                 365

Pro Ser Asn Pro Pro Arg Lys Pro Glu Val His Thr Gly Gly Lys Arg
    370                 375                 380

Phe Val Lys Lys Asp Ser Thr Glu Thr Gln Thr Leu Gly Gly Ala Glu
385                 390                 395                 400

Phe Asp Leu Leu Ala Ser Asp Gly Thr Ala Val Lys Trp Thr Asp Ala
                405                 410                 415

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

Thr Gly Gln Pro Ile Lys Leu Lys Ser His Thr Asp Gly Thr Phe Glu
        435                 440                 445
```

Ile Lys Gly Leu Ala Tyr Ala Val Asp Ala Asn Ala Glu Gly Thr Ala
    450   455   460

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

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

Lys Pro Thr Asp Ile Thr Val Asp Ser Ala Asp Ala Thr Pro Asp Thr
            500   505   510

Ile Lys Asn Asn Lys Arg Pro Ser
        515   520

<210> 181
<211> 483
<212> PRT
<213> Streptococcus agalactiae

<400> 181
Ala Glu Val Ser Gln Glu Arg Pro Ala Lys Thr Thr Val Asn Ile Tyr
1   5   10   15

Lys Leu Gln Ala Asp Ser Tyr Lys Ser Glu Ile Thr Ser Asn Gly Gly
            20   25   30

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

Asp Asn Val Lys Gly Leu Gln Gly Val Gln Phe Lys Arg Tyr Lys Val
    50   55   60

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

Ala Ala Asp Ala Lys Val Gly Thr Ile Leu Glu Glu Gly Val Ser Leu
                85   90   95

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

Lys Ser Asn Val Arg Tyr Leu Tyr Val Glu Asp Leu Lys Asn Ser Pro
        115   120   125

Ser Asn Ile Thr Lys Ala Tyr Ala Val Pro Phe Val Leu Glu Leu Pro
    130   135   140

Val Ala Asn Ser Thr Gly Thr Gly Phe Leu Ser Glu Ile Asn Ile Tyr
145   150   155   160

Pro Lys Asn Val Val Thr Asp Glu Pro Lys Thr Asp Lys Asp Val Lys
                165   170   175

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

Trp Phe Leu Lys Ser Thr Ile Pro Ala Asn Leu Gly Asp Tyr Glu Lys
        195                 200                 205

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

Gly Lys Ile Lys Ile Gly Ser Lys Thr Leu Asn Arg Asp Glu His Tyr
225                 230                 235                 240

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

Phe Lys Pro Glu Lys Phe Lys Glu Ile Ala Glu Leu Leu Lys Gly Met
            260                 265                 270

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

Asp Asp Ala Ala Phe Leu Glu Ile Pro Val Ala Ser Thr Ile Asn Glu
    290                 295                 300

Lys Ala Val Leu Gly Lys Ala Ile Glu Asn Thr Phe Glu Leu Gln Tyr
305                 310                 315                 320

Asp His Thr Pro Asp Lys Ala Asp Asn Pro Lys Pro Ser Asn Pro Pro
                325                 330                 335

Arg Lys Pro Glu Val His Thr Gly Gly Lys Arg Phe Val Lys Lys Asp
            340                 345                 350

Ser Thr Glu Thr Gln Thr Leu Gly Gly Ala Glu Phe Asp Leu Leu Ala
        355                 360                 365

Ser Asp Gly Thr Ala Val Lys Trp Thr Asp Ala Leu Ile Lys Ala Asn
    370                 375                 380

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

Lys Leu Lys Ser His Thr Asp Gly Thr Phe Glu Ile Lys Gly Leu Ala
                405                 410                 415

Tyr Ala Val Asp Ala Asn Ala Glu Gly Thr Ala Val Thr Tyr Lys Leu
            420                 425                 430

Lys Glu Thr Lys Ala Pro Glu Gly Tyr Val Ile Pro Asp Lys Glu Ile
        435                 440                 445
```

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

Thr Val Asp Ser Ala Asp Ala Thr Pro Asp Thr Ile Lys Asn Asn Lys
465 470 475 480

Arg Pro Ser

<210> 182
<211> 271
<212> PRT
<213> Streptococcus agalactiae

<400> 182
Ala Glu Val Ser Gln Glu Arg Pro Ala Lys Thr Thr Val Asn Ile Tyr
1 5 10 15

Lys Leu Gln Ala Asp Ser Tyr Lys Ser Glu Ile Thr Ser Asn Gly Gly
20 25 30

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

Asp Asn Val Lys Gly Leu Gln Gly Val Gln Phe Lys Arg Tyr Lys Val
50 55 60

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

Ala Ala Asp Ala Lys Val Gly Thr Ile Leu Glu Glu Gly Val Ser Leu
85 90 95

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

Lys Ser Asn Val Arg Tyr Leu Tyr Val Glu Asp Leu Lys Asn Ser Pro
115 120 125

Ser Asn Ile Thr Lys Ala Tyr Ala Val Pro Phe Val Leu Glu Leu Pro
130 135 140

Val Ala Asn Ser Thr Gly Thr Gly Phe Leu Ser Glu Ile Asn Ile Tyr
145 150 155 160

Pro Lys Asn Val Val Thr Asp Glu Pro Lys Thr Asp Lys Asp Val Lys
165 170 175

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

Trp Phe Leu Lys Ser Thr Ile Pro Ala Asn Leu Gly Asp Tyr Glu Lys
195 200 205

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

Gly Lys Ile Lys Ile Gly Ser Lys Thr Leu Asn Arg Asp Glu His Tyr
225 230 235 240

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

Phe Lys Pro Glu Lys Phe Lys Glu Ile Ala Glu Leu Leu Lys Gly
260 265 270

<210> 183
<211> 901
<212> PRT
<213> Streptococcus agalactiae

<400> 183
Met Arg Lys Tyr Gln Lys Phe Ser Lys Ile Leu Thr Leu Ser Leu Phe
1 5 10 15

Cys Leu Ser Gln Ile Pro Leu Asn Thr Asn Val Leu Gly Glu Ser Thr
20 25 30

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

Asp Gln Asn Lys Pro Leu Ser Lys Ala Thr Phe Val Leu Lys Thr Thr
50 55 60

Ala His Pro Glu Ser Lys Ile Glu Lys Val Thr Ala Glu Leu Thr Gly
65 70 75 80

Glu Ala Thr Phe Asp Asn Leu Ile Pro Gly Asp Tyr Thr Leu Ser Glu
85 90 95

Glu Thr Ala Pro Glu Gly Tyr Lys Lys Thr Asn Gln Thr Trp Gln Val
100 105 110

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

Asn Ser Thr Ile Gly Gln Asn Gln Glu Glu Leu Asp Lys Gln Tyr Pro
130 135 140

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

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

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Pro Tyr Ser Ser Glu Gly Glu His Ile Arg Glu Ile Pro Glu Gly Thr
            180                 185                 190

Leu Ser Lys Arg Ile Ser Glu Val Gly Asp Leu Ala His Asn Lys Tyr
        195                 200                 205

Lys Ile Glu Leu Thr Val Ser Gly Lys Thr Ile Val Lys Pro Val Asp
    210                 215                 220

Lys Gln Lys Pro Leu Asp Val Val Phe Val Leu Asp Asn Ser Asn Ser
225                 230                 235                 240

Met Asn Asn Asp Gly Pro Asn Phe Gln Arg His Asn Lys Ala Lys Lys
                245                 250                 255

Ala Ala Glu Ala Leu Gly Thr Ala Val Lys Asp Ile Leu Gly Ala Asn
            260                 265                 270

Ser Asp Asn Arg Val Ala Leu Val Thr Tyr Gly Ser Asp Ile Phe Asp
        275                 280                 285

Gly Arg Ser Val Asp Val Val Lys Gly Phe Lys Glu Asp Asp Lys Tyr
    290                 295                 300

Tyr Gly Leu Gln Thr Lys Phe Thr Ile Gln Thr Glu Asn Tyr Ser His
305                 310                 315                 320

Lys Gln Leu Thr Asn Asn Ala Glu Glu Ile Ile Lys Arg Ile Pro Thr
                325                 330                 335

Glu Ala Pro Lys Ala Lys Trp Gly Ser Thr Thr Asn Gly Leu Thr Pro
            340                 345                 350

Glu Gln Gln Lys Glu Tyr Tyr Leu Ser Lys Val Gly Glu Thr Phe Thr
        355                 360                 365

Met Lys Ala Phe Met Glu Ala Asp Asp Ile Leu Ser Gln Val Asn Arg
    370                 375                 380

Asn Ser Gln Lys Ile Ile Val His Val Thr Asp Gly Val Pro Thr Arg
385                 390                 395                 400

Ser Tyr Ala Ile Asn Asn Phe Lys Leu Gly Ala Ser Tyr Glu Ser Gln
                405                 410                 415

Phe Glu Gln Met Lys Lys Asn Gly Tyr Leu Asn Lys Ser Asn Phe Leu
            420                 425                 430

Leu Thr Asp Lys Pro Glu Asp Ile Lys Gly Asn Gly Glu Ser Tyr Phe
        435                 440                 445
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Leu Phe Pro Leu Asp Ser Tyr Gln Thr Gln Ile Ile Ser Gly Asn Leu
    450                 455                 460

Gln Lys Leu His Tyr Leu Asp Leu Asn Leu Asn Tyr Pro Lys Gly Thr
465                 470                 475                 480

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

Tyr Ile Asn Ser Leu Lys Gln Lys Asn Tyr Asp Ile Phe Asn Phe Gly
            500                 505                 510

Ile Asp Ile Ser Gly Phe Arg Gln Val Tyr Asn Glu Glu Tyr Lys Lys
        515                 520                 525

Asn Gln Asp Gly Thr Phe Gln Lys Leu Lys Glu Glu Ala Phe Lys Leu
    530                 535                 540

Ser Asp Gly Glu Ile Thr Glu Leu Met Arg Ser Phe Ser Ser Lys Pro
545                 550                 555                 560

Glu Tyr Tyr Thr Pro Ile Val Thr Ser Ala Asp Thr Ser Asn Asn Glu
                565                 570                 575

Ile Leu Ser Lys Ile Gln Gln Gln Phe Glu Thr Ile Leu Thr Lys Glu
            580                 585                 590

Asn Ser Ile Val Asn Gly Thr Ile Glu Asp Pro Met Gly Asp Lys Ile
        595                 600                 605

Asn Leu Gln Leu Gly Asn Gly Gln Thr Leu Gln Pro Ser Asp Tyr Thr
    610                 615                 620

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

Gly Pro Asn Asn Asp Gly Gly Ile Leu Lys Gly Val Lys Leu Glu Tyr
                645                 650                 655

Ile Gly Asn Lys Leu Tyr Val Arg Gly Leu Asn Leu Gly Glu Gly Gln
            660                 665                 670

Lys Val Thr Leu Thr Tyr Asp Val Lys Leu Asp Asp Ser Phe Ile Ser
        675                 680                 685

Asn Lys Phe Tyr Asp Thr Asn Gly Arg Thr Thr Leu Asn Pro Lys Ser
    690                 695                 700

Glu Asp Pro Asn Thr Leu Arg Asp Phe Pro Ile Pro Lys Ile Arg Asp
705                 710                 715                 720
```

Val Arg Glu Tyr Pro Thr Ile Thr Ile Lys Asn Glu Lys Lys Leu Gly
725 730 735

Glu Ile Glu Phe Ile Lys Val Asp Lys Asp Asn Asn Lys Leu Leu Leu
740 745 750

Lys Gly Ala Thr Phe Glu Leu Gln Glu Phe Asn Glu Asp Tyr Lys Leu
755 760 765

Tyr Leu Pro Ile Lys Asn Asn Asn Ser Lys Val Val Thr Gly Glu Asn
770 775 780

Gly Lys Ile Ser Tyr Lys Asp Leu Lys Asp Gly Lys Tyr Gln Leu Ile
785 790 795 800

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

Leu Thr Phe Glu Val Val Lys Gly Ser Ile Lys Asn Ile Ile Ala Val
820 825 830

Asn Lys Gln Ile Ser Glu Tyr His Glu Glu Gly Asp Lys His Leu Ile
835 840 845

Thr Asn Thr His Ile Pro Pro Lys Gly Ile Ile Pro Met Thr Gly Gly
850 855 860

Lys Gly Ile Leu Ser Phe Ile Leu Ile Gly Gly Ala Met Met Ser Ile
865 870 875 880

Ala Gly Gly Ile Tyr Ile Trp Lys Arg Tyr Lys Lys Ser Ser Asp Met
885 890 895

Ser Ile Lys Lys Asp
900

<210> 184
<211> 869
<212> PRT
<213> Streptococcus agalactiae

<400> 184
Met Arg Lys Tyr Gln Lys Phe Ser Lys Ile Leu Thr Leu Ser Leu Phe
1 5 10 15

Cys Leu Ser Gln Ile Pro Leu Asn Thr Asn Val Leu Gly Glu Ser Thr
20 25 30

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

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Asp Gln Asn Lys Pro Leu Ser Lys Ala Thr Phe Val Leu Lys Thr Thr
    50                  55                  60

Ala His Pro Glu Ser Lys Ile Glu Lys Val Thr Ala Glu Leu Thr Gly
65                  70                  75                  80

Glu Ala Thr Phe Asp Asn Leu Ile Pro Gly Asp Tyr Thr Leu Ser Glu
                85                  90                  95

Glu Thr Ala Pro Glu Gly Tyr Lys Lys Thr Asn Gln Thr Trp Gln Val
            100                 105                 110

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

Asn Ser Thr Ile Gly Gln Asn Gln Glu Glu Leu Asp Lys Gln Tyr Pro
    130                 135                 140

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

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

Pro Tyr Ser Ser Glu Gly Glu His Ile Arg Glu Ile Pro Glu Gly Thr
            180                 185                 190

Leu Ser Lys Arg Ile Ser Glu Val Gly Asp Leu Ala His Asn Lys Tyr
        195                 200                 205

Lys Ile Glu Leu Thr Val Ser Gly Lys Thr Ile Val Lys Pro Val Asp
    210                 215                 220

Lys Gln Lys Pro Leu Asp Val Val Phe Val Leu Asp Asn Ser Asn Ser
225                 230                 235                 240

Met Asn Asn Asp Gly Pro Asn Phe Gln Arg His Asn Lys Ala Lys Lys
                245                 250                 255

Ala Ala Glu Ala Leu Gly Thr Ala Val Lys Asp Ile Leu Gly Ala Asn
            260                 265                 270

Ser Asp Asn Arg Val Ala Leu Val Thr Tyr Gly Ser Asp Ile Phe Asp
        275                 280                 285

Gly Arg Ser Val Asp Val Val Lys Gly Phe Lys Glu Asp Asp Lys Tyr
    290                 295                 300

Tyr Gly Leu Gln Thr Lys Phe Thr Ile Gln Thr Glu Asn Tyr Ser His
305                 310                 315                 320
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Lys Gln Leu Thr Asn Asn Ala Glu Glu Ile Ile Lys Arg Ile Pro Thr
                325                 330                 335

Glu Ala Pro Lys Ala Lys Trp Gly Ser Thr Thr Asn Gly Leu Thr Pro
            340                 345                 350

Glu Gln Gln Lys Glu Tyr Tyr Leu Ser Lys Val Gly Glu Thr Phe Thr
        355                 360                 365

Met Lys Ala Phe Met Glu Ala Asp Asp Ile Leu Ser Gln Val Asn Arg
    370                 375                 380

Asn Ser Gln Lys Ile Ile Val His Val Thr Asp Gly Val Pro Thr Arg
385                 390                 395                 400

Ser Tyr Ala Ile Asn Asn Phe Lys Leu Gly Ala Ser Tyr Glu Ser Gln
                405                 410                 415

Phe Glu Gln Met Lys Lys Asn Gly Tyr Leu Asn Lys Ser Asn Phe Leu
            420                 425                 430

Leu Thr Asp Lys Pro Glu Asp Ile Lys Gly Asn Gly Glu Ser Tyr Phe
        435                 440                 445

Leu Phe Pro Leu Asp Ser Tyr Gln Thr Gln Ile Ile Ser Gly Asn Leu
    450                 455                 460

Gln Lys Leu His Tyr Leu Asp Leu Asn Leu Asn Tyr Pro Lys Gly Thr
465                 470                 475                 480

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

Tyr Ile Asn Ser Leu Lys Gln Lys Asn Tyr Asp Ile Phe Asn Phe Gly
            500                 505                 510

Ile Asp Ile Ser Gly Phe Arg Gln Val Tyr Asn Glu Glu Tyr Lys Lys
        515                 520                 525

Asn Gln Asp Gly Thr Phe Gln Lys Leu Lys Glu Glu Ala Phe Lys Leu
    530                 535                 540

Ser Asp Gly Glu Ile Thr Glu Leu Met Arg Ser Phe Ser Ser Lys Pro
545                 550                 555                 560

Glu Tyr Tyr Thr Pro Ile Val Thr Ser Ala Asp Thr Ser Asn Asn Glu
                565                 570                 575

Ile Leu Ser Lys Ile Gln Gln Gln Phe Glu Thr Ile Leu Thr Lys Glu
            580                 585                 590
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```
Asn Ser Ile Val Asn Gly Thr Ile Glu Asp Pro Met Gly Asp Lys Ile
        595                 600                 605

Asn Leu Gln Leu Gly Asn Gly Gln Thr Leu Gln Pro Ser Asp Tyr Thr
    610                 615                 620

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

Gly Pro Asn Asn Asp Gly Gly Ile Leu Lys Gly Val Lys Leu Glu Tyr
                645                 650                 655

Ile Gly Asn Lys Leu Tyr Val Arg Gly Leu Asn Leu Gly Glu Gly Gln
            660                 665                 670

Lys Val Thr Leu Thr Tyr Asp Val Lys Leu Asp Asp Ser Phe Ile Ser
        675                 680                 685

Asn Lys Phe Tyr Asp Thr Asn Gly Arg Thr Thr Leu Asn Pro Lys Ser
    690                 695                 700

Glu Asp Pro Asn Thr Leu Arg Asp Phe Pro Ile Pro Lys Ile Arg Asp
705                 710                 715                 720

Val Arg Glu Tyr Pro Thr Ile Thr Ile Lys Asn Glu Lys Lys Leu Gly
                725                 730                 735

Glu Ile Glu Phe Ile Lys Val Asp Lys Asp Asn Asn Lys Leu Leu Leu
            740                 745                 750

Lys Gly Ala Thr Phe Glu Leu Gln Glu Phe Asn Glu Asp Tyr Lys Leu
        755                 760                 765

Tyr Leu Pro Ile Lys Asn Asn Asn Ser Lys Val Val Thr Gly Glu Asn
    770                 775                 780

Gly Lys Ile Ser Tyr Lys Asp Leu Lys Asp Gly Lys Tyr Gln Leu Ile
785                 790                 795                 800

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

Leu Thr Phe Glu Val Val Lys Gly Ser Ile Lys Asn Ile Ile Ala Val
            820                 825                 830

Asn Lys Gln Ile Ser Glu Tyr His Glu Glu Gly Asp Lys His Leu Ile
        835                 840                 845

Thr Asn Thr His Ile Pro Pro Lys Gly Ile Ile Pro Met Thr Gly Gly
    850                 855                 860
```

Lys Gly Ile Leu Ser
865

<210> 185
<211> 858
<212> PRT
<213> Streptococcus agalactiae

<400> 185
Met Arg Lys Tyr Gln Lys Phe Ser Lys Ile Leu Thr Leu Ser Leu Phe
1 5 10 15

Cys Leu Ser Gln Ile Pro Leu Asn Thr Asn Val Leu Gly Glu Ser Thr
20 25 30

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

Asp Gln Asn Lys Pro Leu Ser Lys Ala Thr Phe Val Leu Lys Thr Thr
50 55 60

Ala His Pro Glu Ser Lys Ile Glu Lys Val Thr Ala Glu Leu Thr Gly
65 70 75 80

Glu Ala Thr Phe Asp Asn Leu Ile Pro Gly Asp Tyr Thr Leu Ser Glu
85 90 95

Glu Thr Ala Pro Glu Gly Tyr Lys Lys Thr Asn Gln Thr Trp Gln Val
100 105 110

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

Asn Ser Thr Ile Gly Gln Asn Gln Glu Glu Leu Asp Lys Gln Tyr Pro
130 135 140

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

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

Pro Tyr Ser Ser Glu Gly Glu His Ile Arg Glu Ile Pro Glu Gly Thr
180 185 190

Leu Ser Lys Arg Ile Ser Glu Val Gly Asp Leu Ala His Asn Lys Tyr
195 200 205

Lys Ile Glu Leu Thr Val Ser Gly Lys Thr Ile Val Lys Pro Val Asp
210 215 220

Lys Gln Lys Pro Leu Asp Val Val Phe Val Leu Asp Asn Ser Asn Ser
225 230 235 240

```
Met Asn Asn Asp Gly Pro Asn Phe Gln Arg His Asn Lys Ala Lys Lys
                245                 250                 255

Ala Ala Glu Ala Leu Gly Thr Ala Val Lys Asp Ile Leu Gly Ala Asn
            260                 265                 270

Ser Asp Asn Arg Val Ala Leu Val Thr Tyr Gly Ser Asp Ile Phe Asp
        275                 280                 285

Gly Arg Ser Val Asp Val Val Lys Gly Phe Lys Glu Asp Asp Lys Tyr
    290                 295                 300

Tyr Gly Leu Gln Thr Lys Phe Thr Ile Gln Thr Glu Asn Tyr Ser His
305                 310                 315                 320

Lys Gln Leu Thr Asn Asn Ala Glu Glu Ile Ile Lys Arg Ile Pro Thr
                325                 330                 335

Glu Ala Pro Lys Ala Lys Trp Gly Ser Thr Thr Asn Gly Leu Thr Pro
            340                 345                 350

Glu Gln Gln Lys Glu Tyr Tyr Leu Ser Lys Val Gly Glu Thr Phe Thr
        355                 360                 365

Met Lys Ala Phe Met Glu Ala Asp Asp Ile Leu Ser Gln Val Asn Arg
    370                 375                 380

Asn Ser Gln Lys Ile Ile Val His Val Thr Asp Gly Val Pro Thr Arg
385                 390                 395                 400

Ser Tyr Ala Ile Asn Asn Phe Lys Leu Gly Ala Ser Tyr Glu Ser Gln
                405                 410                 415

Phe Glu Gln Met Lys Lys Asn Gly Tyr Leu Asn Lys Ser Asn Phe Leu
            420                 425                 430

Leu Thr Asp Lys Pro Glu Asp Ile Lys Gly Asn Gly Glu Ser Tyr Phe
        435                 440                 445

Leu Phe Pro Leu Asp Ser Tyr Gln Thr Gln Ile Ile Ser Gly Asn Leu
    450                 455                 460

Gln Lys Leu His Tyr Leu Asp Leu Asn Leu Asn Tyr Pro Lys Gly Thr
465                 470                 475                 480

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

Tyr Ile Asn Ser Leu Lys Gln Lys Asn Tyr Asp Ile Phe Asn Phe Gly
            500                 505                 510
```

```
Ile Asp Ile Ser Gly Phe Arg Gln Val Tyr Asn Glu Glu Tyr Lys Lys
        515                 520                 525

Asn Gln Asp Gly Thr Phe Gln Lys Leu Lys Glu Glu Ala Phe Lys Leu
    530                 535                 540

Ser Asp Gly Glu Ile Thr Glu Leu Met Arg Ser Phe Ser Ser Lys Pro
545                 550                 555                 560

Glu Tyr Tyr Thr Pro Ile Val Thr Ser Ala Asp Thr Ser Asn Asn Glu
                565                 570                 575

Ile Leu Ser Lys Ile Gln Gln Gln Phe Glu Thr Ile Leu Thr Lys Glu
            580                 585                 590

Asn Ser Ile Val Asn Gly Thr Ile Glu Asp Pro Met Gly Asp Lys Ile
        595                 600                 605

Asn Leu Gln Leu Gly Asn Gly Gln Thr Leu Gln Pro Ser Asp Tyr Thr
    610                 615                 620

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

Gly Pro Asn Asn Asp Gly Gly Ile Leu Lys Gly Val Lys Leu Glu Tyr
                645                 650                 655

Ile Gly Asn Lys Leu Tyr Val Arg Gly Leu Asn Leu Gly Glu Gly Gln
            660                 665                 670

Lys Val Thr Leu Thr Tyr Asp Val Lys Leu Asp Asp Ser Phe Ile Ser
        675                 680                 685

Asn Lys Phe Tyr Asp Thr Asn Gly Arg Thr Thr Leu Asn Pro Lys Ser
    690                 695                 700

Glu Asp Pro Asn Thr Leu Arg Asp Phe Pro Ile Pro Lys Ile Arg Asp
705                 710                 715                 720

Val Arg Glu Tyr Pro Thr Ile Thr Ile Lys Asn Glu Lys Lys Leu Gly
                725                 730                 735

Glu Ile Glu Phe Ile Lys Val Asp Lys Asp Asn Asn Lys Leu Leu Leu
            740                 745                 750

Lys Gly Ala Thr Phe Glu Leu Gln Glu Phe Asn Glu Asp Tyr Lys Leu
        755                 760                 765

Tyr Leu Pro Ile Lys Asn Asn Asn Ser Lys Val Val Thr Gly Glu Asn
    770                 775                 780
```

```
Gly Lys Ile Ser Tyr Lys Asp Leu Lys Asp Gly Lys Tyr Gln Leu Ile
785                 790                 795                 800

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

Leu Thr Phe Glu Val Val Lys Gly Ser Ile Lys Asn Ile Ile Ala Val
            820                 825                 830

Asn Lys Gln Ile Ser Glu Tyr His Glu Glu Gly Asp Lys His Leu Ile
        835                 840                 845

Thr Asn Thr His Ile Pro Pro Lys Gly Ile
    850                 855


<210> 186
<211> 398
<212> PRT
<213> Streptococcus agalactiae

<400> 186
Thr Ile Val Lys Pro Val Asp Lys Gln Lys Pro Leu Asp Val Val Phe
1               5                   10                  15

Val Leu Asp Asn Ser Asn Ser Met Asn Asn Asp Gly Pro Asn Phe Gln
            20                  25                  30

Arg His Asn Lys Ala Lys Lys Ala Ala Glu Ala Leu Gly Thr Ala Val
        35                  40                  45

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

Tyr Gly Ser Asp Ile Phe Asp Gly Arg Ser Val Asp Val Val Lys Gly
65                  70                  75                  80

Phe Lys Glu Asp Asp Lys Tyr Tyr Gly Leu Gln Thr Lys Phe Thr Ile
                85                  90                  95

Gln Thr Glu Asn Tyr Ser His Lys Gln Leu Thr Asn Asn Ala Glu Glu
            100                 105                 110

Ile Ile Lys Arg Ile Pro Thr Glu Ala Pro Lys Ala Lys Trp Gly Ser
        115                 120                 125

Thr Thr Asn Gly Leu Thr Pro Glu Gln Gln Lys Glu Tyr Tyr Leu Ser
    130                 135                 140

Lys Val Gly Glu Thr Phe Thr Met Lys Ala Phe Met Glu Ala Asp Asp
145                 150                 155                 160
```

```
Ile Leu Ser Gln Val Asn Arg Asn Ser Gln Lys Ile Ile Val His Val
                165                 170                 175

Thr Asp Gly Val Pro Thr Arg Ser Tyr Ala Ile Asn Asn Phe Lys Leu
            180                 185                 190

Gly Ala Ser Tyr Glu Ser Gln Phe Glu Gln Met Lys Lys Asn Gly Tyr
        195                 200                 205

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

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

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

Leu Asn Tyr Pro Lys Gly Thr Ile Tyr Arg Asn Gly Pro Val Lys Glu
            260                 265                 270

His Gly Thr Pro Thr Lys Leu Tyr Ile Asn Ser Leu Lys Gln Lys Asn
        275                 280                 285

Tyr Asp Ile Phe Asn Phe Gly Ile Asp Ile Ser Gly Phe Arg Gln Val
    290                 295                 300

Tyr Asn Glu Glu Tyr Lys Lys Asn Gln Asp Gly Thr Phe Gln Lys Leu
305                 310                 315                 320

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

Arg Ser Phe Ser Ser Lys Pro Glu Tyr Tyr Thr Pro Ile Val Thr Ser
            340                 345                 350

Ala Asp Thr Ser Asn Asn Glu Ile Leu Ser Lys Ile Gln Gln Gln Phe
        355                 360                 365

Glu Thr Ile Leu Thr Lys Glu Asn Ser Ile Val Asn Gly Thr Ile Glu
    370                 375                 380

Asp Pro Met Gly Asp Lys Ile Asn Leu Gln Leu Gly Asn Gly
385                 390                 395
```

<210> 187
<211> 251
<212> PRT
<213> Streptococcus agalactiae

<400> 187

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Gln Thr Leu Gln Pro Ser Asp Tyr Thr Leu Gln Gly Asn Asp Gly Ser
1               5                   10                  15
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```
Val Met Lys Asp Gly Ile Ala Thr Gly Gly Pro Asn Asn Asp Gly Gly
            20                  25                  30

Ile Leu Lys Gly Val Lys Leu Glu Tyr Ile Gly Asn Lys Leu Tyr Val
        35                  40                  45

Arg Gly Leu Asn Leu Gly Glu Gly Gln Lys Val Thr Leu Thr Tyr Asp
    50                  55                  60

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

Gly Arg Thr Thr Leu Asn Pro Lys Ser Glu Asp Pro Asn Thr Leu Arg
                85                  90                  95

Asp Phe Pro Ile Pro Lys Ile Arg Asp Val Arg Glu Tyr Pro Thr Ile
            100                 105                 110

Thr Ile Lys Asn Glu Lys Lys Leu Gly Glu Ile Glu Phe Ile Lys Val
        115                 120                 125

Asp Lys Asp Asn Asn Lys Leu Leu Leu Lys Gly Ala Thr Phe Glu Leu
    130                 135                 140

Gln Glu Phe Asn Glu Asp Tyr Lys Leu Tyr Leu Pro Ile Lys Asn Asn
145                 150                 155                 160

Asn Ser Lys Val Val Thr Gly Glu Asn Gly Lys Ile Ser Tyr Lys Asp
                165                 170                 175

Leu Lys Asp Gly Lys Tyr Gln Leu Ile Glu Ala Val Ser Pro Glu Asp
            180                 185                 190

Tyr Gln Lys Ile Thr Asn Lys Pro Ile Leu Thr Phe Glu Val Val Lys
        195                 200                 205

Gly Ser Ile Lys Asn Ile Ile Ala Val Asn Lys Gln Ile Ser Glu Tyr
    210                 215                 220

His Glu Glu Gly Asp Lys His Leu Ile Thr Asn Thr His Ile Pro Pro
225                 230                 235                 240

Lys Gly Ile Ile Pro Met Thr Gly Gly Lys Gly
                245                 250
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<210> 188
<211> 896
<212> PRT
<213> Streptococcus agalactiae

<400> 188

eolf-seql

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

Cys Leu Ser Gln Ile Pro Leu Asn Thr Asn Val Leu Gly Glu Ser Thr
            20                  25                  30

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

Asp Gln Asn Lys Pro Leu Ser Lys Ala Thr Phe Val Leu Lys Pro Thr
    50                  55                  60

Ser His Ser Glu Ser Lys Val Glu Lys Val Thr Thr Glu Val Thr Gly
65                  70                  75                  80

Glu Ala Thr Phe Asp Asn Leu Thr Pro Gly Asp Tyr Thr Leu Ser Glu
                85                  90                  95

Glu Thr Ala Pro Glu Gly Tyr Lys Lys Thr Thr Gln Thr Trp Gln Val
            100                 105                 110

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

Lys Ser Ile Ile Glu Gln Arg Gln Glu Glu Leu Asp Lys Gln Tyr Pro
    130                 135                 140

Leu Thr Gly Ala Tyr Glu Asp Thr Lys Glu Ser Tyr Asn Leu Glu His
145                 150                 155                 160

Val Lys Asn Ser Ile Pro Asn Gly Lys Leu Glu Ala Lys Ala Val Asn
                165                 170                 175

Pro Tyr Ser Ser Glu Gly Glu His Ile Arg Glu Ile Gln Glu Gly Thr
            180                 185                 190

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

Lys Ile Glu Leu Thr Val Ser Gly Lys Ser Ile Ile Lys Thr Ile Asn
    210                 215                 220

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

Met Lys Asn Asn Gly Lys Asn Asn Lys Ala Lys Lys Ala Gly Glu Ala
                245                 250                 255

Val Glu Thr Ile Ile Lys Asp Val Leu Gly Ala Asn Val Glu Asn Arg
            260                 265                 270
```

```
Ala Ala Leu Val Thr Tyr Gly Ser Asp Ile Phe Asp Gly Arg Thr Val
        275                 280                 285

Lys Val Ile Lys Gly Phe Lys Glu Asp Pro Tyr Tyr Gly Leu Glu Thr
    290                 295                 300

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

Ile Ala Ala Asp Ile Ile Lys Lys Ile Pro Lys Glu Ala Pro Glu Ala
                325                 330                 335

Lys Trp Gly Gly Thr Ser Leu Gly Leu Thr Pro Glu Lys Lys Arg Glu
            340                 345                 350

Tyr Asp Leu Ser Lys Val Gly Glu Thr Phe Thr Met Lys Ala Phe Met
        355                 360                 365

Glu Ala Asp Thr Leu Leu Ser Ser Ile Gln Arg Lys Ser Arg Lys Ile
    370                 375                 380

Ile Val His Leu Thr Asp Gly Val Pro Thr Arg Ser Tyr Ala Ile Asn
385                 390                 395                 400

Ser Phe Val Lys Gly Ser Thr Tyr Ala Asn Gln Phe Glu Arg Ile Lys
                405                 410                 415

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

Glu Lys Ile Lys Gly Asn Gly Glu Ser Tyr Phe Leu Phe Pro Leu Asp
        435                 440                 445

Ser Tyr Gln Thr Gln Ile Ile Ser Gly Asn Leu Gln Lys Leu His Tyr
    450                 455                 460

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

Pro Val Arg Glu His Gly Thr Pro Thr Lys Leu Tyr Ile Asn Ser Leu
                485                 490                 495

Lys Gln Lys Asn Tyr Asp Ile Phe Asn Phe Gly Ile Asp Ile Ser Gly
            500                 505                 510

Phe Arg Gln Val Tyr Asn Glu Asp Tyr Lys Lys Asn Gln Asp Gly Thr
        515                 520                 525

Phe Gln Lys Leu Lys Glu Glu Ala Phe Glu Leu Ser Asp Gly Glu Ile
    530                 535                 540
```

```
Thr Glu Leu Met Asn Ser Phe Ser Ser Lys Pro Glu Tyr Tyr Thr Pro
545                 550                 555                 560

Ile Val Thr Ser Ala Asp Val Ser Asn Asn Glu Ile Leu Ser Lys Ile
                565                 570                 575

Gln Gln Gln Phe Glu Lys Ile Leu Thr Lys Glu Asn Ser Ile Val Asn
            580                 585                 590

Gly Thr Ile Glu Asp Pro Met Gly Asp Lys Ile Asn Leu His Leu Gly
        595                 600                 605

Asn Gly Gln Thr Leu Gln Pro Ser Asp Tyr Thr Leu Gln Gly Asn Asp
    610                 615                 620

Gly Ser Ile Met Lys Asp Ser Ile Ala Thr Gly Gly Pro Asn Asn Asp
625                 630                 635                 640

Gly Gly Ile Leu Lys Gly Val Lys Leu Glu Tyr Ile Lys Asn Lys Leu
                645                 650                 655

Tyr Val Arg Gly Leu Asn Leu Gly Glu Gly Gln Lys Val Thr Leu Thr
            660                 665                 670

Tyr Asp Val Lys Leu Asp Asp Ser Phe Ile Ser Asn Lys Phe Tyr Asp
        675                 680                 685

Thr Asn Gly Arg Thr Thr Leu Asn Pro Lys Ser Glu Glu Pro Asp Thr
    690                 695                 700

Leu Arg Asp Phe Pro Ile Pro Lys Ile Arg Asp Val Arg Glu Tyr Pro
705                 710                 715                 720

Thr Ile Thr Ile Lys Asn Glu Lys Lys Leu Gly Glu Ile Glu Phe Thr
                725                 730                 735

Lys Val Asp Lys Asp Asn Asn Lys Leu Leu Leu Lys Gly Ala Thr Phe
            740                 745                 750

Glu Leu Gln Glu Phe Asn Glu Asp Tyr Lys Leu Tyr Leu Pro Ile Lys
        755                 760                 765

Asn Asn Asn Ser Lys Val Val Thr Gly Glu Asn Gly Lys Ile Ser Tyr
    770                 775                 780

Lys Asp Leu Lys Asp Gly Lys Tyr Gln Leu Ile Glu Ala Val Ser Pro
785                 790                 795                 800

Lys Asp Tyr Gln Lys Ile Thr Asn Lys Pro Ile Leu Thr Phe Glu Val
                805                 810                 815
```

Val Lys Gly Ser Ile Gln Asn Ile Ile Ala Val Asn Lys Gln Ile Ser
820 825 830

Glu Tyr His Glu Glu Gly Asp Lys His Leu Ile Thr Asn Thr His Ile
835 840 845

Pro Pro Lys Gly Ile Ile Pro Met Thr Gly Gly Lys Gly Ile Leu Ser
850 855 860

Phe Ile Leu Ile Gly Gly Ala Met Met Ser Ile Ala Gly Gly Ile Tyr
865 870 875 880

Ile Trp Lys Arg His Lys Lys Ser Ser Asp Ala Ser Ile Glu Lys Asp
885 890 895

<210> 189
<211> 393
<212> PRT
<213> Streptococcus agalactiae

<400> 189
Ser Ile Ile Lys Thr Ile Asn Lys Asp Glu Pro Leu Asp Val Val Phe
1 5 10 15

Val Leu Asp Asn Ser Asn Ser Met Lys Asn Asn Gly Lys Asn Asn Lys
20 25 30

Ala Lys Lys Ala Gly Glu Ala Val Glu Thr Ile Ile Lys Asp Val Leu
35 40 45

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

Ile Phe Asp Gly Arg Thr Val Lys Val Ile Lys Gly Phe Lys Glu Asp
65 70 75 80

Pro Tyr Tyr Gly Leu Glu Thr Ser Phe Thr Val Gln Thr Asn Asp Tyr
85 90 95

Ser Tyr Lys Lys Phe Thr Asn Ile Ala Ala Asp Ile Ile Lys Lys Ile
100 105 110

Pro Lys Glu Ala Pro Glu Ala Lys Trp Gly Gly Thr Ser Leu Gly Leu
115 120 125

Thr Pro Glu Lys Lys Arg Glu Tyr Asp Leu Ser Lys Val Gly Glu Thr
130 135 140

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

Gln Arg Lys Ser Arg Lys Ile Ile Val His Leu Thr Asp Gly Val Pro
165 170 175

```
Thr Arg Ser Tyr Ala Ile Asn Ser Phe Val Lys Gly Ser Thr Tyr Ala
            180                 185                 190

Asn Gln Phe Glu Arg Ile Lys Glu Lys Gly Tyr Leu Asp Lys Asn Asn
        195                 200                 205

Tyr Phe Ile Thr Asp Asp Pro Glu Lys Ile Lys Gly Asn Gly Glu Ser
    210                 215                 220

Tyr Phe Leu Phe Pro Leu Asp Ser Tyr Gln Thr Gln Ile Ile Ser Gly
225                 230                 235                 240

Asn Leu Gln Lys Leu His Tyr Leu Asp Leu Asn Leu Asn Tyr Pro Lys
                245                 250                 255

Gly Thr Ile Tyr Arg Asn Gly Pro Val Arg Glu His Gly Thr Pro Thr
            260                 265                 270

Lys Leu Tyr Ile Asn Ser Leu Lys Gln Lys Asn Tyr Asp Ile Phe Asn
        275                 280                 285

Phe Gly Ile Asp Ile Ser Gly Phe Arg Gln Val Tyr Asn Glu Asp Tyr
    290                 295                 300

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

Glu Leu Ser Asp Gly Glu Ile Thr Glu Leu Met Asn Ser Phe Ser Ser
                325                 330                 335

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

Asn Glu Ile Leu Ser Lys Ile Gln Gln Gln Phe Glu Lys Ile Leu Thr
        355                 360                 365

Lys Glu Asn Ser Ile Val Asn Gly Thr Ile Glu Asp Pro Met Gly Asp
    370                 375                 380

Lys Ile Asn Leu His Leu Gly Asn Gly
385                 390


<210> 190
<211> 251
<212> PRT
<213> Streptococcus agalactiae

<400> 190
Gln Thr Leu Gln Pro Ser Asp Tyr Thr Leu Gln Gly Asn Asp Gly Ser
1               5                   10                  15
```

Ile Met Lys Asp Ser Ile Ala Thr Gly Gly Pro Asn Asn Asp Gly Gly
20 25 30

Ile Leu Lys Gly Val Lys Leu Glu Tyr Ile Lys Asn Lys Leu Tyr Val
35 40 45

Arg Gly Leu Asn Leu Gly Glu Gly Gln Lys Val Thr Leu Thr Tyr Asp
50 55 60

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

Gly Arg Thr Thr Leu Asn Pro Lys Ser Glu Glu Pro Asp Thr Leu Arg
85 90 95

Asp Phe Pro Ile Pro Lys Ile Arg Asp Val Arg Glu Tyr Pro Thr Ile
100 105 110

Thr Ile Lys Asn Glu Lys Lys Leu Gly Glu Ile Glu Phe Thr Lys Val
115 120 125

Asp Lys Asp Asn Asn Lys Leu Leu Leu Lys Gly Ala Thr Phe Glu Leu
130 135 140

Gln Glu Phe Asn Glu Asp Tyr Lys Leu Tyr Leu Pro Ile Lys Asn Asn
145 150 155 160

Asn Ser Lys Val Val Thr Gly Glu Asn Gly Lys Ile Ser Tyr Lys Asp
165 170 175

Leu Lys Asp Gly Lys Tyr Gln Leu Ile Glu Ala Val Ser Pro Lys Asp
180 185 190

Tyr Gln Lys Ile Thr Asn Lys Pro Ile Leu Thr Phe Glu Val Val Lys
195 200 205

Gly Ser Ile Gln Asn Ile Ile Ala Val Asn Lys Gln Ile Ser Glu Tyr
210 215 220

His Glu Glu Gly Asp Lys His Leu Ile Thr Asn Thr His Ile Pro Pro
225 230 235 240

Lys Gly Ile Ile Pro Met Thr Gly Gly Lys Gly
245 250

<210> 191
<211> 901
<212> PRT
<213> Streptococcus agalactiae

<400> 191
Met Arg Lys Tyr Gln Lys Phe Ser Lys Ile Leu Thr Leu Ser Leu Phe
1 5 10 15

```
Cys Leu Ser Gln Ile Pro Leu Asn Thr Asn Val Leu Gly Glu Ser Thr
            20                  25                  30

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

Asp Gln Asn Lys Pro Leu Ser Lys Ala Thr Phe Val Leu Lys Thr Thr
    50                  55                  60

Ala His Pro Glu Ser Lys Ile Glu Lys Val Thr Ala Glu Leu Thr Gly
65                  70                  75                  80

Glu Ala Thr Phe Asp Asn Leu Ile Pro Gly Asp Tyr Thr Leu Ser Glu
                85                  90                  95

Glu Thr Ala Pro Glu Gly Tyr Lys Lys Thr Asn Gln Thr Trp Gln Val
            100                 105                 110

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

Asn Ser Thr Ile Gly Gln Asn Gln Glu Glu Leu Asp Lys Gln Tyr Pro
    130                 135                 140

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

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

Pro Tyr Ser Ser Glu Gly Glu His Ile Arg Glu Ile Pro Glu Gly Thr
            180                 185                 190

Leu Ser Lys Arg Ile Ser Glu Val Gly Asp Leu Ala His Asn Lys Tyr
        195                 200                 205

Lys Ile Glu Leu Thr Val Ser Gly Lys Thr Ile Val Lys Pro Val Asp
    210                 215                 220

Lys Gln Lys Pro Leu Asp Val Val Phe Val Leu Asp Asn Ser Asn Ser
225                 230                 235                 240

Met Asn Asn Asp Gly Pro Asn Phe Gln Arg His Asn Lys Ala Lys Lys
                245                 250                 255

Ala Ala Glu Ala Leu Gly Thr Ala Val Lys Asp Ile Leu Gly Ala Asn
            260                 265                 270

Ser Asp Asn Arg Val Ala Leu Val Thr Tyr Gly Ser Asp Ile Phe Asp
        275                 280                 285
```

```
Gly Arg Ser Val Asp Val Val Lys Gly Phe Lys Glu Asp Asp Lys Tyr
    290                 295                 300

Tyr Gly Leu Gln Thr Lys Phe Thr Ile Gln Thr Glu Asn Tyr Ser His
305                 310                 315                 320

Lys Gln Leu Thr Asn Asn Ala Glu Glu Ile Ile Lys Arg Ile Pro Thr
                325                 330                 335

Glu Ala Pro Lys Ala Lys Trp Gly Ser Thr Thr Asn Gly Leu Thr Pro
            340                 345                 350

Glu Gln Gln Lys Glu Tyr Tyr Leu Ser Lys Val Gly Glu Thr Phe Thr
        355                 360                 365

Met Lys Ala Phe Met Glu Ala Asp Asp Ile Leu Ser Gln Val Asn Arg
    370                 375                 380

Asn Ser Gln Lys Ile Ile Val His Val Thr Asp Gly Val Pro Thr Arg
385                 390                 395                 400

Ser Tyr Ala Ile Asn Asn Phe Lys Leu Gly Ala Ser Tyr Glu Ser Gln
                405                 410                 415

Phe Glu Gln Met Lys Lys Asn Gly Tyr Leu Asn Lys Ser Asn Phe Leu
            420                 425                 430

Leu Thr Asp Lys Pro Glu Asp Ile Lys Gly Asn Gly Glu Ser Tyr Phe
        435                 440                 445

Leu Phe Pro Leu Asp Ser Tyr Gln Thr Gln Ile Ile Ser Gly Asn Leu
    450                 455                 460

Gln Lys Leu His Tyr Leu Asp Leu Asn Leu Asn Tyr Pro Lys Gly Thr
465                 470                 475                 480

Phe Tyr Arg Asn Gly Pro Val Arg Glu His Gly Thr Pro Thr Lys Leu
                485                 490                 495

Tyr Ile Asn Ser Leu Lys Gln Lys Asn Tyr Asp Ile Phe Asn Phe Gly
            500                 505                 510

Ile Asp Ile Ser Gly Phe Arg Gln Val Tyr Asn Glu Asp Tyr Lys Lys
        515                 520                 525

Asn Gln Asp Gly Thr Phe Gln Lys Leu Lys Glu Glu Ala Phe Glu Leu
    530                 535                 540

Ser Asp Gly Glu Ile Thr Glu Leu Met Lys Ser Phe Ser Ser Lys Pro
545                 550                 555                 560
```

```
Glu Tyr Tyr Thr Pro Ile Val Thr Ser Ser Asp Ala Ser Asn Asn Glu
                565                 570                 575

Ile Leu Ser Lys Ile Gln Gln Gln Phe Glu Lys Ile Leu Thr Lys Glu
            580                 585                 590

Asn Ser Ile Val Asn Gly Thr Ile Glu Asp Pro Met Gly Asp Lys Ile
        595                 600                 605

Asn Leu Gln Leu Gly Asn Gly Gln Thr Leu Gln Pro Ser Asp Tyr Thr
    610                 615                 620

Leu Gln Gly Asn Asp Gly Ser Ile Met Lys Asp Ser Ile Ala Thr Gly
625                 630                 635                 640

Gly Pro Asn Asn Asp Gly Gly Ile Leu Lys Gly Val Lys Leu Glu Tyr
                645                 650                 655

Ile Lys Asn Lys Leu Tyr Val Arg Gly Leu Asn Leu Gly Glu Gly Gln
            660                 665                 670

Lys Val Thr Leu Thr Tyr Asp Val Lys Leu Asp Asp Ser Phe Ile Ser
        675                 680                 685

Asn Lys Phe Tyr Asp Thr Asn Gly Arg Thr Thr Leu Asn Pro Lys Ser
    690                 695                 700

Glu Asp Pro Asn Thr Leu Arg Asp Phe Pro Ile Pro Lys Ile Arg Asp
705                 710                 715                 720

Val Arg Glu Tyr Pro Thr Ile Thr Ile Lys Asn Glu Lys Lys Leu Gly
                725                 730                 735

Glu Ile Glu Phe Thr Lys Val Asp Lys Asp Asn Asn Lys Leu Leu Leu
            740                 745                 750

Lys Gly Ala Thr Phe Glu Leu Gln Glu Phe Asn Glu Asp Tyr Lys Leu
        755                 760                 765

Tyr Leu Pro Ile Lys Asn Asn Asn Ser Lys Val Val Thr Gly Glu Asn
    770                 775                 780

Gly Lys Ile Ser Tyr Lys Asp Leu Lys Asp Gly Lys Tyr Gln Leu Ile
785                 790                 795                 800

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

Leu Thr Phe Glu Val Val Lys Gly Ser Ile Gln Asn Ile Ile Ala Val
            820                 825                 830
```

```
Asn Lys Gln Ile Ser Glu Tyr His Glu Glu Gly Asp Lys His Leu Ile
        835                 840                 845

Thr Asn Thr His Ile Pro Pro Lys Gly Ile Ile Pro Met Thr Gly Gly
    850                 855                 860

Lys Gly Ile Leu Ser Phe Ile Leu Ile Gly Gly Ser Met Met Ser Ile
865                 870                 875                 880

Ala Gly Gly Ile Tyr Ile Trp Lys Arg Tyr Lys Lys Ser Ser Asp Ile
                885                 890                 895

Ser Arg Glu Lys Asp
            900
```

<210> 192
<211> 398
<212> PRT
<213> Streptococcus agalactiae

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<400> 192
Thr Ile Val Lys Pro Val Asp Lys Gln Lys Pro Leu Asp Val Val Phe
1               5                   10                  15

Val Leu Asp Asn Ser Asn Ser Met Asn Asn Asp Gly Pro Asn Phe Gln
            20                  25                  30

Arg His Asn Lys Ala Lys Lys Ala Ala Glu Ala Leu Gly Thr Ala Val
        35                  40                  45

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

Tyr Gly Ser Asp Ile Phe Asp Gly Arg Ser Val Asp Val Val Lys Gly
65                  70                  75                  80

Phe Lys Glu Asp Asp Lys Tyr Tyr Gly Leu Gln Thr Lys Phe Thr Ile
                85                  90                  95

Gln Thr Glu Asn Tyr Ser His Lys Gln Leu Thr Asn Asn Ala Glu Glu
            100                 105                 110

Ile Ile Lys Arg Ile Pro Thr Glu Ala Pro Lys Ala Lys Trp Gly Ser
        115                 120                 125

Thr Thr Asn Gly Leu Thr Pro Glu Gln Gln Lys Glu Tyr Tyr Leu Ser
    130                 135                 140

Lys Val Gly Glu Thr Phe Thr Met Lys Ala Phe Met Glu Ala Asp Asp
145                 150                 155                 160
```

```
Ile Leu Ser Gln Val Asn Arg Asn Ser Gln Lys Ile Ile Val His Val
                165                 170                 175

Thr Asp Gly Val Pro Thr Arg Ser Tyr Ala Ile Asn Asn Phe Lys Leu
            180                 185                 190

Gly Ala Ser Tyr Glu Ser Gln Phe Glu Gln Met Lys Lys Asn Gly Tyr
        195                 200                 205

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

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

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

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

His Gly Thr Pro Thr Lys Leu Tyr Ile Asn Ser Leu Lys Gln Lys Asn
        275                 280                 285

Tyr Asp Ile Phe Asn Phe Gly Ile Asp Ile Ser Gly Phe Arg Gln Val
    290                 295                 300

Tyr Asn Glu Asp Tyr Lys Lys Asn Gln Asp Gly Thr Phe Gln Lys Leu
305                 310                 315                 320

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

Lys Ser Phe Ser Ser Lys Pro Glu Tyr Tyr Thr Pro Ile Val Thr Ser
            340                 345                 350

Ser Asp Ala Ser Asn Asn Glu Ile Leu Ser Lys Ile Gln Gln Gln Phe
        355                 360                 365

Glu Lys Ile Leu Thr Lys Glu Asn Ser Ile Val Asn Gly Thr Ile Glu
    370                 375                 380

Asp Pro Met Gly Asp Lys Ile Asn Leu Gln Leu Gly Asn Gly
385                 390                 395

<210> 193
<211> 251
<212> PRT
<213> Streptococcus agalactiae

<400> 193
Gln Thr Leu Gln Pro Ser Asp Tyr Thr Leu Gln Gly Asn Asp Gly Ser
1               5                   10                  15
```

```
Ile Met Lys Asp Ser Ile Ala Thr Gly Gly Pro Asn Asn Asp Gly Gly
            20                  25                  30

Ile Leu Lys Gly Val Lys Leu Glu Tyr Ile Lys Asn Lys Leu Tyr Val
        35                  40                  45

Arg Gly Leu Asn Leu Gly Glu Gly Gln Lys Val Thr Leu Thr Tyr Asp
    50                  55                  60

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

Gly Arg Thr Thr Leu Asn Pro Lys Ser Glu Asp Pro Asn Thr Leu Arg
                85                  90                  95

Asp Phe Pro Ile Pro Lys Ile Arg Asp Val Arg Glu Tyr Pro Thr Ile
            100                 105                 110

Thr Ile Lys Asn Glu Lys Lys Leu Gly Glu Ile Glu Phe Thr Lys Val
        115                 120                 125

Asp Lys Asp Asn Asn Lys Leu Leu Leu Lys Gly Ala Thr Phe Glu Leu
    130                 135                 140

Gln Glu Phe Asn Glu Asp Tyr Lys Leu Tyr Leu Pro Ile Lys Asn Asn
145                 150                 155                 160

Asn Ser Lys Val Val Thr Gly Glu Asn Gly Lys Ile Ser Tyr Lys Asp
                165                 170                 175

Leu Lys Asp Gly Lys Tyr Gln Leu Ile Glu Ala Val Ser Pro Lys Asp
            180                 185                 190

Tyr Gln Lys Ile Thr Asn Lys Pro Ile Leu Thr Phe Glu Val Val Lys
        195                 200                 205

Gly Ser Ile Gln Asn Ile Ile Ala Val Asn Lys Gln Ile Ser Glu Tyr
    210                 215                 220

His Glu Glu Gly Asp Lys His Leu Ile Thr Asn Thr His Ile Pro Pro
225                 230                 235                 240

Lys Gly Ile Ile Pro Met Thr Gly Gly Lys Gly
                245                 250
```

<210> 194
<211> 901
<212> PRT
<213> Streptococcus agalactiae

<400> 194

eolf-seql

```
Met Arg Lys Tyr Gln Lys Phe Ser Lys Ile Leu Thr Leu Ser Leu Phe
1               5                  10                  15

Cys Leu Ser Gln Ile Pro Leu Asn Thr Asn Val Leu Gly Glu Ser Thr
            20                  25                  30

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

Asp Gln Asn Lys Pro Leu Ser Lys Ala Thr Phe Val Leu Lys Thr Thr
    50                  55                  60

Ala His Pro Glu Ser Lys Ile Glu Lys Val Thr Ala Glu Leu Thr Gly
65                  70                  75                  80

Glu Ala Thr Phe Asp Asn Leu Ile Pro Gly Asp Tyr Thr Leu Ser Glu
                85                  90                  95

Glu Thr Ala Pro Glu Gly Tyr Lys Lys Thr Asn Gln Thr Trp Gln Val
            100                 105                 110

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

Asn Ser Thr Ile Gly Gln Asn Gln Glu Glu Leu Asp Lys Gln Tyr Pro
    130                 135                 140

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

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

Pro Tyr Ser Ser Glu Gly Glu His Ile Arg Glu Ile Pro Glu Gly Thr
            180                 185                 190

Leu Ser Lys Arg Ile Ser Glu Val Gly Asp Leu Ala His Asn Lys Tyr
        195                 200                 205

Lys Ile Glu Leu Thr Val Ser Gly Lys Thr Ile Val Lys Pro Val Asp
    210                 215                 220

Lys Gln Lys Pro Leu Asp Val Val Phe Val Leu Asp Asn Ser Asn Ser
225                 230                 235                 240

Met Asn Asn Asp Gly Pro Asn Phe Gln Arg His Asn Lys Ala Lys Lys
                245                 250                 255

Ala Ala Glu Ala Leu Gly Thr Ala Val Lys Asp Ile Leu Gly Ala Asn
            260                 265                 270
```

```
Ser Asp Asn Arg Val Ala Leu Val Thr Tyr Gly Ser Asp Ile Phe Asp
        275                 280                 285

Gly Arg Ser Val Asp Val Val Lys Gly Phe Lys Glu Asp Asp Lys Tyr
    290                 295                 300

Tyr Gly Leu Gln Thr Lys Phe Thr Ile Gln Thr Glu Asn Tyr Ser His
305                 310                 315                 320

Lys Gln Leu Thr Asn Asn Ala Glu Glu Ile Ile Lys Arg Ile Pro Thr
                325                 330                 335

Glu Ala Pro Lys Ala Lys Trp Gly Ser Thr Thr Asn Gly Leu Thr Pro
            340                 345                 350

Glu Gln Gln Lys Glu Tyr Tyr Leu Ser Lys Val Gly Glu Thr Phe Thr
        355                 360                 365

Met Lys Ala Phe Met Glu Ala Asp Asp Ile Leu Ser Gln Val Asn Arg
    370                 375                 380

Asn Ser Gln Lys Ile Ile Val His Val Thr Asp Gly Val Pro Thr Arg
385                 390                 395                 400

Ser Tyr Ala Ile Asn Asn Phe Lys Leu Gly Ala Ser Tyr Glu Ser Gln
                405                 410                 415

Phe Glu Gln Met Lys Lys Asn Gly Tyr Leu Asn Lys Ser Asn Phe Leu
            420                 425                 430

Leu Thr Asp Lys Pro Asp Asp Ile Lys Gly Asn Gly Glu Ser Tyr Phe
        435                 440                 445

Leu Phe Pro Leu Asp Ser Tyr Gln Thr Gln Ile Ile Ser Gly Asn Leu
    450                 455                 460

Gln Lys Leu His Tyr Leu Asp Leu Asn Leu Asn Tyr Pro Lys Gly Thr
465                 470                 475                 480

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

Tyr Ile Asn Ser Leu Lys Gln Lys Asn Tyr Asp Ile Phe Asn Phe Gly
            500                 505                 510

Ile Asp Ile Ser Gly Phe Arg Gln Val Tyr Asn Glu Glu Tyr Lys Lys
        515                 520                 525

Asn Gln Asp Gly Thr Phe Gln Lys Leu Lys Glu Glu Ala Phe Lys Leu
    530                 535                 540
```

```
Ser Asp Gly Glu Ile Thr Glu Leu Met Arg Ser Phe Ser Ser Lys Pro
545                 550                 555                 560

Glu Tyr Tyr Thr Pro Ile Val Thr Ser Ala Asp Thr Ser Asn Asn Glu
                565                 570                 575

Ile Leu Ser Lys Ile Gln Gln Gln Phe Glu Thr Ile Leu Thr Lys Glu
            580                 585                 590

Asn Ser Ile Val Asn Gly Thr Ile Glu Asp Pro Met Gly Asp Lys Ile
        595                 600                 605

Asn Leu Gln Leu Gly Asn Gly Gln Ile Leu Gln Pro Ser Asp Tyr Thr
    610                 615                 620

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

Gly Pro Asn Asn Asp Gly Gly Ile Leu Lys Gly Val Lys Leu Glu Tyr
                645                 650                 655

Ile Gly Asn Lys Leu Tyr Val Arg Gly Leu Asn Leu Gly Glu Gly Gln
            660                 665                 670

Lys Val Thr Leu Thr Tyr Asp Val Lys Leu Asp Asp Ser Phe Ile Ser
        675                 680                 685

Asn Lys Phe Tyr Asp Thr Asn Gly Arg Thr Thr Leu Asn Pro Lys Ser
    690                 695                 700

Glu Asp Pro Asn Thr Leu Arg Asp Phe Pro Ile Pro Lys Ile Arg Asp
705                 710                 715                 720

Val Arg Glu Tyr Pro Thr Ile Thr Ile Lys Asn Glu Lys Lys Leu Gly
                725                 730                 735

Glu Ile Glu Phe Ile Lys Val Asp Lys Asp Asn Asn Lys Leu Leu Leu
            740                 745                 750

Lys Gly Ala Thr Phe Glu Leu Gln Glu Phe Asn Glu Asp Tyr Lys Leu
        755                 760                 765

Tyr Leu Pro Ile Lys Asn Asn Asn Ser Lys Val Val Thr Gly Glu Asn
    770                 775                 780

Gly Lys Ile Ser Tyr Lys Asp Leu Lys Asp Gly Lys Tyr Gln Leu Ile
785                 790                 795                 800

Glu Ala Val Ser Pro Glu Asp Tyr Gln Lys Ile Thr Asn Lys Pro Ile
                805                 810                 815
```

Leu Thr Phe Glu Val Val Lys Gly Ser Ile Lys Asn Ile Ile Ala Val
820 825 830

Asn Lys Gln Ile Ser Glu Tyr His Glu Glu Gly Asp Lys His Leu Ile
835 840 845

Thr Asn Thr His Ile Pro Pro Lys Gly Ile Ile Pro Lys Thr Gly Gly
850 855 860

Lys Gly Ile Leu Ser Phe Ile Leu Ile Gly Gly Ala Met Met Ser Ile
865 870 875 880

Ala Gly Gly Ile Tyr Ile Trp Lys Arg Tyr Lys Lys Ser Ser Asp Met
885 890 895

Ser Ile Lys Lys Asp
900

<210> 195
<211> 398
<212> PRT
<213> Streptococcus agalactiae

<400> 195
Thr Ile Val Lys Pro Val Asp Lys Gln Lys Pro Leu Asp Val Val Phe
1 5 10 15

Val Leu Asp Asn Ser Asn Ser Met Asn Asn Asp Gly Pro Asn Phe Gln
20 25 30

Arg His Asn Lys Ala Lys Lys Ala Ala Glu Ala Leu Gly Thr Ala Val
35 40 45

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

Tyr Gly Ser Asp Ile Phe Asp Gly Arg Ser Val Asp Val Val Lys Gly
65 70 75 80

Phe Lys Glu Asp Asp Lys Tyr Tyr Gly Leu Gln Thr Lys Phe Thr Ile
85 90 95

Gln Thr Glu Asn Tyr Ser His Lys Gln Leu Thr Asn Asn Ala Glu Glu
100 105 110

Ile Ile Lys Arg Ile Pro Thr Glu Ala Pro Lys Ala Lys Trp Gly Ser
115 120 125

Thr Thr Asn Gly Leu Thr Pro Glu Gln Gln Lys Glu Tyr Tyr Leu Ser
130 135 140

Lys Val Gly Glu Thr Phe Thr Met Lys Ala Phe Met Glu Ala Asp Asp
145 150 155 160

```
Ile Leu Ser Gln Val Asn Arg Asn Ser Gln Lys Ile Ile Val His Val
                165                 170                 175

Thr Asp Gly Val Pro Thr Arg Ser Tyr Ala Ile Asn Asn Phe Lys Leu
            180                 185                 190

Gly Ala Ser Tyr Glu Ser Gln Phe Glu Gln Met Lys Lys Asn Gly Tyr
        195                 200                 205

Leu Asn Lys Ser Asn Phe Leu Leu Thr Asp Lys Pro Asp Asp Ile Lys
    210                 215                 220

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

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

Leu Asn Tyr Pro Lys Gly Thr Ile Tyr Arg Asn Gly Pro Val Lys Glu
            260                 265                 270

His Gly Thr Pro Thr Lys Leu Tyr Ile Asn Ser Leu Lys Gln Lys Asn
        275                 280                 285

Tyr Asp Ile Phe Asn Phe Gly Ile Asp Ile Ser Gly Phe Arg Gln Val
    290                 295                 300

Tyr Asn Glu Glu Tyr Lys Lys Asn Gln Asp Gly Thr Phe Gln Lys Leu
305                 310                 315                 320

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

Arg Ser Phe Ser Ser Lys Pro Glu Tyr Tyr Thr Pro Ile Val Thr Ser
            340                 345                 350

Ala Asp Thr Ser Asn Asn Glu Ile Leu Ser Lys Ile Gln Gln Gln Phe
        355                 360                 365

Glu Thr Ile Leu Thr Lys Glu Asn Ser Ile Val Asn Gly Thr Ile Glu
    370                 375                 380

Asp Pro Met Gly Asp Lys Ile Asn Leu Gln Leu Gly Asn Gly
385                 390                 395
```

<210> 196
<211> 251
<212> PRT
<213> Streptococcus agalactiae

<400> 196

```
Gln Ile Leu Gln Pro Ser Asp Tyr Thr Leu Gln Gly Asn Asp Gly Ser
1               5                  10                  15

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

Ile Leu Lys Gly Val Lys Leu Glu Tyr Ile Gly Asn Lys Leu Tyr Val
        35                  40                  45

Arg Gly Leu Asn Leu Gly Glu Gly Gln Lys Val Thr Leu Thr Tyr Asp
    50                  55                  60

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

Gly Arg Thr Thr Leu Asn Pro Lys Ser Glu Asp Pro Asn Thr Leu Arg
                85                  90                  95

Asp Phe Pro Ile Pro Lys Ile Arg Asp Val Arg Glu Tyr Pro Thr Ile
            100                 105                 110

Thr Ile Lys Asn Glu Lys Lys Leu Gly Glu Ile Glu Phe Ile Lys Val
        115                 120                 125

Asp Lys Asp Asn Asn Lys Leu Leu Leu Lys Gly Ala Thr Phe Glu Leu
    130                 135                 140

Gln Glu Phe Asn Glu Asp Tyr Lys Leu Tyr Leu Pro Ile Lys Asn Asn
145                 150                 155                 160

Asn Ser Lys Val Val Thr Gly Glu Asn Gly Lys Ile Ser Tyr Lys Asp
                165                 170                 175

Leu Lys Asp Gly Lys Tyr Gln Leu Ile Glu Ala Val Ser Pro Glu Asp
            180                 185                 190

Tyr Gln Lys Ile Thr Asn Lys Pro Ile Leu Thr Phe Glu Val Val Lys
        195                 200                 205

Gly Ser Ile Lys Asn Ile Ile Ala Val Asn Lys Gln Ile Ser Glu Tyr
    210                 215                 220

His Glu Glu Gly Asp Lys His Leu Ile Thr Asn Thr His Ile Pro Pro
225                 230                 235                 240

Lys Gly Ile Ile Pro Lys Thr Gly Gly Lys Gly
                245                 250
```

<210> 197
<211> 901
<212> PRT
<213> Streptococcus agalactiae

<400> 197
Met Arg Lys Tyr Gln Lys Phe Ser Lys Ile Leu Thr Leu Ser Leu Phe
1 5 10 15

Cys Leu Ser Gln Ile Pro Leu Asn Thr Asn Val Leu Gly Glu Ser Thr
20 25 30

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

Asp Gln Asn Lys Pro Leu Ser Lys Ala Thr Phe Val Leu Lys Thr Thr
50 55 60

Ala His Pro Glu Ser Lys Ile Glu Lys Val Thr Ala Glu Leu Thr Gly
65 70 75 80

Glu Ala Thr Phe Asp Asn Leu Ile Pro Gly Asp Tyr Thr Leu Ser Glu
85 90 95

Glu Thr Ala Pro Glu Gly Tyr Lys Lys Thr Asn Gln Thr Trp Gln Val
100 105 110

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

Asn Ser Thr Ile Gly Gln Asn His Glu Glu Leu Asp Lys Gln Tyr Pro
130 135 140

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

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

Pro Tyr Ser Ser Glu Gly Glu His Ile Arg Glu Ile Pro Glu Gly Thr
180 185 190

Leu Ser Lys Arg Ile Ser Glu Val Gly Asp Leu Ala His Asn Lys Tyr
195 200 205

Lys Ile Glu Leu Thr Val Ser Gly Lys Thr Ile Val Lys Pro Val Asp
210 215 220

Lys Gln Lys Pro Leu Asp Val Val Phe Val Leu Asp Asn Ser Asn Ser
225 230 235 240

Met Asn Asn Asp Gly Pro Asn Phe Gln Arg His Asn Lys Ala Lys Lys
245 250 255

Ala Ala Glu Ala Leu Gly Thr Ala Val Lys Asp Ile Leu Gly Ala Asn
260 265 270

```
Ser Asp Asn Arg Val Ala Leu Val Thr Tyr Gly Ser Asp Ile Phe Asp
        275                 280                 285

Gly Arg Ser Val Asp Val Val Lys Gly Phe Lys Glu Asp Asp Lys Tyr
    290                 295                 300

Tyr Gly Leu Gln Thr Lys Phe Thr Ile Gln Thr Glu Asn Tyr Ser His
305                 310                 315                 320

Lys Gln Leu Thr Asn Asn Ala Glu Glu Ile Ile Lys Arg Ile Pro Thr
                325                 330                 335

Glu Ala Pro Arg Ala Lys Trp Gly Ser Thr Thr Asn Gly Leu Thr Pro
            340                 345                 350

Glu Gln Gln Lys Gln Tyr Tyr Leu Ser Lys Val Gly Glu Thr Phe Thr
        355                 360                 365

Met Lys Ala Phe Met Glu Ala Asp Asp Ile Leu Ser Gln Val Asp Arg
    370                 375                 380

Asn Ser Gln Lys Ile Ile Val His Ile Thr Asp Gly Val Pro Thr Arg
385                 390                 395                 400

Ser Tyr Ala Ile Asn Asn Phe Lys Leu Gly Ala Ser Tyr Glu Ser Gln
                405                 410                 415

Phe Glu Gln Met Lys Lys Asn Gly Tyr Leu Asn Lys Ser Asn Phe Leu
            420                 425                 430

Leu Thr Asp Lys Pro Glu Asp Ile Lys Gly Asn Gly Glu Ser Tyr Phe
        435                 440                 445

Leu Phe Pro Leu Asp Ser Tyr Gln Thr Gln Ile Ile Ser Gly Asn Leu
    450                 455                 460

Gln Lys Leu His Tyr Leu Asp Leu Asn Leu Asn Tyr Pro Lys Gly Thr
465                 470                 475                 480

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

Tyr Ile Asn Ser Leu Lys Gln Lys Asn Tyr Asp Ile Phe Asn Phe Gly
            500                 505                 510

Ile Asp Ile Ser Ala Phe Arg Gln Val Tyr Asn Glu Asp Tyr Lys Lys
        515                 520                 525

Asn Gln Asp Gly Thr Phe Gln Lys Leu Lys Glu Glu Ala Phe Glu Leu
    530                 535                 540
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Ser Asp Gly Glu Ile Thr Glu Leu Met Lys Ser Phe Ser Ser Lys Pro
545                 550                 555                 560

Glu Tyr Tyr Thr Pro Ile Val Thr Ser Ser Asp Ala Ser Asn Asn Glu
                565                 570                 575

Ile Leu Ser Lys Ile Gln Gln Gln Phe Glu Lys Val Leu Thr Lys Glu
            580                 585                 590

Asn Ser Ile Val Asn Gly Thr Ile Glu Asp Pro Met Gly Asp Lys Ile
        595                 600                 605

Asn Leu Gln Leu Gly Asn Gly Gln Thr Leu Gln Pro Ser Asp Tyr Thr
    610                 615                 620

Leu Gln Gly Asn Asp Gly Ser Ile Met Lys Asp Ser Ile Ala Thr Gly
625                 630                 635                 640

Gly Pro Asn Asn Asp Gly Gly Ile Leu Lys Gly Val Lys Leu Glu Tyr
                645                 650                 655

Ile Lys Asn Lys Leu Tyr Val Arg Gly Leu Asn Leu Gly Glu Gly Gln
            660                 665                 670

Lys Val Thr Leu Thr Tyr Asp Val Lys Leu Asp Asp Ser Phe Ile Ser
        675                 680                 685

Asn Lys Phe Tyr Asp Thr Asn Gly Arg Thr Thr Leu Asn Pro Lys Ser
    690                 695                 700

Glu Asp Pro Asn Thr Leu Arg Asp Phe Pro Ile Pro Lys Ile Arg Asp
705                 710                 715                 720

Val Arg Glu Tyr Pro Thr Ile Thr Ile Lys Asn Glu Lys Lys Leu Gly
                725                 730                 735

Glu Ile Glu Phe Thr Lys Val Asp Lys Asp Asn Asn Lys Leu Leu Leu
            740                 745                 750

Lys Gly Ala Thr Phe Glu Leu Gln Glu Phe Asn Glu Asp Tyr Lys Leu
        755                 760                 765

Tyr Leu Pro Ile Lys Asn Asn Asn Ser Lys Val Val Thr Gly Glu Asn
    770                 775                 780

Gly Lys Ile Ser Tyr Lys Asp Leu Lys Asp Gly Lys Tyr Gln Leu Ile
785                 790                 795                 800

Glu Ala Val Ser Pro Lys Asp Tyr Gln Lys Ile Thr Asn Lys Pro Ile
                805                 810                 815
```

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

Asn Lys Gln Ile Ser Glu Tyr His Glu Glu Gly Asp Lys His Leu Ile
835 840 845

Thr Asn Thr His Ile Pro Pro Lys Gly Ile Ile Pro Met Thr Gly Gly
850 855 860

Lys Gly Ile Leu Ser Phe Ile Leu Ile Gly Gly Ser Met Met Ser Ile
865 870 875 880

Ala Gly Gly Ile Tyr Ile Trp Lys Arg Tyr Lys Lys Ser Ser Asp Ile
885 890 895

Ser Arg Glu Lys Asp
900

<210> 198
<211> 398
<212> PRT
<213> Streptococcus agalactiae

<400> 198
Thr Ile Val Lys Pro Val Asp Lys Gln Lys Pro Leu Asp Val Val Phe
1 5 10 15

Val Leu Asp Asn Ser Asn Ser Met Asn Asn Asp Gly Pro Asn Phe Gln
20 25 30

Arg His Asn Lys Ala Lys Lys Ala Ala Glu Ala Leu Gly Thr Ala Val
35 40 45

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

Tyr Gly Ser Asp Ile Phe Asp Gly Arg Ser Val Asp Val Val Lys Gly
65 70 75 80

Phe Lys Glu Asp Asp Lys Tyr Tyr Gly Leu Gln Thr Lys Phe Thr Ile
85 90 95

Gln Thr Glu Asn Tyr Ser His Lys Gln Leu Thr Asn Asn Ala Glu Glu
100 105 110

Ile Ile Lys Arg Ile Pro Thr Glu Ala Pro Arg Ala Lys Trp Gly Ser
115 120 125

Thr Thr Asn Gly Leu Thr Pro Glu Gln Gln Lys Gln Tyr Tyr Leu Ser
130 135 140

```
Lys Val Gly Glu Thr Phe Thr Met Lys Ala Phe Met Glu Ala Asp Asp
145                 150                 155                 160

Ile Leu Ser Gln Val Asp Arg Asn Ser Gln Lys Ile Ile Val His Ile
                165                 170                 175

Thr Asp Gly Val Pro Thr Arg Ser Tyr Ala Ile Asn Asn Phe Lys Leu
            180                 185                 190

Gly Ala Ser Tyr Glu Ser Gln Phe Glu Gln Met Lys Lys Asn Gly Tyr
        195                 200                 205

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

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

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

Leu Asn Tyr Pro Lys Gly Thr Ile Tyr Arg Asn Gly Pro Val Arg Glu
            260                 265                 270

His Gly Thr Pro Thr Lys Leu Tyr Ile Asn Ser Leu Lys Gln Lys Asn
        275                 280                 285

Tyr Asp Ile Phe Asn Phe Gly Ile Asp Ile Ser Ala Phe Arg Gln Val
    290                 295                 300

Tyr Asn Glu Asp Tyr Lys Lys Asn Gln Asp Gly Thr Phe Gln Lys Leu
305                 310                 315                 320

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

Lys Ser Phe Ser Ser Lys Pro Glu Tyr Tyr Thr Pro Ile Val Thr Ser
            340                 345                 350

Ser Asp Ala Ser Asn Asn Glu Ile Leu Ser Lys Ile Gln Gln Gln Phe
        355                 360                 365

Glu Lys Val Leu Thr Lys Glu Asn Ser Ile Val Asn Gly Thr Ile Glu
    370                 375                 380

Asp Pro Met Gly Asp Lys Ile Asn Leu Gln Leu Gly Asn Gly
385                 390                 395


<210> 199
<211> 251
<212> PRT
<213> Streptococcus agalactiae
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<400> 199
Gln Thr Leu Gln Pro Ser Asp Tyr Thr Leu Gln Gly Asn Asp Gly Ser
1 5 10 15

Ile Met Lys Asp Ser Ile Ala Thr Gly Gly Pro Asn Asn Asp Gly Gly
20 25 30

Ile Leu Lys Gly Val Lys Leu Glu Tyr Ile Lys Asn Lys Leu Tyr Val
35 40 45

Arg Gly Leu Asn Leu Gly Glu Gly Gln Lys Val Thr Leu Thr Tyr Asp
50 55 60

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

Gly Arg Thr Thr Leu Asn Pro Lys Ser Glu Asp Pro Asn Thr Leu Arg
85 90 95

Asp Phe Pro Ile Pro Lys Ile Arg Asp Val Arg Glu Tyr Pro Thr Ile
100 105 110

Thr Ile Lys Asn Glu Lys Lys Leu Gly Glu Ile Glu Phe Thr Lys Val
115 120 125

Asp Lys Asp Asn Asn Lys Leu Leu Leu Lys Gly Ala Thr Phe Glu Leu
130 135 140

Gln Glu Phe Asn Glu Asp Tyr Lys Leu Tyr Leu Pro Ile Lys Asn Asn
145 150 155 160

Asn Ser Lys Val Val Thr Gly Glu Asn Gly Lys Ile Ser Tyr Lys Asp
165 170 175

Leu Lys Asp Gly Lys Tyr Gln Leu Ile Glu Ala Val Ser Pro Lys Asp
180 185 190

Tyr Gln Lys Ile Thr Asn Lys Pro Ile Leu Thr Phe Glu Val Val Lys
195 200 205

Gly Ser Ile Gln Asn Ile Ile Ala Val Asn Lys Gln Ile Ser Glu Tyr
210 215 220

His Glu Glu Gly Asp Lys His Leu Ile Thr Asn Thr His Ile Pro Pro
225 230 235 240

Lys Gly Ile Ile Pro Met Thr Gly Gly Lys Gly
245 250

<210> 200
<211> 896

<212> PRT
<213> Streptococcus agalactiae

<400> 200
Met Arg Lys Tyr Gln Lys Phe Ser Lys Ile Leu Thr Leu Ser Leu Phe
1 5 10 15

Cys Leu Ser Gln Ile Pro Leu Asn Thr Asn Val Leu Gly Glu Ser Thr
20 25 30

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

Asp Gln Asn Lys Pro Leu Ser Lys Ala Thr Phe Val Leu Lys Pro Thr
50 55 60

Ser His Ser Glu Ser Lys Val Glu Lys Val Thr Thr Glu Val Thr Gly
65 70 75 80

Glu Ala Thr Phe Asp Asn Leu Thr Pro Gly Asp Tyr Thr Leu Ser Glu
85 90 95

Glu Thr Ala Pro Glu Gly Tyr Lys Lys Thr Thr Gln Thr Trp Gln Val
100 105 110

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

Lys Ser Ile Ile Glu Gln Arg Gln Glu Glu Leu Asp Lys Gln Tyr Pro
130 135 140

Leu Thr Gly Ala Tyr Glu Asp Thr Lys Glu Ser Tyr Asn Leu Glu His
145 150 155 160

Val Lys Asn Ser Ile Pro Asn Gly Lys Leu Glu Ala Lys Ala Val Asn
165 170 175

Pro Tyr Ser Ser Glu Gly Glu His Ile Arg Glu Ile Gln Glu Gly Thr
180 185 190

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

Lys Ile Glu Leu Thr Val Ser Gly Lys Ser Ile Ile Lys Thr Ile Asn
210 215 220

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

Met Lys Asn Asn Gly Lys Asn Asn Lys Ala Lys Lys Ala Gly Glu Ala
245 250 255

```
Val Glu Thr Ile Ile Lys Asp Val Leu Gly Ala Asn Val Glu Asn Arg
            260                 265                 270

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

Lys Val Ile Lys Gly Phe Lys Glu Asp Pro Tyr Tyr Gly Leu Glu Thr
    290                 295                 300

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

Ile Ala Ala Asp Ile Ile Lys Lys Ile Pro Lys Glu Ala Pro Glu Ala
                325                 330                 335

Lys Trp Gly Gly Thr Ser Leu Gly Leu Thr Pro Glu Lys Lys Arg Glu
            340                 345                 350

Tyr Asp Leu Ser Lys Val Gly Glu Thr Phe Thr Met Lys Ala Phe Met
        355                 360                 365

Glu Ala Asp Thr Leu Leu Ser Ser Ile Gln Arg Lys Ser Arg Lys Ile
    370                 375                 380

Ile Val His Leu Thr Asp Gly Val Pro Thr Arg Ser Tyr Ala Ile Asn
385                 390                 395                 400

Ser Phe Val Thr Gly Ser Thr Tyr Ala Asn Gln Phe Glu Arg Ile Lys
                405                 410                 415

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

Glu Lys Ile Lys Gly Asn Gly Glu Ser Tyr Phe Leu Phe Pro Leu Asp
        435                 440                 445

Ser Tyr Gln Thr Gln Ile Ile Ser Gly Asn Leu Gln Lys Leu His Tyr
    450                 455                 460

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

Pro Val Arg Glu His Gly Thr Pro Thr Lys Leu Tyr Ile Asn Ser Leu
                485                 490                 495

Lys Gln Lys Asn Tyr Asp Ile Phe Asn Phe Gly Ile Asp Ile Ser Gly
            500                 505                 510

Phe Arg Gln Val Tyr Asn Glu Asp Tyr Lys Lys Asn Gln Asp Gly Thr
        515                 520                 525
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Phe Gln Lys Leu Lys Glu Glu Ala Phe Glu Leu Ser Asp Gly Glu Ile
    530                 535                 540

Thr Glu Leu Met Asn Ser Phe Ser Ser Lys Pro Glu Tyr Tyr Thr Pro
545                 550                 555                 560

Ile Val Thr Ser Ala Asp Val Ser Asn Asn Glu Ile Leu Ser Lys Ile
                565                 570                 575

Gln Gln Gln Phe Glu Lys Ile Leu Thr Lys Glu Asn Ser Ile Val Asn
            580                 585                 590

Gly Thr Ile Glu Asp Pro Met Gly Asp Lys Ile Asn Leu Gln Leu Gly
        595                 600                 605

Asn Gly Gln Thr Leu Gln Pro Ser Asp Tyr Thr Leu Gln Gly Asn Asp
    610                 615                 620

Gly Ser Ile Met Lys Asp Ser Ile Ala Thr Gly Gly Pro Asn Asn Asp
625                 630                 635                 640

Gly Gly Ile Leu Lys Gly Val Lys Leu Glu Tyr Ile Lys Asn Lys Leu
                645                 650                 655

Tyr Val Arg Gly Leu Asn Leu Gly Glu Gly Gln Lys Val Thr Leu Thr
            660                 665                 670

Tyr Asp Val Lys Leu Asp Asp Ser Phe Ile Ser Asn Lys Phe Tyr Asp
        675                 680                 685

Thr Asn Gly Arg Thr Thr Leu Asn Pro Lys Ser Glu Glu Pro Asp Thr
    690                 695                 700

Leu Arg Asp Phe Pro Ile Pro Lys Ile Arg Asp Val Arg Glu Tyr Pro
705                 710                 715                 720

Thr Ile Thr Ile Lys Asn Glu Lys Lys Leu Gly Glu Ile Glu Phe Thr
                725                 730                 735

Lys Val Asp Lys Asp Asn Asn Lys Leu Leu Leu Lys Gly Ala Thr Phe
            740                 745                 750

Glu Leu Gln Glu Phe Asn Glu Asp Tyr Lys Leu Tyr Leu Pro Ile Lys
        755                 760                 765

Asn Asn Asn Ser Lys Val Val Thr Gly Glu Asn Gly Lys Ile Ser Tyr
    770                 775                 780

Lys Asp Leu Lys Asp Gly Lys Tyr Gln Leu Ile Glu Ala Val Ser Pro
785                 790                 795                 800
```

Lys Asp Tyr Gln Lys Ile Thr Asn Lys Pro Ile Leu Thr Phe Glu Val
805 810 815

Val Lys Gly Ser Ile Gln Asn Ile Ile Ala Val Asn Lys Gln Ile Ser
820 825 830

Glu Tyr His Glu Glu Gly Asp Lys His Leu Ile Thr Asn Thr His Ile
835 840 845

Pro Pro Lys Gly Ile Ile Pro Met Thr Gly Gly Lys Gly Ile Leu Ser
850 855 860

Phe Ile Leu Ile Gly Gly Ala Met Met Ser Ile Ala Gly Gly Ile Tyr
865 870 875 880

Ile Trp Lys Arg His Lys Lys Ser Ser Asp Ala Ser Ile Glu Lys Asp
885 890 895

<210> 201
<211> 393
<212> PRT
<213> Streptococcus agalactiae

<400> 201
Ser Ile Ile Lys Thr Ile Asn Lys Asp Glu Pro Leu Asp Val Val Phe
1 5 10 15

Val Leu Asp Asn Ser Asn Ser Met Lys Asn Asn Gly Lys Asn Asn Lys
20 25 30

Ala Lys Lys Ala Gly Glu Ala Val Glu Thr Ile Ile Lys Asp Val Leu
35 40 45

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

Ile Phe Asp Gly Arg Thr Val Lys Val Ile Lys Gly Phe Lys Glu Asp
65 70 75 80

Pro Tyr Tyr Gly Leu Glu Thr Ser Phe Thr Val Gln Thr Asn Asp Tyr
85 90 95

Ser Tyr Lys Lys Phe Thr Asn Ile Ala Ala Asp Ile Ile Lys Lys Ile
100 105 110

Pro Lys Glu Ala Pro Glu Ala Lys Trp Gly Gly Thr Ser Leu Gly Leu
115 120 125

Thr Pro Glu Lys Lys Arg Glu Tyr Asp Leu Ser Lys Val Gly Glu Thr
130 135 140

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

Gln Arg Lys Ser Arg Lys Ile Ile Val His Leu Thr Asp Gly Val Pro
165 170 175

Thr Arg Ser Tyr Ala Ile Asn Ser Phe Val Thr Gly Ser Thr Tyr Ala
180 185 190

Asn Gln Phe Glu Arg Ile Lys Glu Lys Gly Tyr Leu Asp Lys Asn Asn
195 200 205

Tyr Phe Ile Thr Asp Asp Pro Glu Lys Ile Lys Gly Asn Gly Glu Ser
210 215 220

Tyr Phe Leu Phe Pro Leu Asp Ser Tyr Gln Thr Gln Ile Ile Ser Gly
225 230 235 240

Asn Leu Gln Lys Leu His Tyr Leu Asp Leu Asn Leu Asn Tyr Pro Lys
245 250 255

Gly Thr Ile Tyr Arg Asn Gly Pro Val Arg Glu His Gly Thr Pro Thr
260 265 270

Lys Leu Tyr Ile Asn Ser Leu Lys Gln Lys Asn Tyr Asp Ile Phe Asn
275 280 285

Phe Gly Ile Asp Ile Ser Gly Phe Arg Gln Val Tyr Asn Glu Asp Tyr
290 295 300

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

Glu Leu Ser Asp Gly Glu Ile Thr Glu Leu Met Asn Ser Phe Ser Ser
325 330 335

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

Asn Glu Ile Leu Ser Lys Ile Gln Gln Gln Phe Glu Lys Ile Leu Thr
355 360 365

Lys Glu Asn Ser Ile Val Asn Gly Thr Ile Glu Asp Pro Met Gly Asp
370 375 380

Lys Ile Asn Leu Gln Leu Gly Asn Gly
385 390

<210> 202
<211> 251
<212> PRT
<213> Streptococcus agalactiae

<400> 202

```
Gln Thr Leu Gln Pro Ser Asp Tyr Thr Leu Gln Gly Asn Asp Gly Ser
1               5                   10                  15

Ile Met Lys Asp Ser Ile Ala Thr Gly Gly Pro Asn Asn Asp Gly Gly
            20                  25                  30

Ile Leu Lys Gly Val Lys Leu Glu Tyr Ile Lys Asn Lys Leu Tyr Val
        35                  40                  45

Arg Gly Leu Asn Leu Gly Glu Gly Gln Lys Val Thr Leu Thr Tyr Asp
    50                  55                  60

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

Gly Arg Thr Thr Leu Asn Pro Lys Ser Glu Glu Pro Asp Thr Leu Arg
                85                  90                  95

Asp Phe Pro Ile Pro Lys Ile Arg Asp Val Arg Glu Tyr Pro Thr Ile
            100                 105                 110

Thr Ile Lys Asn Glu Lys Lys Leu Gly Glu Ile Glu Phe Thr Lys Val
        115                 120                 125

Asp Lys Asp Asn Asn Lys Leu Leu Leu Lys Gly Ala Thr Phe Glu Leu
    130                 135                 140

Gln Glu Phe Asn Glu Asp Tyr Lys Leu Tyr Leu Pro Ile Lys Asn Asn
145                 150                 155                 160

Asn Ser Lys Val Val Thr Gly Glu Asn Gly Lys Ile Ser Tyr Lys Asp
                165                 170                 175

Leu Lys Asp Gly Lys Tyr Gln Leu Ile Glu Ala Val Ser Pro Lys Asp
            180                 185                 190

Tyr Gln Lys Ile Thr Asn Lys Pro Ile Leu Thr Phe Glu Val Val Lys
        195                 200                 205

Gly Ser Ile Gln Asn Ile Ile Ala Val Asn Lys Gln Ile Ser Glu Tyr
    210                 215                 220

His Glu Glu Gly Asp Lys His Leu Ile Thr Asn Thr His Ile Pro Pro
225                 230                 235                 240

Lys Gly Ile Ile Pro Met Thr Gly Gly Lys Gly
                245                 250

<210> 203
<211> 896
<212> PRT
<213> Streptococcus agalactiae
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<400> 203
Met Arg Lys Tyr Gln Lys Phe Ser Lys Ile Leu Thr Leu Ser Leu Phe
1   5   10   15

Cys Leu Ser Gln Ile Pro Leu Asn Thr Asn Val Leu Gly Glu Ser Thr
            20   25   30

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

Asp Gln Asn Lys Pro Leu Ser Lys Ala Thr Phe Val Leu Lys Thr Thr
    50   55   60

Ala His Pro Glu Ser Lys Ile Glu Lys Val Thr Ala Glu Val Thr Gly
65   70   75   80

Glu Ala Thr Phe Asp Asn Leu Thr Pro Gly Asp Tyr Thr Leu Ser Glu
                85   90   95

Glu Thr Ala Pro Glu Gly Tyr Lys Lys Thr Thr Gln Thr Trp Gln Val
            100   105   110

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

Lys Ser Ile Ile Glu Gln Arg Gln Glu Glu Leu Asp Lys Gln Tyr Pro
    130   135   140

Leu Thr Gly Ala Tyr Glu Asp Thr Lys Glu Ser Tyr Asn Leu Glu His
145   150   155   160

Val Lys Asn Ser Ile Pro Asn Gly Lys Leu Glu Ala Lys Ala Val Asn
                165   170   175

Pro Tyr Ser Ser Glu Gly Glu His Ile Arg Glu Ile Gln Glu Gly Thr
            180   185   190

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

Lys Ile Glu Leu Thr Val Ser Gly Lys Ser Ile Ile Lys Thr Ile Asn
    210   215   220

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

Met Lys Asn Asn Gly Lys Asn Asn Lys Ala Lys Lys Ala Gly Glu Ala
                245   250   255

Val Glu Thr Ile Ile Lys Asp Val Leu Gly Ala Asn Val Glu Asn Arg
            260   265   270

```
Ala Ala Leu Val Thr Tyr Gly Ser Asp Ile Phe Asp Gly Arg Thr Val
        275                 280                 285

Lys Val Ile Lys Gly Phe Lys Glu Asp Pro Tyr His Gly Leu Glu Thr
    290                 295                 300

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

Ile Ala Ala Asp Ile Ile Lys Lys Ile Pro Lys Glu Ala Pro Glu Ala
                325                 330                 335

Lys Trp Gly Gly Thr Ser Leu Gly Leu Thr Pro Glu Lys Lys Arg Glu
            340                 345                 350

Tyr Asp Leu Ser Lys Val Gly Glu Thr Phe Thr Met Lys Ala Phe Met
        355                 360                 365

Glu Ala Asp Thr Leu Leu Ser Ser Ile Gln Arg Lys Ser Arg Lys Ile
    370                 375                 380

Ile Val His Leu Thr Asp Gly Val Pro Thr Arg Ser Tyr Ala Ile Asn
385                 390                 395                 400

Ser Phe Val Thr Gly Ser Thr Tyr Ala Asn Gln Phe Glu Arg Ile Lys
                405                 410                 415

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

Glu Lys Ile Lys Gly Asn Gly Glu Ser Tyr Phe Leu Phe Pro Leu Asp
        435                 440                 445

Ser Tyr Gln Thr Gln Ile Ile Ser Gly Asn Leu Gln Lys Leu His Tyr
    450                 455                 460

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

Pro Val Arg Glu His Gly Thr Pro Thr Lys Leu Tyr Ile Asn Ser Leu
                485                 490                 495

Lys Gln Lys Asn Tyr Asp Ile Phe Asn Phe Gly Ile Asp Ile Ser Gly
            500                 505                 510

Phe Arg Gln Val Tyr Asn Glu Asp Tyr Lys Lys Asn Gln Asp Gly Thr
        515                 520                 525

Phe Gln Lys Leu Lys Glu Glu Ala Phe Glu Leu Ser Gly Gly Glu Ile
    530                 535                 540
```

```
Thr Glu Leu Met Lys Ser Phe Ser Ser Lys Pro Glu Tyr Tyr Thr Pro
545                 550                 555                 560

Ile Val Thr Ser Ala Asp Val Ser Asn Asn Glu Ile Leu Ser Lys Ile
                565                 570                 575

Gln Gln Gln Phe Glu Lys Ile Leu Thr Lys Glu Asn Ser Ile Val Asn
            580                 585                 590

Gly Thr Ile Glu Asp Pro Met Gly Asp Lys Ile Asn Leu Gln Leu Gly
        595                 600                 605

Asn Gly Gln Thr Leu Gln Pro Ser Asp Tyr Thr Leu Gln Gly Asn Asp
    610                 615                 620

Gly Ser Ile Met Lys Asp Ser Ile Ala Thr Gly Gly Pro Asn Asn Asp
625                 630                 635                 640

Gly Gly Ile Leu Lys Gly Val Lys Leu Glu Tyr Ile Lys Asn Lys Leu
                645                 650                 655

Tyr Val Arg Gly Leu Asn Leu Gly Glu Gly Gln Lys Val Thr Leu Thr
            660                 665                 670

Tyr Asp Val Lys Leu Asp Asp Ser Phe Ile Ser Asn Lys Phe Tyr Asp
        675                 680                 685

Thr Asn Gly Arg Thr Thr Leu Asn Pro Lys Ser Glu Glu Pro Asp Thr
    690                 695                 700

Leu Arg Asp Phe Pro Ile Pro Lys Ile Arg Asp Val Arg Glu Tyr Pro
705                 710                 715                 720

Thr Ile Thr Ile Lys Asn Glu Lys Lys Leu Gly Glu Ile Glu Phe Thr
                725                 730                 735

Lys Val Asp Lys Asp Asn Asn Lys Leu Leu Leu Lys Gly Ala Thr Phe
            740                 745                 750

Glu Leu Gln Glu Phe Asn Glu Asp Tyr Lys Leu Tyr Leu Pro Ile Lys
        755                 760                 765

Asn Asn Asn Ser Lys Val Val Thr Gly Glu Asn Gly Lys Ile Ser Tyr
    770                 775                 780

Lys Asp Leu Lys Asp Gly Lys Tyr Gln Leu Ile Glu Ala Val Ser Pro
785                 790                 795                 800

Lys Asp Tyr Gln Lys Ile Thr Asn Lys Pro Ile Leu Thr Phe Glu Val
                805                 810                 815
```

Val Lys Gly Ser Ile Gln Asn Ile Ile Ala Val Asn Lys Gln Ile Ser
820 825 830

Glu Tyr His Glu Glu Gly Asp Lys His Leu Ile Thr Asn Thr His Ile
835 840 845

Pro Pro Lys Gly Ile Ile Pro Met Thr Gly Gly Lys Gly Ile Leu Ser
850 855 860

Phe Ile Leu Ile Gly Gly Ala Met Met Ser Ile Ala Gly Gly Ile Tyr
865 870 875 880

Ile Trp Lys Lys His Lys Lys Ser Ser Asp Ala Ser Ile Glu Lys Asp
885 890 895

<210> 204
<211> 393
<212> PRT
<213> Streptococcus agalactiae

<400> 204
Ser Ile Ile Lys Thr Ile Asn Lys Asp Glu Pro Leu Asp Val Val Phe
1 5 10 15

Val Leu Asp Asn Ser Asn Ser Met Lys Asn Asn Gly Lys Asn Asn Lys
20 25 30

Ala Lys Lys Ala Gly Glu Ala Val Glu Thr Ile Ile Lys Asp Val Leu
35 40 45

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

Ile Phe Asp Gly Arg Thr Val Lys Val Ile Lys Gly Phe Lys Glu Asp
65 70 75 80

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

Ser Tyr Lys Lys Phe Thr Asn Ile Ala Ala Asp Ile Ile Lys Lys Ile
100 105 110

Pro Lys Glu Ala Pro Glu Ala Lys Trp Gly Gly Thr Ser Leu Gly Leu
115 120 125

Thr Pro Glu Lys Lys Arg Glu Tyr Asp Leu Ser Lys Val Gly Glu Thr
130 135 140

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

```
Gln Arg Lys Ser Arg Lys Ile Ile Val His Leu Thr Asp Gly Val Pro
                165                 170                 175

Thr Arg Ser Tyr Ala Ile Asn Ser Phe Val Thr Gly Ser Thr Tyr Ala
            180                 185                 190

Asn Gln Phe Glu Arg Ile Lys Glu Lys Gly Tyr Leu Asp Lys Asn Asn
        195                 200                 205

Tyr Phe Ile Thr Asp Asp Pro Glu Lys Ile Lys Gly Asn Gly Glu Ser
    210                 215                 220

Tyr Phe Leu Phe Pro Leu Asp Ser Tyr Gln Thr Gln Ile Ile Ser Gly
225                 230                 235                 240

Asn Leu Gln Lys Leu His Tyr Leu Asp Leu Asn Leu Asn Tyr Pro Lys
                245                 250                 255

Gly Thr Ile Tyr Arg Asn Gly Pro Val Arg Glu His Gly Thr Pro Thr
            260                 265                 270

Lys Leu Tyr Ile Asn Ser Leu Lys Gln Lys Asn Tyr Asp Ile Phe Asn
        275                 280                 285

Phe Gly Ile Asp Ile Ser Gly Phe Arg Gln Val Tyr Asn Glu Asp Tyr
    290                 295                 300

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

Glu Leu Ser Gly Gly Glu Ile Thr Glu Leu Met Lys Ser Phe Ser Ser
                325                 330                 335

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

Asn Glu Ile Leu Ser Lys Ile Gln Gln Gln Phe Glu Lys Ile Leu Thr
        355                 360                 365

Lys Glu Asn Ser Ile Val Asn Gly Thr Ile Glu Asp Pro Met Gly Asp
    370                 375                 380

Lys Ile Asn Leu Gln Leu Gly Asn Gly
385                 390
```

<210> 205
<211> 251
<212> PRT
<213> Streptococcus agalactiae

<400> 205

```
Gln Thr Leu Gln Pro Ser Asp Tyr Thr Leu Gln Gly Asn Asp Gly Ser
1               5                   10                  15
```

```
Ile Met Lys Asp Ser Ile Ala Thr Gly Gly Pro Asn Asn Asp Gly Gly
            20                  25                  30

Ile Leu Lys Gly Val Lys Leu Glu Tyr Ile Lys Asn Lys Leu Tyr Val
        35                  40                  45

Arg Gly Leu Asn Leu Gly Glu Gly Gln Lys Val Thr Leu Thr Tyr Asp
    50                  55                  60

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

Gly Arg Thr Thr Leu Asn Pro Lys Ser Glu Glu Pro Asp Thr Leu Arg
                85                  90                  95

Asp Phe Pro Ile Pro Lys Ile Arg Asp Val Arg Glu Tyr Pro Thr Ile
            100                 105                 110

Thr Ile Lys Asn Glu Lys Lys Leu Gly Glu Ile Glu Phe Thr Lys Val
        115                 120                 125

Asp Lys Asp Asn Asn Lys Leu Leu Leu Lys Gly Ala Thr Phe Glu Leu
    130                 135                 140

Gln Glu Phe Asn Glu Asp Tyr Lys Leu Tyr Leu Pro Ile Lys Asn Asn
145                 150                 155                 160

Asn Ser Lys Val Val Thr Gly Glu Asn Gly Lys Ile Ser Tyr Lys Asp
                165                 170                 175

Leu Lys Asp Gly Lys Tyr Gln Leu Ile Glu Ala Val Ser Pro Lys Asp
            180                 185                 190

Tyr Gln Lys Ile Thr Asn Lys Pro Ile Leu Thr Phe Glu Val Val Lys
        195                 200                 205

Gly Ser Ile Gln Asn Ile Ile Ala Val Asn Lys Gln Ile Ser Glu Tyr
    210                 215                 220

His Glu Glu Gly Asp Lys His Leu Ile Thr Asn Thr His Ile Pro Pro
225                 230                 235                 240

Lys Gly Ile Ile Pro Met Thr Gly Gly Lys Gly
                245                 250
```

<210> 206
<211> 502
<212> PRT
<213> Streptococcus agalactiae

<400> 206

```
Met Lys Lys Lys Met Ile Gln Ser Leu Leu Val Ala Ser Leu Ala Phe
1               5                  10                  15

Gly Met Ala Val Ser Pro Val Thr Pro Ile Ala Phe Ala Ala Glu Thr
            20                  25                  30

Gly Thr Ile Thr Val Gln Asp Thr Gln Lys Gly Ala Thr Tyr Lys Ala
        35                  40                  45

Tyr Lys Val Phe Asp Ala Glu Ile Asp Asn Ala Asn Val Ser Asp Ser
    50                  55                  60

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

Tyr Lys Ala Ser Thr Asp Phe Asn Ser Leu Phe Thr Thr Thr Thr Asn
                85                  90                  95

Gly Gly Arg Thr Tyr Val Thr Lys Lys Asp Thr Ala Ser Ala Asn Glu
            100                 105                 110

Ile Ala Thr Trp Ala Lys Ser Ile Ser Ala Asn Thr Thr Pro Val Ser
        115                 120                 125

Thr Val Thr Glu Ser Asn Asn Asp Gly Thr Glu Val Ile Asn Val Ser
    130                 135                 140

Gln Tyr Gly Tyr Tyr Tyr Val Ser Ser Thr Val Asn Asn Gly Ala Val
145                 150                 155                 160

Ile Met Val Thr Ser Val Thr Pro Asn Ala Thr Ile His Glu Lys Asn
                165                 170                 175

Thr Asp Ala Thr Trp Gly Asp Gly Gly Gly Lys Thr Val Asp Gln Lys
            180                 185                 190

Thr Tyr Ser Val Gly Asp Thr Val Lys Tyr Thr Ile Thr Tyr Lys Asn
        195                 200                 205

Ala Val Asn Tyr His Gly Thr Glu Lys Val Tyr Gln Tyr Val Ile Lys
    210                 215                 220

Asp Thr Met Pro Ser Ala Ser Val Val Asp Leu Asn Glu Gly Ser Tyr
225                 230                 235                 240

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

Gly Ser Glu Lys Ala Thr Gly Lys Tyr Asn Leu Leu Glu Glu Asn Asn
            260                 265                 270
```

```
Asn Phe Thr Ile Thr Ile Pro Trp Ala Ala Thr Asn Thr Pro Thr Gly
        275                 280                 285

Asn Thr Gln Asn Gly Ala Asn Asp Asp Phe Phe Tyr Lys Gly Ile Asn
    290                 295                 300

Thr Ile Thr Val Thr Tyr Thr Gly Val Leu Lys Ser Gly Ala Lys Pro
305                 310                 315                 320

Gly Ser Ala Asp Leu Pro Glu Asn Thr Asn Ile Ala Thr Ile Asn Pro
                325                 330                 335

Asn Thr Ser Asn Asp Asp Pro Gly Gln Lys Val Thr Val Arg Asp Gly
            340                 345                 350

Gln Ile Thr Ile Lys Lys Ile Asp Gly Ser Thr Lys Ala Ser Leu Gln
        355                 360                 365

Gly Ala Ile Phe Val Leu Lys Asn Ala Thr Gly Gln Phe Leu Asn Phe
    370                 375                 380

Asn Asp Thr Asn Asn Val Glu Trp Gly Thr Glu Ala Asn Ala Thr Glu
385                 390                 395                 400

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

Gly Thr Tyr Tyr Leu Val Glu Lys Lys Ala Pro Leu Gly Tyr Asn Leu
            420                 425                 430

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

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

Gly Thr Glu Leu Pro Ser Thr Gly Gly Ile Gly Thr Thr Ile Phe Tyr
465                 470                 475                 480

Ile Ile Gly Ala Ile Leu Val Ile Gly Ala Gly Ile Val Leu Val Ala
                485                 490                 495

Arg Arg Arg Leu Arg Ser
            500
```

<210> 207
<211> 437
<212> PRT
<213> Streptococcus agalactiae

<400> 207

```
Glu Thr Gly Thr Ile Thr Val Gln Asp Thr Gln Lys Gly Ala Thr Tyr
1               5                   10                  15
```

```
Lys Ala Tyr Lys Val Phe Asp Ala Glu Ile Asp Asn Ala Asn Val Ser
            20                  25                  30

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

Ala Glu Tyr Lys Ala Ser Thr Asp Phe Asn Ser Leu Phe Thr Thr Thr
    50                  55                  60

Thr Asn Gly Gly Arg Thr Tyr Val Thr Lys Lys Asp Thr Ala Ser Ala
65                  70                  75                  80

Asn Glu Ile Ala Thr Trp Ala Lys Ser Ile Ser Ala Asn Thr Thr Pro
                85                  90                  95

Val Ser Thr Val Thr Glu Ser Asn Asn Asp Gly Thr Glu Val Ile Asn
            100                 105                 110

Val Ser Gln Tyr Gly Tyr Tyr Tyr Val Ser Ser Thr Val Asn Asn Gly
        115                 120                 125

Ala Val Ile Met Val Thr Ser Val Thr Pro Asn Ala Thr Ile His Glu
    130                 135                 140

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

Gln Lys Thr Tyr Ser Val Gly Asp Thr Val Lys Tyr Thr Ile Thr Tyr
                165                 170                 175

Lys Asn Ala Val Asn Tyr His Gly Thr Glu Lys Val Tyr Gln Tyr Val
            180                 185                 190

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

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

Thr Gln Gly Ser Glu Lys Ala Thr Gly Lys Tyr Asn Leu Leu Glu Glu
225                 230                 235                 240

Asn Asn Asn Phe Thr Ile Thr Ile Pro Trp Ala Ala Thr Asn Thr Pro
                245                 250                 255

Thr Gly Asn Thr Gln Asn Gly Ala Asn Asp Asp Phe Phe Tyr Lys Gly
            260                 265                 270

Ile Asn Thr Ile Thr Val Thr Tyr Thr Gly Val Leu Lys Ser Gly Ala
        275                 280                 285
```

Lys Pro Gly Ser Ala Asp Leu Pro Glu Asn Thr Asn Ile Ala Thr Ile
290 295 300

Asn Pro Asn Thr Ser Asn Asp Asp Pro Gly Gln Lys Val Thr Val Arg
305 310 315 320

Asp Gly Gln Ile Thr Ile Lys Lys Ile Asp Gly Ser Thr Lys Ala Ser
325 330 335

Leu Gln Gly Ala Ile Phe Val Leu Lys Asn Ala Thr Gly Gln Phe Leu
340 345 350

Asn Phe Asn Asp Thr Asn Asn Val Glu Trp Gly Thr Glu Ala Asn Ala
355 360 365

Thr Glu Tyr Thr Thr Gly Ala Asp Gly Ile Ile Thr Ile Thr Gly Leu
370 375 380

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

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

Asp Thr Thr Asn Ser Asp Asn Leu Leu Val Asn Pro Thr Val Glu Asn
420 425 430

Asn Lys Gly Thr Glu
435

<210> 208
<211> 437
<212> PRT
<213> Streptococcus agalactiae

<400> 208
Glu Thr Gly Thr Ile Thr Val Gln Asp Thr Lys Lys Gly Ala Thr Tyr
1 5 10 15

Lys Ala Tyr Lys Val Phe Asp Ala Glu Ile Asp Asn Ala Asn Val Ser
20 25 30

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

Ala Glu Tyr Lys Ala Ser Thr Asp Phe Asn Ser Leu Phe Thr Thr Thr
50 55 60

Thr Asn Gly Gly Arg Thr Tyr Val Thr Lys Lys Asp Thr Ala Ser Ala
65 70 75 80

```
Asn Glu Ile Ala Thr Trp Ala Lys Ser Ile Ser Ala Asn Thr Thr Pro
                85                  90                  95

Val Ser Thr Val Thr Glu Ser Asn Asn Asp Gly Thr Glu Val Ile Asn
            100                 105                 110

Val Ser Gln Tyr Gly Tyr Tyr Tyr Val Ser Ser Thr Val Asn Asn Gly
        115                 120                 125

Ala Val Ile Met Val Thr Ser Val Thr Pro Asn Ala Thr Ile His Glu
    130                 135                 140

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

Gln Lys Thr Tyr Ser Val Gly Asp Thr Val Lys Tyr Thr Ile Thr Tyr
                165                 170                 175

Lys Asn Ala Val Asn Tyr His Gly Thr Glu Lys Val Tyr Gln Tyr Val
            180                 185                 190

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

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

Thr Gln Gly Ser Glu Lys Ala Thr Gly Lys Tyr Asn Leu Leu Glu Glu
225                 230                 235                 240

Asn Asn Asn Phe Thr Ile Thr Ile Pro Trp Ala Ala Thr Asn Thr Pro
                245                 250                 255

Thr Gly Asn Thr Gln Asn Gly Ala Asn Asp Asp Phe Phe Tyr Lys Gly
            260                 265                 270

Ile Asn Thr Ile Thr Val Thr Tyr Thr Gly Val Leu Lys Ser Gly Ala
        275                 280                 285

Lys Pro Gly Ser Ala Asp Leu Pro Glu Asn Thr Asn Ile Ala Thr Ile
    290                 295                 300

Asn Pro Asn Thr Ser Asn Asp Asp Pro Gly Gln Lys Val Thr Val Arg
305                 310                 315                 320

Asp Gly Gln Ile Thr Ile Lys Lys Ile Asp Gly Ser Thr Lys Ala Ser
                325                 330                 335

Leu Gln Gly Ala Ile Phe Val Leu Lys Asn Ala Thr Gly Gln Phe Leu
            340                 345                 350
```

Asn Phe Asn Asp Thr Asn Asn Val Glu Trp Gly Thr Glu Ala Asn Ala
355 360 365

Thr Glu Tyr Thr Thr Gly Ala Asp Gly Ile Ile Thr Ile Thr Gly Leu
370 375 380

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

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

Asp Thr Thr Asn Ser Asp Asn Leu Leu Val Asn Pro Thr Val Glu Asn
420 425 430

Asn Lys Gly Thr Glu
435

<210> 209
<211> 941
<212> PRT
<213> Streptococcus agalactiae

<400> 209
Met Ala Ser Ala Glu Thr Gly Thr Ile Thr Val Gln Asp Thr Gln Lys
1 5 10 15

Gly Ala Thr Tyr Lys Ala Tyr Lys Val Phe Asp Ala Glu Ile Asp Asn
20 25 30

Ala Asn Val Ser Asp Ser Asn Lys Asp Gly Ala Ser Tyr Leu Ile Pro
35 40 45

Gln Gly Lys Glu Ala Glu Tyr Lys Ala Ser Thr Asp Phe Asn Ser Leu
50 55 60

Phe Thr Thr Thr Thr Asn Gly Gly Arg Thr Tyr Val Thr Lys Lys Asp
65 70 75 80

Thr Ala Ser Ala Asn Glu Ile Ala Thr Trp Ala Lys Ser Ile Ser Ala
85 90 95

Asn Thr Thr Pro Val Ser Thr Val Thr Glu Ser Asn Asn Asp Gly Thr
100 105 110

Glu Val Ile Asn Val Ser Gln Tyr Gly Tyr Tyr Tyr Val Ser Ser Thr
115 120 125

Val Asn Asn Gly Ala Val Ile Met Val Thr Ser Val Thr Pro Asn Ala
130 135 140

Thr Ile His Glu Lys Asn Thr Asp Ala Thr Trp Gly Asp Gly Gly Gly
145 150 155 160

```
Lys Thr Val Asp Gln Lys Thr Tyr Ser Val Gly Asp Thr Val Lys Tyr
                165                 170                 175

Thr Ile Thr Tyr Lys Asn Ala Val Asn Tyr His Gly Thr Glu Lys Val
            180                 185                 190

Tyr Gln Tyr Val Ile Lys Asp Thr Met Pro Ser Ala Ser Val Val Asp
        195                 200                 205

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

Ile Thr Thr Leu Thr Gln Gly Ser Glu Lys Ala Thr Gly Lys Tyr Asn
225                 230                 235                 240

Leu Leu Glu Glu Asn Asn Asn Phe Thr Ile Thr Ile Pro Trp Ala Ala
                245                 250                 255

Thr Asn Thr Pro Thr Gly Asn Thr Gln Asn Gly Ala Asn Asp Asp Phe
            260                 265                 270

Phe Tyr Lys Gly Ile Asn Thr Ile Thr Val Thr Tyr Thr Gly Val Leu
        275                 280                 285

Lys Ser Gly Ala Lys Pro Gly Ser Ala Asp Leu Pro Glu Asn Thr Asn
    290                 295                 300

Ile Ala Thr Ile Asn Pro Asn Thr Ser Asn Asp Asp Pro Gly Gln Lys
305                 310                 315                 320

Val Thr Val Arg Asp Gly Gln Ile Thr Ile Lys Lys Ile Asp Gly Ser
                325                 330                 335

Thr Lys Ala Ser Leu Gln Gly Ala Ile Phe Val Leu Lys Asn Ala Thr
            340                 345                 350

Gly Gln Phe Leu Asn Phe Asn Asp Thr Asn Asn Val Glu Trp Gly Thr
        355                 360                 365

Glu Ala Asn Ala Thr Glu Tyr Thr Thr Gly Ala Asp Gly Ile Ile Thr
    370                 375                 380

Ile Thr Gly Leu Lys Glu Gly Thr Tyr Tyr Leu Val Glu Lys Lys Ala
385                 390                 395                 400

Pro Leu Gly Tyr Asn Leu Leu Asp Asn Ser Gln Lys Val Ile Leu Gly
                405                 410                 415

Asp Gly Ala Thr Asp Thr Thr Asn Ser Asp Asn Leu Leu Val Asn Pro
            420                 425                 430
```

```
Thr Val Glu Asn Asn Lys Gly Thr Glu Gly Gly Gly Gly Ser Gly Gly
        435                 440                 445

Gly Gly Ser Gly Gly Gly Gly Ser Glu Leu Ala Glu Val Ser Gln Glu
    450                 455                 460

Arg Pro Ala Lys Thr Thr Val Asn Ile Tyr Lys Leu Gln Ala Asp Ser
465                 470                 475                 480

Tyr Lys Ser Glu Ile Thr Ser Asn Gly Gly Ile Glu Asn Lys Asp Gly
                485                 490                 495

Glu Val Ile Ser Asn Tyr Ala Lys Leu Gly Asp Asn Val Lys Gly Leu
            500                 505                 510

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

Asp Glu Leu Lys Lys Leu Thr Thr Val Glu Ala Ala Asp Ala Lys Val
    530                 535                 540

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

Gln Gly Leu Val Val Asp Ala Leu Asp Ser Lys Ser Asn Val Arg Tyr
                565                 570                 575

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

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

Thr Gly Phe Leu Ser Glu Ile Asn Ile Tyr Pro Lys Asn Val Val Thr
    610                 615                 620

Asp Glu Pro Lys Thr Asp Lys Asp Val Lys Lys Leu Gly Gln Asp Asp
625                 630                 635                 640

Ala Gly Tyr Thr Ile Gly Glu Glu Phe Lys Trp Phe Leu Lys Ser Thr
                645                 650                 655

Ile Pro Ala Asn Leu Gly Asp Tyr Glu Lys Phe Glu Ile Thr Asp Lys
            660                 665                 670

Phe Ala Asp Gly Leu Thr Tyr Lys Ser Val Gly Lys Ile Lys Ile Gly
        675                 680                 685

Ser Lys Thr Leu Asn Arg Asp Glu His Tyr Thr Ile Asp Glu Pro Thr
    690                 695                 700
```

```
Val Asp Asn Gln Asn Thr Leu Lys Ile Thr Phe Lys Pro Glu Lys Phe
705                 710                 715                 720

Lys Glu Ile Ala Glu Leu Leu Lys Gly Met Thr Leu Val Lys Asn Gln
                725                 730                 735

Asp Ala Leu Asp Lys Ala Thr Ala Asn Thr Asp Asp Ala Ala Phe Leu
            740                 745                 750

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

Ala Ile Glu Asn Thr Phe Glu Leu Gln Tyr Asp His Thr Pro Asp Lys
    770                 775                 780

Ala Asp Asn Pro Lys Pro Ser Asn Pro Pro Arg Lys Pro Glu Val His
785                 790                 795                 800

Thr Gly Gly Lys Arg Phe Val Lys Lys Asp Ser Thr Glu Thr Gln Thr
                805                 810                 815

Leu Gly Gly Ala Glu Phe Asp Leu Leu Ala Ser Asp Gly Thr Ala Val
            820                 825                 830

Lys Trp Thr Asp Ala Leu Ile Lys Ala Asn Thr Asn Lys Asn Tyr Ile
        835                 840                 845

Ala Gly Glu Ala Val Thr Gly Gln Pro Ile Lys Leu Lys Ser His Thr
    850                 855                 860

Asp Gly Thr Phe Glu Ile Lys Gly Leu Ala Tyr Ala Val Asp Ala Asn
865                 870                 875                 880

Ala Glu Gly Thr Ala Val Thr Tyr Lys Leu Lys Glu Thr Lys Ala Pro
                885                 890                 895

Glu Gly Tyr Val Ile Pro Asp Lys Glu Ile Glu Phe Thr Val Ser Gln
            900                 905                 910

Thr Ser Tyr Asn Thr Lys Pro Thr Asp Ile Thr Val Asp Ser Ala Asp
        915                 920                 925

Ala Thr Pro Asp Thr Ile Lys Asn Asn Lys Arg Pro Ser
    930                 935                 940
```

<210> 210
<211> 932
<212> PRT
<213> Streptococcus agalactiae

<400> 210

eolf-seql

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

Gly Ala Thr Tyr Lys Ala Tyr Lys Val Phe Asp Ala Glu Ile Asp Asn
            20                  25                  30

Ala Asn Val Ser Asp Ser Asn Lys Asp Gly Ala Ser Tyr Leu Ile Pro
        35                  40                  45

Gln Gly Lys Glu Ala Glu Tyr Lys Ala Ser Thr Asp Phe Asn Ser Leu
    50                  55                  60

Phe Thr Thr Thr Thr Asn Gly Gly Arg Thr Tyr Val Thr Lys Lys Asp
65                  70                  75                  80

Thr Ala Ser Ala Asn Glu Ile Ala Thr Trp Ala Lys Ser Ile Ser Ala
                85                  90                  95

Asn Thr Thr Pro Val Ser Thr Val Thr Glu Ser Asn Asn Asp Gly Thr
            100                 105                 110

Glu Val Ile Asn Val Ser Gln Tyr Gly Tyr Tyr Tyr Val Ser Ser Thr
        115                 120                 125

Val Asn Asn Gly Ala Val Ile Met Val Thr Ser Val Thr Pro Asn Ala
    130                 135                 140

Thr Ile His Glu Lys Asn Thr Asp Ala Thr Trp Gly Asp Gly Gly Gly
145                 150                 155                 160

Lys Thr Val Asp Gln Lys Thr Tyr Ser Val Gly Asp Thr Val Lys Tyr
                165                 170                 175

Thr Ile Thr Tyr Lys Asn Ala Val Asn Tyr His Gly Thr Glu Lys Val
            180                 185                 190

Tyr Gln Tyr Val Ile Lys Asp Thr Met Pro Ser Ala Ser Val Val Asp
        195                 200                 205

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

Ile Thr Thr Leu Thr Gln Gly Ser Glu Lys Ala Thr Gly Lys Tyr Asn
225                 230                 235                 240

Leu Leu Glu Glu Asn Asn Asn Phe Thr Ile Thr Ile Pro Trp Ala Ala
                245                 250                 255

Thr Asn Thr Pro Thr Gly Asn Thr Gln Asn Gly Ala Asn Asp Asp Phe
            260                 265                 270
```

```
Phe Tyr Lys Gly Ile Asn Thr Ile Thr Val Thr Tyr Thr Gly Val Leu
        275                 280                 285

Lys Ser Gly Ala Lys Pro Gly Ser Ala Asp Leu Pro Glu Asn Thr Asn
    290                 295                 300

Ile Ala Thr Ile Asn Pro Asn Thr Ser Asn Asp Asp Pro Gly Gln Lys
305                 310                 315                 320

Val Thr Val Arg Asp Gly Gln Ile Thr Ile Lys Lys Ile Asp Gly Ser
                325                 330                 335

Thr Lys Ala Ser Leu Gln Gly Ala Ile Phe Val Leu Lys Asn Ala Thr
            340                 345                 350

Gly Gln Phe Leu Asn Phe Asn Asp Thr Asn Asn Val Glu Trp Gly Thr
        355                 360                 365

Glu Ala Asn Ala Thr Glu Tyr Thr Thr Gly Ala Asp Gly Ile Ile Thr
    370                 375                 380

Ile Thr Gly Leu Lys Glu Gly Thr Tyr Tyr Leu Val Glu Lys Lys Ala
385                 390                 395                 400

Pro Leu Gly Tyr Asn Leu Leu Asp Asn Ser Gln Lys Val Ile Leu Gly
                405                 410                 415

Asp Gly Ala Thr Asp Thr Thr Asn Ser Asp Asn Leu Leu Val Asn Pro
            420                 425                 430

Thr Val Glu Asn Asn Lys Gly Thr Glu Gly Ser Gly Gly Gly Gly Glu
        435                 440                 445

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

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

Gly Ile Glu Asn Lys Asp Gly Glu Val Ile Ser Asn Tyr Ala Lys Leu
                485                 490                 495

Gly Asp Asn Val Lys Gly Leu Gln Gly Val Gln Phe Lys Arg Tyr Lys
            500                 505                 510

Val Lys Thr Asp Ile Ser Val Asp Glu Leu Lys Lys Leu Thr Thr Val
        515                 520                 525

Glu Ala Ala Asp Ala Lys Val Gly Thr Ile Leu Glu Glu Gly Val Ser
    530                 535                 540
```

```
Leu Pro Gln Lys Thr Asn Ala Gln Gly Leu Val Val Asp Ala Leu Asp
545                 550                 555                 560

Ser Lys Ser Asn Val Arg Tyr Leu Tyr Val Glu Asp Leu Lys Asn Ser
                565                 570                 575

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

Pro Val Ala Asn Ser Thr Gly Thr Gly Phe Leu Ser Glu Ile Asn Ile
        595                 600                 605

Tyr Pro Lys Asn Val Val Thr Asp Glu Pro Lys Thr Asp Lys Asp Val
    610                 615                 620

Lys Lys Leu Gly Gln Asp Asp Ala Gly Tyr Thr Ile Gly Glu Glu Phe
625                 630                 635                 640

Lys Trp Phe Leu Lys Ser Thr Ile Pro Ala Asn Leu Gly Asp Tyr Glu
                645                 650                 655

Lys Phe Glu Ile Thr Asp Lys Phe Ala Asp Gly Leu Thr Tyr Lys Ser
            660                 665                 670

Val Gly Lys Ile Lys Ile Gly Ser Lys Thr Leu Asn Arg Asp Glu His
        675                 680                 685

Tyr Thr Ile Asp Glu Pro Thr Val Asp Asn Gln Asn Thr Leu Lys Ile
    690                 695                 700

Thr Phe Lys Pro Glu Lys Phe Lys Glu Ile Ala Glu Leu Leu Lys Gly
705                 710                 715                 720

Met Thr Leu Val Lys Asn Gln Asp Ala Leu Asp Lys Ala Thr Ala Asn
                725                 730                 735

Thr Asp Asp Ala Ala Phe Leu Glu Ile Pro Val Ala Ser Thr Ile Asn
            740                 745                 750

Glu Lys Ala Val Leu Gly Lys Ala Ile Glu Asn Thr Phe Glu Leu Gln
        755                 760                 765

Tyr Asp His Thr Pro Asp Lys Ala Asp Asn Pro Lys Pro Ser Asn Pro
    770                 775                 780

Pro Arg Lys Pro Glu Val His Thr Gly Gly Lys Arg Phe Val Lys Lys
785                 790                 795                 800

Asp Ser Thr Glu Thr Gln Thr Leu Gly Gly Ala Glu Phe Asp Leu Leu
                805                 810                 815
```

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Ala Ser Asp Gly Thr Ala Val Lys Trp Thr Asp Ala Leu Ile Lys Ala
            820                 825                 830

Asn Thr Asn Lys Asn Tyr Ile Ala Gly Glu Ala Val Thr Gly Gln Pro
        835                 840                 845

Ile Lys Leu Lys Ser His Thr Asp Gly Thr Phe Glu Ile Lys Gly Leu
    850                 855                 860

Ala Tyr Ala Val Asp Ala Asn Ala Glu Gly Thr Ala Val Thr Tyr Lys
865                 870                 875                 880

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

Ile Glu Phe Thr Val Ser Gln Thr Ser Tyr Asn Thr Lys Pro Thr Asp
            900                 905                 910

Ile Thr Val Asp Ser Ala Asp Ala Thr Pro Asp Thr Ile Lys Asn Asn
        915                 920                 925

Lys Arg Pro Ser
    930


<210> 211
<211> 941
<212> PRT
<213> Streptococcus agalactiae

<400> 211
Met Ala Ser Ala Glu Thr Gly Thr Ile Thr Val Gln Asp Thr Lys Lys
1               5                   10                  15

Gly Ala Thr Tyr Lys Ala Tyr Lys Val Phe Asp Ala Glu Ile Asp Asn
            20                  25                  30

Ala Asn Val Ser Asp Ser Asn Lys Asp Gly Ala Ser Tyr Leu Ile Pro
        35                  40                  45

Gln Gly Lys Glu Ala Glu Tyr Lys Ala Ser Thr Asp Phe Asn Ser Leu
    50                  55                  60

Phe Thr Thr Thr Thr Asn Gly Gly Arg Thr Tyr Val Thr Lys Lys Asp
65                  70                  75                  80

Thr Ala Ser Ala Asn Glu Ile Ala Thr Trp Ala Lys Ser Ile Ser Ala
                85                  90                  95

Asn Thr Thr Pro Val Ser Thr Val Thr Glu Ser Asn Asn Asp Gly Thr
            100                 105                 110

Glu Val Ile Asn Val Ser Gln Tyr Gly Tyr Tyr Tyr Val Ser Ser Thr
        115                 120                 125
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Val Asn Asn Gly Ala Val Ile Met Val Thr Ser Val Thr Pro Asn Ala
    130                 135                 140

Thr Ile His Glu Lys Asn Thr Asp Ala Thr Trp Gly Asp Gly Gly Gly
145                 150                 155                 160

Lys Thr Val Asp Gln Lys Thr Tyr Ser Val Gly Asp Thr Val Lys Tyr
                165                 170                 175

Thr Ile Thr Tyr Lys Asn Ala Val Asn Tyr His Gly Thr Glu Lys Val
            180                 185                 190

Tyr Gln Tyr Val Ile Lys Asp Thr Met Pro Ser Ala Ser Val Val Asp
        195                 200                 205

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

Ile Thr Thr Leu Thr Gln Gly Ser Glu Lys Ala Thr Gly Lys Tyr Asn
225                 230                 235                 240

Leu Leu Glu Glu Asn Asn Asn Phe Thr Ile Thr Ile Pro Trp Ala Ala
                245                 250                 255

Thr Asn Thr Pro Thr Gly Asn Thr Gln Asn Gly Ala Asn Asp Asp Phe
            260                 265                 270

Phe Tyr Lys Gly Ile Asn Thr Ile Thr Val Thr Tyr Thr Gly Val Leu
        275                 280                 285

Lys Ser Gly Ala Lys Pro Gly Ser Ala Asp Leu Pro Glu Asn Thr Asn
    290                 295                 300

Ile Ala Thr Ile Asn Pro Asn Thr Ser Asn Asp Asp Pro Gly Gln Lys
305                 310                 315                 320

Val Thr Val Arg Asp Gly Gln Ile Thr Ile Lys Lys Ile Asp Gly Ser
                325                 330                 335

Thr Lys Ala Ser Leu Gln Gly Ala Ile Phe Val Leu Lys Asn Ala Thr
            340                 345                 350

Gly Gln Phe Leu Asn Phe Asn Asp Thr Asn Asn Val Glu Trp Gly Thr
        355                 360                 365

Glu Ala Asn Ala Thr Glu Tyr Thr Thr Gly Ala Asp Gly Ile Ile Thr
    370                 375                 380

Ile Thr Gly Leu Lys Glu Gly Thr Tyr Tyr Leu Val Glu Lys Lys Ala
385                 390                 395                 400
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Pro Leu Gly Tyr Asn Leu Leu Asp Asn Ser Gln Lys Val Ile Leu Gly
                405                 410                 415

Asp Gly Ala Thr Asp Thr Thr Asn Ser Asp Asn Leu Leu Val Asn Pro
            420                 425                 430

Thr Val Glu Asn Asn Lys Gly Thr Glu Gly Gly Gly Gly Ser Gly Gly
        435                 440                 445

Gly Gly Ser Gly Gly Gly Gly Ser Glu Leu Ala Glu Val Ser Gln Glu
    450                 455                 460

Arg Pro Ala Lys Thr Thr Val Asn Ile Tyr Lys Leu Gln Ala Asp Ser
465                 470                 475                 480

Tyr Lys Ser Glu Ile Thr Ser Asn Gly Gly Ile Glu Asn Lys Asp Gly
                485                 490                 495

Glu Val Ile Ser Asn Tyr Ala Lys Leu Gly Asp Asn Val Lys Gly Leu
            500                 505                 510

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

Asp Glu Leu Lys Lys Leu Thr Thr Val Glu Ala Ala Asp Ala Lys Val
    530                 535                 540

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

Gln Gly Leu Val Val Asp Ala Leu Asp Ser Lys Ser Asn Val Arg Tyr
                565                 570                 575

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

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

Thr Gly Phe Leu Ser Glu Ile Asn Ile Tyr Pro Lys Asn Val Val Thr
    610                 615                 620

Asp Glu Pro Lys Thr Asp Lys Asp Val Lys Lys Leu Gly Gln Asp Asp
625                 630                 635                 640

Ala Gly Tyr Thr Ile Gly Glu Glu Phe Lys Trp Phe Leu Lys Ser Thr
                645                 650                 655

Ile Pro Ala Asn Leu Gly Asp Tyr Glu Lys Phe Glu Ile Thr Asp Lys
            660                 665                 670
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```
Phe Ala Asp Gly Leu Thr Tyr Lys Ser Val Gly Lys Ile Lys Ile Gly
        675                 680                 685

Ser Lys Thr Leu Asn Arg Asp Glu His Tyr Thr Ile Asp Glu Pro Thr
    690                 695                 700

Val Asp Asn Gln Asn Thr Leu Lys Ile Thr Phe Lys Pro Glu Lys Phe
705                 710                 715                 720

Lys Glu Ile Ala Glu Leu Leu Lys Gly Met Thr Leu Val Lys Asn Gln
                725                 730                 735

Asp Ala Leu Asp Lys Ala Thr Ala Asn Thr Asp Asp Ala Ala Phe Leu
            740                 745                 750

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

Ala Ile Glu Asn Thr Phe Glu Leu Gln Tyr Asp His Thr Pro Asp Lys
    770                 775                 780

Ala Asp Asn Pro Lys Pro Ser Asn Pro Pro Arg Lys Pro Glu Val His
785                 790                 795                 800

Thr Gly Gly Lys Arg Phe Val Lys Lys Asp Ser Thr Glu Thr Gln Thr
                805                 810                 815

Leu Gly Gly Ala Glu Phe Asp Leu Leu Ala Ser Asp Gly Thr Ala Val
            820                 825                 830

Lys Trp Thr Asp Ala Leu Ile Lys Ala Asn Thr Asn Lys Asn Tyr Ile
        835                 840                 845

Ala Gly Glu Ala Val Thr Gly Gln Pro Ile Lys Leu Lys Ser His Thr
    850                 855                 860

Asp Gly Thr Phe Glu Ile Lys Gly Leu Ala Tyr Ala Val Asp Ala Asn
865                 870                 875                 880

Ala Glu Gly Thr Ala Val Thr Tyr Lys Leu Lys Glu Thr Lys Ala Pro
                885                 890                 895

Glu Gly Tyr Val Ile Pro Asp Lys Glu Ile Glu Phe Thr Val Ser Gln
            900                 905                 910

Thr Ser Tyr Asn Thr Lys Pro Thr Asp Ile Thr Val Asp Ser Ala Asp
        915                 920                 925

Ala Thr Pro Asp Thr Ile Lys Asn Asn Lys Arg Pro Ser
    930                 935                 940
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<210> 212
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<212> PRT
<213> Streptococcus agalactiae

<400> 212
Met Ala Ser Ala Glu Thr Gly Thr Ile Thr Val Gln Asp Thr Lys Lys
1 5 10 15

Gly Ala Thr Tyr Lys Ala Tyr Lys Val Phe Asp Ala Glu Ile Asp Asn
20 25 30

Ala Asn Val Ser Asp Ser Asn Lys Asp Gly Ala Ser Tyr Leu Ile Pro
35 40 45

Gln Gly Lys Glu Ala Glu Tyr Lys Ala Ser Thr Asp Phe Asn Ser Leu
50 55 60

Phe Thr Thr Thr Thr Asn Gly Gly Arg Thr Tyr Val Thr Lys Lys Asp
65 70 75 80

Thr Ala Ser Ala Asn Glu Ile Ala Thr Trp Ala Lys Ser Ile Ser Ala
85 90 95

Asn Thr Thr Pro Val Ser Thr Val Thr Glu Ser Asn Asn Asp Gly Thr
100 105 110

Glu Val Ile Asn Val Ser Gln Tyr Gly Tyr Tyr Tyr Val Ser Ser Thr
115 120 125

Val Asn Asn Gly Ala Val Ile Met Val Thr Ser Val Thr Pro Asn Ala
130 135 140

Thr Ile His Glu Lys Asn Thr Asp Ala Thr Trp Gly Asp Gly Gly Gly
145 150 155 160

Lys Thr Val Asp Gln Lys Thr Tyr Ser Val Gly Asp Thr Val Lys Tyr
165 170 175

Thr Ile Thr Tyr Lys Asn Ala Val Asn Tyr His Gly Thr Glu Lys Val
180 185 190

Tyr Gln Tyr Val Ile Lys Asp Thr Met Pro Ser Ala Ser Val Val Asp
195 200 205

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

Ile Thr Thr Leu Thr Gln Gly Ser Glu Lys Ala Thr Gly Lys Tyr Asn
225 230 235 240

```
Leu Glu Glu Asn Asn Asn Phe Thr Ile Thr Ile Pro Trp Ala Ala Thr
                245                 250                 255

Asn Thr Pro Thr Gly Asn Thr Gln Asn Gly Ala Asn Asp Asp Phe Phe
            260                 265                 270

Tyr Lys Gly Ile Asn Thr Ile Thr Val Thr Tyr Thr Gly Val Leu Lys
        275                 280                 285

Ser Gly Ala Lys Pro Gly Ser Ala Asp Leu Pro Glu Asn Thr Asn Ile
    290                 295                 300

Ala Thr Ile Asn Pro Asn Thr Ser Asn Asp Asp Pro Gly Gln Lys Val
305                 310                 315                 320

Thr Val Arg Asp Gly Gln Ile Thr Ile Lys Lys Ile Asp Gly Ser Thr
                325                 330                 335

Lys Ala Ser Leu Gln Gly Ala Ile Phe Val Leu Lys Asn Ala Thr Gly
            340                 345                 350

Gln Phe Leu Asn Phe Asn Asp Thr Asn Asn Val Glu Trp Gly Thr Glu
        355                 360                 365

Ala Asn Ala Thr Glu Tyr Thr Thr Gly Ala Asp Gly Ile Ile Thr Ile
    370                 375                 380

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

Leu Gly Tyr Asn Leu Leu Asp Asn Ser Gln Lys Val Ile Leu Gly Asp
                405                 410                 415

Gly Ala Thr Asp Thr Thr Asn Ser Asp Asn Leu Leu Val Asn Pro Thr
            420                 425                 430

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

Ala Glu Val Ser Gln Glu Arg Pro Ala Lys Thr Thr Val Asn Ile Tyr
    450                 455                 460

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

Ile Glu Asn Lys Asp Gly Glu Val Ile Ser Asn Tyr Ala Lys Leu Gly
                485                 490                 495

Asp Asn Val Lys Gly Leu Gln Gly Val Gln Phe Lys Arg Tyr Lys Val
            500                 505                 510
```

```
Lys Thr Asp Ile Ser Val Asp Glu Leu Lys Lys Leu Thr Thr Val Glu
        515                 520                 525

Ala Ala Asp Ala Lys Val Gly Thr Ile Leu Glu Glu Gly Val Ser Leu
    530                 535                 540

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

Lys Ser Asn Val Arg Tyr Leu Tyr Val Glu Asp Leu Lys Asn Ser Pro
                565                 570                 575

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

Val Ala Asn Ser Thr Gly Thr Gly Phe Leu Ser Glu Ile Asn Ile Tyr
        595                 600                 605

Pro Lys Asn Val Val Thr Asp Glu Pro Lys Thr Asp Lys Asp Val Lys
    610                 615                 620

Lys Leu Gly Gln Asp Asp Ala Gly Tyr Thr Ile Gly Glu Glu Phe Lys
625                 630                 635                 640

Trp Phe Leu Lys Ser Thr Ile Pro Ala Asn Leu Gly Asp Tyr Glu Lys
                645                 650                 655

Phe Glu Ile Thr Asp Lys Phe Ala Asp Gly Leu Thr Tyr Lys Ser Val
            660                 665                 670

Gly Lys Ile Lys Ile Gly Ser Lys Thr Leu Asn Arg Asp Glu His Tyr
        675                 680                 685

Thr Ile Asp Glu Pro Thr Val Asp Asn Gln Asn Thr Leu Lys Ile Thr
    690                 695                 700

Phe Lys Pro Glu Lys Phe Lys Glu Ile Ala Glu Leu Leu Lys Gly Met
705                 710                 715                 720

Thr Leu Val Lys Asn Gln Asp Ala Leu Asp Lys Ala Thr Ala Asn Thr
                725                 730                 735

Asp Asp Ala Ala Phe Leu Glu Ile Pro Val Ala Ser Thr Ile Asn Glu
            740                 745                 750

Lys Ala Val Leu Gly Lys Ala Ile Glu Asn Thr Phe Glu Leu Gln Tyr
        755                 760                 765

Asp His Thr Pro Asp Lys Ala Asp Asn Pro Lys Pro Ser Asn Pro Pro
    770                 775                 780
```

Arg Lys Pro Glu Val His Thr Gly Gly Lys Arg Phe Val Lys Lys Asp
785 790 795 800

Ser Thr Glu Thr Gln Thr Leu Gly Gly Ala Glu Phe Asp Leu Leu Ala
805 810 815

Ser Asp Gly Thr Ala Val Lys Trp Thr Asp Ala Leu Ile Lys Ala Asn
820 825 830

Thr Asn Lys Asn Tyr Ile Ala Gly Glu Ala Val Thr Gly Gln Pro Ile
835 840 845

Lys Leu Lys Ser His Thr Asp Gly Thr Phe Glu Ile Lys Gly Leu Ala
850 855 860

Tyr Ala Val Asp Ala Asn Ala Glu Gly Thr Ala Val Thr Tyr Lys Leu
865 870 875 880

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

Glu Phe Thr Val Ser Gln Thr Ser Tyr Asn Thr Lys Pro Thr Asp Ile
900 905 910

Thr Val Asp Ser Ala Asp Ala Thr Pro Asp Thr Ile Lys Asn Asn Lys
915 920 925

Arg Pro Ser
930

<210> 213
<211> 890
<212> PRT
<213> Streptococcus agalactiae

<400> 213
Met Lys Lys Arg Gln Lys Ile Trp Arg Gly Leu Ser Val Thr Leu Leu
1 5 10 15

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

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

Asn Ala Thr Pro Leu Gly Lys Ala Thr Phe Val Leu Lys Asn Asp Asn
50 55 60

Asp Lys Ser Glu Thr Ser His Glu Thr Val Glu Gly Ser Gly Glu Ala
65 70 75 80

Thr Phe Glu Asn Ile Lys Pro Gly Asp Tyr Thr Leu Arg Glu Glu Thr
85 90 95

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Ala Pro Ile Gly Tyr Lys Lys Thr Asp Lys Thr Trp Lys Val Lys Val
            100                 105                 110

Ala Asp Asn Gly Ala Thr Ile Ile Glu Gly Met Asp Ala Asp Lys Ala
        115                 120                 125

Glu Lys Arg Lys Glu Val Leu Asn Ala Gln Tyr Pro Lys Ser Ala Ile
    130                 135                 140

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

Lys Val Gly Glu Gln Tyr Lys Ala Leu Asn Pro Ile Asn Gly Lys Asp
                165                 170                 175

Gly Arg Arg Glu Ile Ala Glu Gly Trp Leu Ser Lys Lys Ile Thr Gly
            180                 185                 190

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

Gly Lys Thr Thr Val Glu Thr Lys Glu Leu Asn Gln Pro Leu Asp Val
    210                 215                 220

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

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

Asp Lys Ile Thr Ser Asn Lys Asp Asn Arg Val Ala Leu Val Thr Tyr
            260                 265                 270

Ala Ser Thr Ile Phe Asp Gly Thr Glu Ala Thr Val Ser Lys Gly Val
        275                 280                 285

Ala Asp Gln Asn Gly Lys Ala Leu Asn Asp Ser Val Ser Trp Asp Tyr
    290                 295                 300

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

Leu Thr Asn Asp Ala Asn Glu Val Asn Ile Leu Lys Ser Arg Ile Pro
                325                 330                 335

Lys Glu Ala Glu His Ile Asn Gly Asp Arg Thr Leu Tyr Gln Phe Gly
            340                 345                 350

Ala Thr Phe Thr Gln Lys Ala Leu Met Lys Ala Asn Glu Ile Leu Glu
        355                 360                 365
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Thr Gln Ser Ser Asn Ala Arg Lys Lys Leu Ile Phe His Val Thr Asp
    370                 375                 380

Gly Val Pro Thr Met Ser Tyr Ala Ile Asn Phe Asn Pro Tyr Ile Ser
385                 390                 395                 400

Thr Ser Tyr Gln Asn Gln Phe Asn Ser Phe Leu Asn Lys Ile Pro Asp
                405                 410                 415

Arg Ser Gly Ile Leu Gln Glu Asp Phe Ile Ile Asn Gly Asp Asp Tyr
            420                 425                 430

Gln Ile Val Lys Gly Asp Gly Glu Ser Phe Lys Leu Phe Ser Asp Arg
        435                 440                 445

Lys Val Pro Val Thr Gly Gly Thr Thr Gln Ala Ala Tyr Arg Val Pro
    450                 455                 460

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

Gly Tyr Ile Tyr Leu Tyr Trp Arg Asp Tyr Asn Trp Val Tyr Pro Phe
                485                 490                 495

Asp Pro Lys Thr Lys Lys Val Ser Ala Thr Lys Gln Ile Lys Thr His
            500                 505                 510

Gly Glu Pro Thr Thr Leu Tyr Phe Asn Gly Asn Ile Arg Pro Lys Gly
        515                 520                 525

Tyr Asp Ile Phe Thr Val Gly Ile Gly Val Asn Gly Asp Pro Gly Ala
    530                 535                 540

Thr Pro Leu Glu Ala Glu Lys Phe Met Gln Ser Ile Ser Ser Lys Thr
545                 550                 555                 560

Glu Asn Tyr Thr Asn Val Asp Asp Thr Asn Lys Ile Tyr Asp Glu Leu
                565                 570                 575

Asn Lys Tyr Phe Lys Thr Ile Val Glu Glu Lys His Ser Ile Val Asp
            580                 585                 590

Gly Asn Val Thr Asp Pro Met Gly Glu Met Ile Glu Phe Gln Leu Lys
        595                 600                 605

Asn Gly Gln Ser Phe Thr His Asp Asp Tyr Val Leu Val Gly Asn Asp
    610                 615                 620

Gly Ser Gln Leu Lys Asn Gly Val Ala Leu Gly Gly Pro Asn Ser Asp
625                 630                 635                 640
```

```
Gly Gly Ile Leu Lys Asp Val Thr Val Thr Tyr Asp Lys Thr Ser Gln
                645                 650                 655

Thr Ile Lys Ile Asn His Leu Asn Leu Gly Ser Gly Gln Lys Val Val
            660                 665                 670

Leu Thr Tyr Asp Val Arg Leu Lys Asp Asn Tyr Ile Ser Asn Lys Phe
        675                 680                 685

Tyr Asn Thr Asn Asn Arg Thr Thr Leu Ser Pro Lys Ser Glu Lys Glu
    690                 695                 700

Pro Asn Thr Ile Arg Asp Phe Pro Ile Pro Lys Ile Arg Asp Val Arg
705                 710                 715                 720

Glu Phe Pro Val Leu Thr Ile Ser Asn Gln Lys Lys Met Gly Glu Val
                725                 730                 735

Glu Phe Ile Lys Val Asn Lys Asp Lys His Ser Glu Ser Leu Leu Gly
            740                 745                 750

Ala Lys Phe Gln Leu Gln Ile Glu Lys Asp Phe Ser Gly Tyr Lys Gln
        755                 760                 765

Phe Val Pro Glu Gly Ser Asp Val Thr Thr Lys Asn Asp Gly Lys Ile
    770                 775                 780

Tyr Phe Lys Ala Leu Gln Asp Gly Asn Tyr Lys Leu Tyr Glu Ile Ser
785                 790                 795                 800

Ser Pro Asp Gly Tyr Ile Glu Val Lys Thr Lys Pro Val Val Thr Phe
                805                 810                 815

Thr Ile Gln Asn Gly Glu Val Thr Asn Leu Lys Ala Asp Pro Asn Ala
            820                 825                 830

Asn Lys Asn Gln Ile Gly Tyr Leu Glu Gly Asn Gly Lys His Leu Ile
        835                 840                 845

Thr Asn Thr Pro Lys Arg Pro Pro Gly Val Phe Pro Lys Thr Gly Gly
    850                 855                 860

Ile Gly Thr Ile Val Tyr Ile Leu Val Gly Ser Thr Phe Met Ile Leu
865                 870                 875                 880

Thr Ile Cys Ser Phe Arg Arg Lys Gln Leu
                885                 890
```

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<211> 1434

<212> PRT
<213> Streptococcus agalactiae

<400> 214

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Met Leu Lys Lys Cys Gln Thr Phe Ile Ile Glu Ser Leu Lys Lys Lys
1               5                  10                  15

Lys His Pro Lys Glu Trp Lys Ile Ile Met Trp Ser Leu Met Ile Leu
            20                  25                  30

Thr Thr Phe Leu Thr Thr Tyr Phe Leu Ile Leu Pro Ala Ile Thr Val
        35                  40                  45

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

Ser Ser Gln Val Thr Ser Ser Thr Ser Ser Ser Gln Ser Ser Val Glu
65                  70                  75                  80

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

Ser Glu Glu Ala Ala Tyr Arg Glu Glu Pro Leu Met Phe Arg Gly Ala
            100                 105                 110

Asp Tyr Thr Val Thr Val Thr Leu Thr Lys Glu Ala Lys Ile Pro Lys
        115                 120                 125

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

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

Glu Ile Lys Asn Phe Lys Leu Tyr Asp Ile Thr Ile Glu Ser Asn Gly
                165                 170                 175

Lys Glu Ala Glu Pro Gln Ala Pro Val Lys Val Glu Val Asn Tyr Asp
            180                 185                 190

Lys Pro Leu Glu Ala Ser Asp Glu Asn Leu Lys Val Val His Phe Lys
        195                 200                 205

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

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

Tyr Ala Ile Val Gln Glu Asp Asn Thr Glu Val Pro Arg Leu Thr Tyr
                245                 250                 255
```

```
His Phe Gln Asn Asn Asp Gly Thr Asp Tyr Asp Phe Leu Thr Ala Ser
            260                 265                 270

Gly Met Gln Val His His Gln Ile Ile Lys Asp Gly Glu Ser Leu Gly
        275                 280                 285

Glu Val Gly Ile Pro Thr Ile Lys Ala Gly Glu His Phe Asn Gly Trp
    290                 295                 300

Tyr Thr Tyr Asp Pro Thr Thr Gly Lys Tyr Gly Asp Pro Val Lys Phe
305                 310                 315                 320

Gly Glu Pro Ile Thr Val Thr Glu Thr Lys Glu Ile Cys Val Arg Pro
                325                 330                 335

Phe Met Ser Lys Val Ala Thr Val Thr Leu Tyr Asp Asp Ser Ala Gly
            340                 345                 350

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

Gly Thr Ala Asp Leu Ser Ser Phe Lys Val Ser Pro Pro Thr Ser Thr
    370                 375                 380

Leu Leu Phe Val Gly Trp Ser Lys Thr Gln Asn Gly Ala Pro Leu Ser
385                 390                 395                 400

Glu Ser Glu Ile Gln Ala Leu Pro Val Ser Ser Asp Ile Ser Leu Tyr
                405                 410                 415

Pro Val Phe Lys Glu Ser Tyr Gly Val Glu Phe Asn Thr Gly Asp Leu
            420                 425                 430

Ser Thr Gly Val Thr Tyr Ile Ala Pro Arg Arg Val Leu Thr Gly Gln
        435                 440                 445

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

Phe Ala Gly Trp Tyr Thr Ala Ala Ser Gly Gly Ala Ala Phe Asp Phe
465                 470                 475                 480

Asn Gln Val Leu Thr Lys Asp Thr Thr Leu Tyr Ala His Trp Ser Pro
                485                 490                 495

Ala Gln Thr Thr Tyr Thr Ile Asn Tyr Trp Gln Gln Ser Ala Thr Asp
            500                 505                 510

Asn Lys Asn Ala Thr Asp Ala Gln Lys Thr Tyr Glu Tyr Ala Gly Gln
        515                 520                 525
```

```
Val Thr Arg Ser Gly Leu Ser Leu Ser Asn Gln Thr Leu Thr Gln Gln
    530                 535                 540

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

Thr Glu Thr Ser Val Met Ile Lys Asp Asp Gly Ser Ser Val Val Asn
                565                 570                 575

Val Tyr Tyr Asp Arg Lys Leu Ile Thr Ile Lys Phe Ala Lys Tyr Gly
            580                 585                 590

Gly Tyr Ser Leu Pro Glu Tyr Tyr Tyr Ser Tyr Asn Trp Ser Ser Asp
        595                 600                 605

Ala Asp Thr Tyr Thr Gly Leu Tyr Gly Thr Thr Leu Ala Ala Asn Gly
    610                 615                 620

Tyr Gln Trp Lys Thr Gly Ala Trp Gly Tyr Leu Ala Asn Val Gly Asn
625                 630                 635                 640

Asn Gln Val Gly Thr Tyr Gly Met Ser Tyr Leu Gly Glu Phe Ile Leu
                645                 650                 655

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

Asn Ile Val Gln Thr Tyr Arg Phe Phe Lys Gln Gly Leu Asp Gly Thr
        675                 680                 685

Tyr Ser Leu Ala Asp Thr Gly Gly Gly Ala Gly Ala Asp Glu Phe Thr
    690                 695                 700

Phe Thr Glu Lys Tyr Leu Gly Phe Asn Val Lys Tyr Tyr Gln Arg Leu
705                 710                 715                 720

Tyr Pro Asp Asn Tyr Leu Phe Asp Gln Tyr Ala Ser Gln Thr Ser Ala
                725                 730                 735

Gly Val Lys Val Pro Ile Ser Asp Glu Tyr Tyr Asp Arg Tyr Gly Ala
            740                 745                 750

Tyr His Lys Asp Tyr Leu Asn Leu Val Val Trp Tyr Glu Arg Asn Ser
        755                 760                 765

Tyr Lys Ile Lys Tyr Leu Asp Pro Leu Asp Asn Thr Glu Leu Pro Asn
    770                 775                 780

Phe Pro Val Lys Asp Val Leu Tyr Glu Gln Asn Leu Ser Ser Tyr Ala
785                 790                 795                 800
```

```
Pro Asp Thr Thr Thr Val Gln Pro Lys Pro Ser Arg Pro Gly Tyr Val
                805                 810                 815

Trp Asp Gly Lys Trp Tyr Lys Asp Gln Ala Gln Thr Gln Val Phe Asp
            820                 825                 830

Phe Asn Thr Thr Met Pro Pro His Asp Val Lys Val Tyr Ala Gly Trp
        835                 840                 845

Gln Lys Val Thr Tyr Arg Val Asn Ile Asp Pro Asn Gly Gly Arg Leu
    850                 855                 860

Ser Lys Thr Asp Asp Thr Tyr Leu Asp Leu His Tyr Gly Asp Arg Ile
865                 870                 875                 880

Pro Asp Tyr Thr Asp Ile Thr Arg Asp Tyr Ile Gln Asp Pro Ser Gly
                885                 890                 895

Thr Tyr Tyr Tyr Lys Tyr Asp Ser Arg Asp Lys Asp Pro Asp Ser Thr
            900                 905                 910

Lys Asp Ala Tyr Tyr Thr Thr Asp Thr Ser Leu Ser Asn Val Asp Thr
        915                 920                 925

Thr Thr Lys Tyr Lys Tyr Val Lys Asp Ala Tyr Lys Leu Val Gly Trp
    930                 935                 940

Tyr Tyr Val Asn Pro Asp Gly Ser Ile Arg Pro Tyr Asn Phe Ser Gly
945                 950                 955                 960

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

Asp Tyr His Ile Ile Tyr Ser Asn Asp Ala Val Gly Thr Asp Gly Lys
            980                 985                 990

Pro Ala Leu Asp Ala Ser Gly Gln  Gln Leu Gln Thr Ser  Asn Glu Pro
        995                 1000                1005

Thr Asp  Pro Asp Ser Tyr Asp  Asp Gly Ser His Ser  Ala Leu Leu
    1010                1015                1020

Arg Arg  Pro Thr Met Pro Asp  Gly Tyr Arg Phe Arg  Gly Trp Trp
    1025                1030                1035

Tyr Asn  Gly Lys Ile Tyr Asn  Pro Tyr Asp Ser Ile  Asp Ile Asp
    1040                1045                1050

Ala His  Leu Ala Asp Ala Asn  Lys Asn Ile Thr Ile  Lys Pro Val
    1055                1060                1065
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Ile Ile  Pro Val Gly Asp Ile  Lys Leu Glu Asp Thr  Ser Ile Lys
    1070                 1075                 1080

Tyr Asn  Gly Asn Gly Gly Thr  Arg Val Glu Asn Gly  Asn Val Val
    1085                 1090                 1095

Thr Gln  Val Glu Thr Pro Arg  Met Glu Leu Asn Ser  Thr Thr Thr
    1100                 1105                 1110

Ile Pro  Glu Asn Gln Tyr Phe  Thr Arg Thr Gly Tyr  Asn Leu Ile
    1115                 1120                 1125

Gly Trp  His His Asp Lys Asp  Leu Ala Asp Thr Gly  Arg Val Glu
    1130                 1135                 1140

Phe Thr  Ala Gly Gln Ser Ile  Gly Ile Asp Asn Asn  Pro Asp Ala
    1145                 1150                 1155

Thr Asn  Thr Leu Tyr Ala Val  Trp Gln Pro Lys Glu  Tyr Thr Val
    1160                 1165                 1170

Arg Val  Ser Lys Thr Val Val  Gly Leu Asp Glu Asp  Lys Thr Lys
    1175                 1180                 1185

Asp Phe  Leu Phe Asn Pro Ser  Glu Thr Leu Gln Gln  Glu Asn Phe
    1190                 1195                 1200

Pro Leu  Arg Asp Gly Gln Thr  Lys Glu Phe Lys Val  Pro Tyr Gly
    1205                 1210                 1215

Thr Ser  Ile Ser Ile Asp Glu  Gln Ala Tyr Asp Glu  Phe Lys Val
    1220                 1225                 1230

Ser Glu  Ser Ile Thr Glu Lys  Asn Leu Ala Thr Gly  Glu Ala Asp
    1235                 1240                 1245

Lys Thr  Tyr Asp Ala Thr Gly  Leu Gln Ser Leu Thr  Val Ser Gly
    1250                 1255                 1260

Asp Val  Asp Ile Ser Phe Thr  Asn Thr Arg Ile Lys  Gln Lys Val
    1265                 1270                 1275

Arg Leu  Gln Lys Val Asn Val  Glu Asn Asp Asn Asn  Phe Leu Ala
    1280                 1285                 1290

Gly Ala  Val Phe Asp Ile Tyr  Glu Ser Asp Ala Asn  Gly Asn Lys
    1295                 1300                 1305

Ala Ser  His Pro Met Tyr Ser  Gly Leu Val Thr Asn  Asp Lys Gly
    1310                 1315                 1320
```

Leu Leu Leu Val Asp Ala Asn Asn Tyr Leu Ser Leu Pro Val Gly
1325 1330 1335

Lys Tyr Tyr Leu Thr Glu Thr Lys Ala Pro Pro Gly Tyr Leu Leu
1340 1345 1350

Pro Lys Asn Asp Ile Ser Val Leu Val Ile Ser Thr Gly Val Thr
1355 1360 1365

Phe Glu Gln Asn Gly Asn Asn Ala Thr Pro Ile Lys Glu Asn Leu
1370 1375 1380

Val Asp Gly Ser Thr Val Tyr Thr Phe Lys Ile Thr Asn Ser Lys
1385 1390 1395

Gly Thr Glu Leu Pro Ser Thr Gly Gly Ile Gly Thr His Ile Tyr
1400 1405 1410

Ile Leu Val Gly Leu Ala Leu Ala Leu Pro Ser Gly Leu Ile Leu
1415 1420 1425

Tyr Tyr Arg Lys Lys Ile
1430

<210> 215
<211> 478
<212> PRT
<213> Streptococcus agalactiae

<400> 215
Met Asn Asn Asn Glu Lys Lys Val Lys Tyr Phe Leu Arg Lys Thr Ala
1 5 10 15

Tyr Gly Leu Ala Ser Met Ser Ala Ala Phe Ala Val Cys Ser Gly Ile
20 25 30

Val His Ala Asp Thr Ser Ser Gly Ile Ser Ala Ser Ile Pro His Lys
35 40 45

Lys Gln Val Asn Leu Gly Ala Val Thr Leu Lys Asn Leu Ile Ser Lys
50 55 60

Tyr Arg Gly Asn Asp Lys Ala Ile Ala Ile Leu Leu Ser Arg Val Asn
65 70 75 80

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

Thr Glu Ala Glu Ile Arg Asn Ile Leu Tyr Gln Gly Gln Ile Gly Lys
100 105 110

Gln Asn Lys Pro Ser Val Thr Thr His Ala Lys Val Ser Asp Gln Glu
115 120 125

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Leu Gly Lys Gln Ser Arg Arg Ser Gln Asp Ile Ile Lys Ser Leu Gly
    130                 135                 140

Phe Leu Ser Ser Asp Gln Lys Asp Ile Leu Val Lys Ser Ile Ser Ser
145                 150                 155                 160

Ser Lys Asp Ser Gln Leu Ile Leu Lys Phe Val Thr Gln Ala Thr Gln
                165                 170                 175

Leu Asn Asn Ala Glu Ser Thr Lys Ala Lys Gln Met Ala Gln Asn Asp
            180                 185                 190

Val Ala Leu Ile Lys Asn Ile Ser Pro Glu Val Leu Glu Glu Tyr Lys
        195                 200                 205

Glu Lys Ile Gln Arg Ala Ser Thr Lys Ser Gln Val Asp Glu Phe Val
    210                 215                 220

Ala Glu Ala Lys Lys Val Val Asn Ser Asn Lys Glu Thr Leu Val Asn
225                 230                 235                 240

Gln Ala Asn Gly Lys Lys Gln Glu Ile Ala Lys Leu Glu Asn Leu Ser
                245                 250                 255

Asn Asp Glu Met Leu Arg Tyr Asn Thr Ala Ile Asp Asn Val Val Lys
            260                 265                 270

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

Asn Ser Ile Lys Gln Ala Ala Gln Glu Val Ala Gln Lys Asn Leu Gln
    290                 295                 300

Lys Gln Tyr Ala Lys Lys Ile Glu Arg Ile Ser Ser Lys Gly Leu Ala
305                 310                 315                 320

Leu Ser Lys Lys Ala Lys Glu Ile Tyr Glu Lys His Lys Ser Ile Leu
                325                 330                 335

Pro Thr Pro Gly Tyr Tyr Ala Asp Ser Val Gly Thr Tyr Leu Asn Arg
            340                 345                 350

Phe Arg Asp Lys Gln Thr Phe Gly Asn Arg Ser Val Trp Thr Gly Gln
        355                 360                 365

Ser Gly Leu Asp Glu Ala Lys Lys Met Leu Asp Glu Val Lys Lys Leu
    370                 375                 380

Leu Lys Glu Leu Gln Asp Leu Thr Arg Gly Thr Lys Glu Asp Lys Lys
385                 390                 395                 400
```

Pro Asp Val Lys Pro Glu Ala Lys Pro Glu Ala Lys Pro Asp Val Lys
405 410 415

Pro Glu Ala Lys Pro Asp Val Lys Pro Glu Ala Lys Pro Asp Val Lys
420 425 430

Pro Glu Ala Lys Pro Asp Val Lys Pro Glu Ala Lys Pro Asp Val Lys
435 440 445

Pro Glu Ala Lys Pro Asp Val Lys Ile Val Ser Leu Ile Val Met Leu
450 455 460

Ser Ala Gly Leu Ile Thr Ile Val Leu Lys His Lys Lys Asn
465 470 475

<210> 216
<211> 370
<212> PRT
<213> Streptococcus agalactiae

<400> 216
Thr Ser Ser Gly Ile Ser Ala Ser Ile Pro His Lys Lys Gln Val Asn
1 5 10 15

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

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

Ala Ser Gln Asp Thr Leu Pro Gln Leu Ile Asn Ser Thr Glu Ala Glu
50 55 60

Ile Arg Asn Ile Leu Tyr Gln Gly Gln Ile Gly Lys Gln Asn Lys Pro
65 70 75 80

Ser Val Thr Thr His Ala Lys Val Ser Asp Gln Glu Leu Gly Lys Gln
85 90 95

Ser Arg Arg Ser Gln Asp Ile Ile Lys Ser Leu Gly Phe Leu Ser Ser
100 105 110

Asp Gln Lys Asp Ile Leu Val Lys Ser Ile Ser Ser Ser Lys Asp Ser
115 120 125

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

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

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

Arg Ala Ser Thr Lys Ser Gln Val Asp Glu Phe Val Ala Glu Ala Lys
180 185 190

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

Lys Lys Gln Glu Ile Ala Lys Leu Glu Asn Leu Ser Asn Asp Glu Met
210 215 220

Leu Arg Tyr Asn Thr Ala Ile Asp Asn Val Val Lys Gln Tyr Asn Glu
225 230 235 240

Gly Lys Leu Asn Ile Thr Ala Ala Met Asn Ala Leu Asn Ser Ile Lys
245 250 255

Gln Ala Ala Gln Glu Val Ala Gln Lys Asn Leu Gln Lys Gln Tyr Ala
260 265 270

Lys Lys Ile Glu Arg Ile Ser Ser Lys Gly Leu Ala Leu Ser Lys Lys
275 280 285

Ala Lys Glu Ile Tyr Glu Lys His Lys Ser Ile Leu Pro Thr Pro Gly
290 295 300

Tyr Tyr Ala Asp Ser Val Gly Thr Tyr Leu Asn Arg Phe Arg Asp Lys
305 310 315 320

Gln Thr Phe Gly Asn Arg Ser Val Trp Thr Gly Gln Ser Gly Leu Asp
325 330 335

Glu Ala Lys Lys Met Leu Asp Glu Val Lys Lys Leu Leu Lys Glu Leu
340 345 350

Gln Asp Leu Thr Arg Gly Thr Lys Glu Asp Lys Lys Pro Asp Val Lys
355 360 365

Pro Glu
370

<210> 217
<211> 411
<212> PRT
<213> Streptococcus agalactiae

<400> 217
Thr Ser Ser Gly Ile Ser Ala Ser Ile Pro His Lys Lys Gln Val Asn
1 5 10 15

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

```
Asp Lys Ala Ile Ala Ile Leu Leu Ser Arg Val Asn Asp Phe Asn Arg
        35                  40                  45

Ala Ser Gln Asp Thr Leu Pro Gln Leu Ile Asn Ser Thr Glu Ala Glu
    50                  55                  60

Ile Arg Asn Ile Leu Tyr Gln Gly Gln Ile Gly Lys Gln Asn Lys Pro
65                  70                  75                  80

Ser Val Thr Thr His Ala Lys Val Ser Asp Gln Glu Leu Gly Lys Gln
                85                  90                  95

Ser Arg Arg Ser Gln Asp Ile Ile Lys Ser Leu Gly Phe Leu Ser Ser
            100                 105                 110

Asp Gln Lys Asp Ile Leu Val Lys Ser Ile Ser Ser Ser Lys Asp Ser
        115                 120                 125

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

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

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

Arg Ala Ser Thr Lys Ser Gln Val Asp Glu Phe Val Ala Glu Ala Lys
            180                 185                 190

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

Lys Lys Gln Glu Ile Ala Lys Leu Glu Asn Leu Ser Asn Asp Glu Met
    210                 215                 220

Leu Arg Tyr Asn Thr Ala Ile Asp Asn Val Val Lys Gln Tyr Asn Glu
225                 230                 235                 240

Gly Lys Leu Asn Ile Thr Ala Ala Met Asn Ala Leu Asn Ser Ile Lys
                245                 250                 255

Gln Ala Ala Gln Glu Val Ala Gln Lys Asn Leu Gln Lys Gln Tyr Ala
            260                 265                 270

Lys Lys Ile Glu Arg Ile Ser Ser Lys Gly Leu Ala Leu Ser Lys Lys
        275                 280                 285

Ala Lys Glu Ile Tyr Glu Lys His Lys Ser Ile Leu Pro Thr Pro Gly
    290                 295                 300
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Tyr Tyr Ala Asp Ser Val Gly Thr Tyr Leu Asn Arg Phe Arg Asp Lys
305                 310                 315                 320

Gln Thr Phe Gly Asn Arg Ser Val Trp Thr Gly Gln Ser Gly Leu Asp
                325                 330                 335

Glu Ala Lys Lys Met Leu Asp Glu Val Lys Lys Leu Leu Lys Glu Leu
            340                 345                 350

Gln Asp Leu Thr Arg Gly Thr Lys Glu Asp Lys Lys Pro Asp Val Lys
        355                 360                 365

Pro Glu Ala Lys Pro Glu Ala Lys Leu Glu Ala Lys Pro Glu Ala Lys
    370                 375                 380

Pro Ala Thr Lys Lys Ser Val Asn Thr Ser Gly Asn Leu Ala Ala Lys
385                 390                 395                 400

Lys Ala Ile Glu Asn Lys Lys Tyr Ser Lys Lys
                405                 410


<210> 218
<211> 436
<212> PRT
<213> Streptococcus agalactiae

<400> 218
Met Asn Asn Asn Glu Lys Lys Val Lys Tyr Phe Leu Arg Lys Thr Ala
1               5                   10                  15

Tyr Gly Leu Ala Ser Met Ser Ala Ala Phe Ala Val Cys Ser Gly Ile
            20                  25                  30

Val His Ala Asp Thr Ser Ser Gly Ile Ser Ala Ser Ile Pro His Lys
        35                  40                  45

Lys Gln Val Asn Leu Gly Ala Val Thr Leu Lys Asn Leu Ile Ser Lys
    50                  55                  60

Tyr Arg Gly Asn Asp Lys Ala Ile Ala Ile Leu Leu Ser Arg Val Asn
65                  70                  75                  80

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

Thr Glu Ala Glu Ile Arg Asn Ile Leu Tyr Gln Gly Gln Ile Gly Lys
            100                 105                 110

Gln Asn Lys Pro Ser Val Thr Thr His Ala Lys Val Ser Asp Gln Glu
        115                 120                 125
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```
Leu Gly Lys Gln Ser Arg Arg Ser Gln Asp Ile Ile Lys Ser Leu Gly
    130                 135                 140

Phe Leu Ser Ser Asp Gln Lys Asp Ile Leu Val Lys Ser Ile Ser Ser
145                 150                 155                 160

Ser Lys Asp Ser Gln Leu Ile Leu Lys Phe Val Thr Gln Ala Thr Gln
                165                 170                 175

Leu Asn Asn Ala Glu Ser Thr Lys Ala Lys Gln Met Ala Gln Asn Asp
            180                 185                 190

Val Ala Leu Ile Lys Asn Ile Ser Pro Glu Val Leu Glu Glu Tyr Lys
        195                 200                 205

Glu Lys Ile Gln Arg Ala Ser Thr Lys Ser Gln Val Asp Glu Phe Val
    210                 215                 220

Ala Glu Ala Lys Lys Val Val Asn Ser Asn Lys Glu Thr Leu Val Asn
225                 230                 235                 240

Gln Ala Asn Gly Lys Lys Gln Glu Ile Ala Lys Leu Glu Asn Leu Ser
                245                 250                 255

Asn Asp Glu Met Leu Arg Tyr Asn Thr Ala Ile Asp Asn Val Val Lys
            260                 265                 270

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

Asn Ser Ile Lys Gln Ala Ala Gln Glu Val Ala Gln Lys Asn Leu Gln
    290                 295                 300

Lys Gln Tyr Ala Lys Lys Ile Glu Arg Ile Ser Ser Lys Gly Leu Ala
305                 310                 315                 320

Leu Ser Lys Lys Ala Lys Glu Ile Tyr Glu Lys His Lys Ser Ile Leu
                325                 330                 335

Pro Thr Pro Gly Tyr Tyr Ala Asp Ser Val Gly Thr Tyr Leu Asn Arg
            340                 345                 350

Phe Arg Asp Lys Gln Thr Phe Gly Asn Arg Ser Val Trp Thr Gly Gln
        355                 360                 365

Ser Gly Leu Asp Glu Ala Lys Lys Met Leu Asp Glu Val Lys Lys Leu
    370                 375                 380

Leu Lys Glu Leu Gln Asp Leu Thr Arg Gly Thr Lys Glu Asp Lys Lys
385                 390                 395                 400
```

Pro Asp Val Lys Pro Glu Ala Lys Pro Glu Ala Lys Pro Asp Val Lys
405 410 415

Pro Glu Ala Lys Pro Asp Val Lys Pro Glu Ala Lys Pro Asp Val Lys
420 425 430

Pro Glu Ala Lys
435

<210> 219
<211> 364
<212> PRT
<213> Streptococcus agalactiae

<400> 219
Thr Ser Ser Gly Ile Ser Ala Ser Ile Pro His Lys Lys Gln Val Asn
1 5 10 15

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

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

Ala Ser Gln Asp Thr Leu Pro Gln Leu Ile Asn Ser Thr Glu Ala Glu
50 55 60

Ile Arg Asn Ile Leu Tyr Gln Gly Gln Ile Gly Lys Gln Asn Lys Pro
65 70 75 80

Ser Val Thr Thr His Ala Lys Val Ser Asp Gln Glu Leu Gly Lys Gln
85 90 95

Ser Arg Arg Ser Gln Asp Ile Ile Lys Ser Leu Gly Phe Leu Ser Ser
100 105 110

Asp Gln Lys Asp Ile Leu Val Lys Ser Ile Ser Ser Ser Lys Asp Ser
115 120 125

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

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

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

Arg Ala Ser Thr Lys Ser Gln Val Asp Glu Phe Val Ala Glu Ala Lys
180 185 190

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

Lys Lys Gln Glu Ile Ala Lys Leu Glu Asn Leu Ser Asn Asp Glu Met
210 215 220

Leu Arg Tyr Asn Thr Ala Ile Asp Asn Val Val Lys Gln Tyr Asn Glu
225 230 235 240

Gly Lys Leu Asn Ile Thr Ala Ala Met Asn Ala Leu Asn Ser Ile Lys
245 250 255

Gln Ala Ala Gln Glu Val Ala Gln Lys Asn Leu Gln Lys Gln Tyr Ala
260 265 270

Lys Lys Ile Glu Arg Ile Ser Ser Lys Gly Leu Ala Leu Ser Lys Lys
275 280 285

Ala Lys Glu Ile Tyr Glu Lys His Lys Ser Ile Leu Pro Thr Pro Gly
290 295 300

Tyr Tyr Ala Asp Ser Val Gly Thr Tyr Leu Asn Arg Phe Arg Asp Lys
305 310 315 320

Gln Thr Phe Gly Asn Arg Ser Val Trp Thr Gly Gln Ser Gly Leu Asp
325 330 335

Glu Ala Lys Lys Met Leu Asp Glu Val Lys Lys Leu Leu Lys Glu Leu
340 345 350

Gln Asp Leu Thr Arg Gly Thr Lys Glu Asp Lys Lys
355 360

<210> 220
<211> 518
<212> PRT
<213> Streptococcus agalactiae

<400> 220
Met Asn Asn Asn Glu Lys Lys Val Lys Tyr Phe Leu Arg Lys Thr Ala
1 5 10 15

Tyr Gly Leu Ala Ser Met Ser Ala Ala Phe Ala Val Cys Ser Gly Ile
20 25 30

Val His Ala Asp Thr Ser Ser Gly Ile Ser Ala Ser Ile Pro His Lys
35 40 45

Lys Gln Val Asn Leu Gly Ala Val Thr Leu Lys Asn Leu Ile Ser Lys
50 55 60

Tyr Arg Gly Asn Asp Lys Ala Ile Ala Ile Leu Leu Ser Arg Val Asn
65 70 75 80

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

Thr Glu Ala Glu Ile Arg Asn Ile Leu Tyr Gln Gly Gln Ile Gly Lys
            100                 105                 110

Gln Asn Lys Pro Ser Val Thr Thr His Ala Lys Val Ser Asp Gln Glu
        115                 120                 125

Leu Gly Lys Gln Ser Arg Arg Ser Gln Asp Ile Ile Lys Ser Leu Gly
    130                 135                 140

Phe Leu Ser Ser Asp Gln Lys Asp Ile Leu Val Lys Ser Ile Ser Ser
145                 150                 155                 160

Ser Lys Asp Ser Gln Leu Ile Leu Lys Phe Val Thr Gln Ala Thr Gln
                165                 170                 175

Leu Asn Asn Ala Glu Ser Thr Lys Ala Lys Gln Met Ala Gln Asn Asp
            180                 185                 190

Val Ala Leu Ile Lys Asn Ile Ser Pro Glu Val Leu Glu Glu Tyr Lys
        195                 200                 205

Glu Lys Ile Gln Arg Ala Ser Thr Lys Ser Gln Val Asp Glu Phe Val
    210                 215                 220

Ala Glu Ala Lys Lys Val Val Asn Ser Asn Lys Glu Thr Leu Val Asn
225                 230                 235                 240

Gln Ala Asn Gly Lys Lys Gln Glu Ile Ala Lys Leu Glu Asn Leu Ser
                245                 250                 255

Asn Asp Glu Met Leu Arg Tyr Asn Thr Ala Ile Asp Asn Val Val Lys
            260                 265                 270

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

Asn Ser Ile Lys Gln Ala Ala Gln Glu Val Ala Gln Lys Asn Leu Gln
    290                 295                 300

Lys Gln Tyr Ala Lys Lys Ile Glu Arg Ile Ser Ser Lys Gly Leu Ala
305                 310                 315                 320

Leu Ser Lys Lys Ala Lys Glu Ile Tyr Glu Lys His Lys Ser Ile Leu
                325                 330                 335

Pro Thr Pro Gly Tyr Tyr Ala Asp Ser Val Gly Thr Tyr Leu Asn Arg
            340                 345                 350
```

Phe Arg Asp Lys Gln Thr Phe Gly Asn Arg Ser Val Trp Thr Gly Gln
355 360 365

Ser Gly Leu Asp Glu Ala Lys Lys Met Leu Asp Glu Val Lys Lys Leu
370 375 380

Leu Lys Glu Leu Gln Asp Leu Thr Arg Gly Thr Lys Glu Asp Lys Lys
385 390 395 400

Pro Asp Val Lys Pro Glu Ala Lys Pro Glu Ala Lys Pro Asp Val Lys
405 410 415

Pro Glu Ala Lys Pro Asp Val Lys Pro Glu Ala Lys Pro Asp Val Lys
420 425 430

Pro Glu Ala Lys Pro Asp Val Lys Pro Glu Ala Lys Pro Asp Val Lys
435 440 445

Pro Glu Ala Lys Pro Asp Val Lys Glu Ala Lys Pro Asp Val Lys Pro
450 455 460

Glu Ala Lys Pro Glu Ala Lys Pro Glu Ala Lys Ser Glu Ala Lys Pro
465 470 475 480

Glu Ala Lys Leu Glu Ala Lys Pro Glu Ala Lys Pro Ala Thr Lys Lys
485 490 495

Ser Val Asn Thr Ser Gly Asn Leu Ala Ala Lys Lys Ala Ile Glu Asn
500 505 510

Lys Lys Tyr Ser Lys Lys
515

<210> 221
<211> 378
<212> PRT
<213> Streptococcus agalactiae

<400> 221
Met Asn Asn Asn Glu Lys Lys Val Lys Tyr Phe Leu Arg Lys Thr Ala
1 5 10 15

Tyr Gly Leu Ala Ser Met Ser Ala Ala Phe Ala Val Cys Ser Gly Ile
20 25 30

Val His Ala Asp Thr Ser Ser Gly Ile Ser Ala Ser Ile Pro His Lys
35 40 45

Lys Gln Val Asn Leu Gly Ala Val Thr Leu Lys Asn Leu Ile Ser Lys
50 55 60

Tyr Arg Gly Asn Asp Lys Ala Ile Ala Ile Leu Leu Ser Arg Val Asn
65 70 75 80

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

Thr Glu Ala Glu Ile Arg Asn Ile Leu Tyr Gln Gly Gln Ile Gly Lys
            100                 105                 110

Gln Asn Lys Pro Ser Val Thr Thr His Ala Lys Val Ser Asp Gln Glu
        115                 120                 125

Leu Gly Lys Gln Ser Arg Arg Ser Gln Asp Ile Ile Lys Ser Leu Gly
    130                 135                 140

Phe Leu Ser Ser Asp Gln Lys Asp Ile Leu Val Lys Ser Ile Ser Ser
145                 150                 155                 160

Ser Lys Asp Ser Gln Leu Ile Leu Lys Phe Val Thr Gln Ala Thr Gln
                165                 170                 175

Leu Asn Asn Ala Glu Ser Thr Lys Ala Lys Gln Met Ala Gln Asn Asp
            180                 185                 190

Val Ala Leu Ile Lys Asn Ile Ser Pro Glu Val Leu Glu Glu Tyr Lys
        195                 200                 205

Glu Lys Ile Gln Arg Ala Ser Thr Lys Ser Gln Val Asp Glu Phe Val
    210                 215                 220

Ala Glu Ala Lys Lys Val Val Asn Ser Asn Lys Glu Thr Leu Val Asn
225                 230                 235                 240

Gln Ala Asn Gly Lys Lys Gln Glu Ile Ala Lys Leu Glu Asn Leu Ser
                245                 250                 255

Asn Asp Glu Met Leu Arg Tyr Asn Thr Ala Ile Asp Asn Val Val Lys
            260                 265                 270

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

Asn Ser Ile Lys Gln Ala Ala Gln Glu Val Ala Gln Lys Asn Leu Gln
    290                 295                 300

Lys Gln Tyr Ala Lys Lys Ile Glu Arg Ile Ser Ser Lys Gly Leu Ala
305                 310                 315                 320

Leu Ser Lys Lys Ala Lys Glu Ile Tyr Glu Lys His Lys Ser Ile Leu
                325                 330                 335

Pro Thr Pro Gly Tyr Tyr Ala Asp Ser Val Gly Thr Tyr Leu Asn Arg
            340                 345                 350
```

Phe Arg Asp Lys Gln Thr Phe Gly Asn Arg Ser Val Trp Thr Gly Gln
355 360 365

Ser Gly Leu Asp Glu Ala Lys Lys Asn Ala
370 375

<210> 222
<211> 471
<212> PRT
<213> Streptococcus agalactiae

<400> 222
Met Asn Asn Asn Glu Lys Lys Val Lys Tyr Phe Leu Arg Lys Thr Ala
1 5 10 15

Tyr Gly Leu Ala Ser Met Ser Ala Ala Phe Ala Val Cys Ser Gly Ile
20 25 30

Val His Ala Asp Thr Ser Ser Gly Ile Ser Asp Ser Ile Pro His Lys
35 40 45

Lys Gln Val Asn Leu Gly Ala Val Thr Leu Lys Asn Leu Ile Ser Lys
50 55 60

Tyr Arg Gly Asn Asp Lys Ala Ile Ala Ile Leu Leu Ser Arg Val Asp
65 70 75 80

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

Thr Glu Ala Glu Ile Asn Asn Thr Leu Pro Gln Gly Arg Ile Ile Lys
100 105 110

Gln Ser Ile Pro Val Val Arg Leu Lys Val Glu Arg Leu Gly Ser Gly
115 120 125

Ala Ile Lys Ala Glu Ser Ile Asn Asn Ile Lys Ala Glu Ser Ile Asn
130 135 140

Lys Ile Gln Gly Lys Ser Thr Asn Thr Ile Lys Ala Glu Ser Ile Asn
145 150 155 160

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

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

Thr Ile Lys Ala Glu Ser Ile His Lys Ile Lys Pro Gln Ser Ile Lys
195 200 205

```
Ser Thr Ser Ala Thr His Val Lys Val Ser Asp Gln Glu Leu Ala Lys
    210                 215                 220

Gln Ser Arg Arg Ser Gln Asp Ile Ile Lys Ser Leu Gly Phe Leu Ser
225                 230                 235                 240

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

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

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

Ile Lys Asn Ile Ser Leu Glu Val Leu Glu Glu Tyr Lys Glu Lys Ile
    290                 295                 300

Gln Arg Ala Ser Thr Lys Ser Gln Val Asp Glu Leu Val Ala Glu Ala
305                 310                 315                 320

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

Gly Lys Lys Gln Glu Ile Ala Lys Leu Glu Asn Leu Ser Asn Asp Glu
            340                 345                 350

Met Leu Arg Tyr Asn Thr Ala Ile Asp Asn Val Val Lys Gln Tyr Asn
        355                 360                 365

Glu Gly Lys Leu Asn Ile Thr Asp Ala Met Asn Ala Leu Asn Ser Ile
    370                 375                 380

Lys Gln Ala Ala Gln Glu Val Ala Gln Lys Asn Leu Gln Lys Gln Tyr
385                 390                 395                 400

Ala Lys Lys Ile Glu Arg Ile Ser Leu Lys Gly Leu Ala Leu Ser Lys
                405                 410                 415

Lys Ala Lys Glu Ile Tyr Glu Lys His Lys Ser Ile Leu Pro Thr Pro
            420                 425                 430

Gly Tyr Tyr Ala Asp Ser Val Gly Thr Tyr Leu Asn Arg Phe Arg Asp
        435                 440                 445

Lys Arg Thr Phe Gly Asn Arg Ser Val Trp Thr Gly Gln Ser Gly Leu
    450                 455                 460

Asp Glu Ala Lys Lys Asn Ala
465                 470
```

<210> 223
<211> 522
<212> PRT
<213> Streptococcus agalactiae

<400> 223
Met Asn Asn Asn Glu Lys Lys Val Lys Tyr Phe Leu Arg Lys Thr Ala
1 5 10 15

Tyr Gly Leu Ala Ser Met Ser Ala Ala Phe Ile Val Cys Ser Gly Ile
20 25 30

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

Glu Lys Leu Gly Lys Leu Lys Asp Val Lys Ser Val His Glu Leu Thr
50 55 60

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

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

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

Asp Val Lys Arg Leu Leu Asn Glu Phe Tyr Asn Ala Val Ala Arg Lys
115 120 125

Gln Leu Asp Thr Asn Ser Ala Asp Tyr Arg Ser Lys Ile Asp Asn Ile
130 135 140

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

Ala Asn Lys Ser Ile Leu Pro His Arg Tyr Lys Asp Ser Val Gly Thr
165 170 175

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

Trp Asn Gly Gln Glu Gly Phe Asn Ala Ala Gln Lys Leu Leu Glu Asp
195 200 205

Val Lys Lys Leu Leu Leu Glu Leu Gln Asn Leu Thr Lys Asn Asn Lys
210 215 220

Pro Asn Ile Gln Val Pro Lys Gln Ala Pro Thr Glu Ala Ala Lys Pro
225 230 235 240

Ala Leu Ser Pro Glu Ala Leu Thr Arg Leu Thr Thr Trp Tyr Asn Gln
245 250 255

```
Ala Lys Asp Leu Leu Lys Asp Asp Gln Val Lys Asp Lys Tyr Val Asp
            260                 265                 270

Ile Leu Ser Val Gln Lys Ala Val Asp Gln Ala Tyr Asp His Val Glu
        275                 280                 285

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

Leu Arg Asp Ala Leu Gln Ser Leu Glu Leu Lys Asp Lys Lys Val Ala
305                 310                 315                 320

Lys Pro Val Ala Lys Gly Thr Tyr Asp Val Lys Tyr Val Asp Thr Glu
                325                 330                 335

Gly Lys Glu Val Ala Lys Ser Arg His Phe Glu Gly Glu Glu Gly Ala
            340                 345                 350

Ala Phe Val Thr Ser Ala Lys Glu Val Ala Gly Tyr Lys Leu Val Arg
        355                 360                 365

Thr Glu Gly Ala Val Ser Asn Val Phe Thr Ala Gly Ala Gln Val Arg
    370                 375                 380

Thr Tyr Val Tyr Glu Lys Val Lys Pro Glu Val Lys Pro Asp Val Lys
385                 390                 395                 400

Pro Glu Ala Lys Pro Glu Ala Lys Pro Glu Val Lys Pro Asp Val Lys
                405                 410                 415

Pro Glu Ala Lys Pro Glu Ala Lys Pro Glu Val Lys Ser Asp Val Lys
            420                 425                 430

Pro Glu Ala Lys Pro Glu Ala Lys Pro Glu Ala Lys Pro Glu Val Lys
        435                 440                 445

Pro Asp Val Lys Pro Glu Ala Lys Pro Glu Ala Lys Pro Ala Thr Lys
    450                 455                 460

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

Asn Lys Lys Tyr Ser Lys Lys Leu Pro Ser Thr Gly Glu Ala Ala Ser
                485                 490                 495

Pro Leu Leu Ala Ile Val Ser Leu Ile Val Met Leu Ser Ala Gly Leu
            500                 505                 510

Ile Thr Ile Val Leu Lys His Lys Lys Asn
        515                 520
```

<210> 224
<211> 1085
<212> PRT
<213> Streptococcus agalactiae

<400> 224
Met Leu Lys Lys Gln Phe Gly Asn Phe Gly Glu Lys Ser Arg Lys Val
1 5 10 15

Arg Val Lys Met Arg Lys Ser Gly Lys His Trp Val Lys Ser Val Met
20 25 30

Thr Gln Ile Gly Tyr Val Ile Leu Ser Arg Phe Ser Gly Lys Glu Lys
35 40 45

Ser Ser Lys Val Gln Thr Thr Ser Glu Asp Leu Ser Arg Thr Lys Thr
50 55 60

Ser Ala Ser Ile Leu Thr Ala Val Ala Ala Leu Gly Ala Val Val Gly
65 70 75 80

Gly Thr Thr Asp Thr Thr Ser Val Ser Ala Glu Glu Thr Pro Thr Ala
85 90 95

Thr Glu Leu Thr Gly Asn Glu Lys Thr Leu Ala Thr Ala Glu Thr Val
100 105 110

Val Val Ala Pro Glu Val Lys Thr Val Asn Ser Asp Ser Ser Ser His
115 120 125

Ser Thr Ser Glu Ser Gln Ser Met Ser Thr Ser Thr Leu Gln Ser Thr
130 135 140

Ser Ala Ser Leu Ser Ala Ser Glu Ser Leu Met Asp Ser Thr Ser Ala
145 150 155 160

Ser Leu Ser Glu Ser Ser Ser Leu Ser Glu Tyr Ser Ser Leu Ser Leu
165 170 175

Ser Ser Ser Glu Ser Val Ser Ala Ser Glu Ser Val Gln Ser Ser Glu
180 185 190

Ala Ala Thr Thr Ala Arg Val Gln Pro Arg Ala Met Arg Val Val Ser
195 200 205

Ser Ala Ser Asp Met Glu Thr Leu Pro Ala Ala Leu Ile Ser Gly Glu
210 215 220

Gly Asp Val Thr Thr Val Gln Gly Gln Asp Val Thr Asp Lys Leu Gln
225 230 235 240

```
Asn Leu Asp Ile Lys Leu Ser Gly Gly Val Gln Ala Lys Ala Gly Val
                245                 250                 255

Ile Asn Met Asp Lys Ser Glu Ser Met His Met Ser Leu Lys Phe Thr
            260                 265                 270

Ile Asp Ser Val Asn Arg Gly Asp Thr Phe Glu Ile Lys Leu Ser Asp
        275                 280                 285

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

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

Lys Lys Ser Ile Val Tyr Ser Phe Thr Asp Phe Ala Ala Ser Lys Asn
                325                 330                 335

Asn Ile Asn Gly Ile Leu Asp Ile Pro Leu Trp Pro Asp Asp Thr Thr
            340                 345                 350

Val Gln Asn Thr Lys Glu Asp Val Leu Phe Ser Val Lys Ile Lys Asp
        355                 360                 365

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

Ile Asp Phe Ala Gly Gly Val Ser Val Asp Ser Arg Ile Thr Asn Ile
385                 390                 395                 400

Asp Asp Val Gly Lys Lys Met Thr Tyr Ile Ser Gln Ile Asn Val Asp
                405                 410                 415

Gly Lys Ser Leu Tyr Asn Tyr Asn Gly Leu Tyr Thr Arg Ile Tyr Asn
            420                 425                 430

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

Tyr Lys Thr Thr Ser Asp Asn Ile Val Glu Ser Met Val Gln Asp Tyr
    450                 455                 460

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

Lys Gly Trp Tyr Asp Ile Tyr Trp Gly Gln Phe Ile Ala Ser Asn Glu
                485                 490                 495

Thr Tyr Val Ile Val Val Glu Thr Pro Phe Thr Asn Ala Val Thr Leu
            500                 505                 510
```

```
Asn Thr Thr Leu Ser Asp Tyr Asn Glu Asn Asn Gly Val Glu His Asn
        515                 520                 525

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

Arg Lys Ile Leu Ser Glu Leu Val Ser Ser Ser Glu Ser Val Ser Ser
545                 550                 555                 560

Ser Glu Ser Val Ser Asn Ser Glu Ser Ile Ser Thr Ser Glu Ser Val
                565                 570                 575

Ser Asn Ser Glu Ser Ile Ser Ser Ser Glu Ser Val Ser Ser Ser Glu
            580                 585                 590

Ser Ile Ser Thr Ser Glu Ser Val Ser Thr Ser Glu Ser Ile Ser Ser
        595                 600                 605

Ser Glu Ser Val Ser Ser Ser Glu Ser Val Ser Ser Ser Glu Ser Ile
    610                 615                 620

Ser Ser Ser Glu Ser Val Ser Asn Ser Glu Ser Ile Ser Ser Ser Glu
625                 630                 635                 640

Ser Val Ser Asn Ser Glu Ser Ile Ser Ser Ser Glu Ser Val Ser Ser
                645                 650                 655

Ser Glu Ser Ile Ser Asn Ser Glu Ser Ile Ser Ser Ser Glu Ser Val
            660                 665                 670

Ser Thr Ser Glu Ser Ile Ser Ser Ser Glu Ser Val Ser Asn Ser Glu
        675                 680                 685

Ser Ile Ser Ser Ser Glu Ser Val Ser Ser Ser Glu Ser Val Ser Thr
    690                 695                 700

Ser Glu Ser Ile Ser Ser Ser Glu Ser Val Ser Asn Ser Glu Ser Ile
705                 710                 715                 720

Ser Thr Ser Glu Ser Val Ser Thr Ser Glu Ser Ile Ser Ser Ser Glu
                725                 730                 735

Ser Val Ser Ser Ser Glu Ser Ile Ser Ser Ser Glu Ser Val Ser Asn
            740                 745                 750

Ser Glu Ser Ile Ser Asn Ser Glu Ser Val Ser Ser Ser Glu Ser Val
        755                 760                 765

Ser Asn Ser Glu Ser Ile Ser Ser Ser Glu Ser Val Ser Asn Ser Glu
    770                 775                 780
```

```
Ser Ile Ser Thr Ser Glu Ser Val Ser Thr Ser Glu Ser Ile Ser Ser
785                 790                 795                 800

Ser Glu Ser Val Ser Asn Ser Glu Ser Ile Ser Ser Ser Glu Ser Val
                805                 810                 815

Ser Asn Ser Glu Ser Ile Ser Ser Ser Glu Ser Val Ser Asn Ser Glu
            820                 825                 830

Ser Ile Ser Ser Ser Glu Ser Val Ser Asn Ser Glu Ser Ile Ser Ser
        835                 840                 845

Ser Glu Ser Val Ser Ser Ser Glu Ser Val Ser Ser Ser Glu Ser Ile
    850                 855                 860

Ser Thr Ser Glu Ser Val Ser Asn Ser Glu Ser Ile Ser Ser Ser Glu
865                 870                 875                 880

Ser Val Ser Asn Ser Glu Ser Ile Ser Ser Ser Glu Ser Val Ser Asn
                885                 890                 895

Ser Glu Ser Ile Ser Ser Ser Glu Ser Val Ser Asn Ser Glu Ser Ile
            900                 905                 910

Ser Ser Ser Glu Ser Val Ser Ser Ser Glu Ser Ile Ser Ser Ser Glu
        915                 920                 925

Ser Val Ser Ser Ser Glu Ser Val Ser Asn Ser Glu Ser Ile Ser Ser
    930                 935                 940

Ser Glu Ser Val Ser Asn Ser Glu Ser Ile Ser Ser Ser Glu Ser Val
945                 950                 955                 960

Ser Ser Ser Glu Ser Ile Ser Ser Ser Glu Ser Val Ser Asn Ser Glu
                965                 970                 975

Ser Ile Leu Ser Ser Glu Ser Val Ser Ser Ser Glu Ser Ile Ser Ser
            980                 985                 990

Ser Glu Ser Ile Ser Ser Ser Glu  Ser Val Ser Met Ser  Thr Thr Glu
        995                 1000                1005

Ser Leu  Ser Glu Ser Glu Val  Ser Gly Asp Ser Glu  Ile Ser Ser
    1010                1015                1020

Ser Thr  Glu Ser Ser Ser Gln  Ser Glu Ser Met Asn  His Thr Glu
    1025                1030                1035

Ile Lys  Ser Asp Ser Glu Ser  Gln His Glu Val Lys  His Gln Val
    1040                1045                1050
```

Leu Pro Glu Thr Gly Asp Asn Ser Ala Ser Ala Leu Gly Leu Leu
1055 1060 1065

Gly Ala Gly Leu Leu Leu Gly Ala Thr Lys Ser Arg Lys Lys Lys
1070 1075 1080

Lys Asp
1085

<210> 225
<211> 1233
<212> PRT
<213> Streptococcus agalactiae

<400> 225
Met Asp Lys His His Ser Lys Lys Ala Ile Leu Lys Leu Thr Leu Ile
1 5 10 15

Thr Thr Ser Ile Leu Leu Met His Ser Asn Gln Val Asn Ala Glu Glu
20 25 30

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

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

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

Ser Val Lys Asn Asp Lys Thr Glu Asp Glu Leu Leu Glu Glu Leu Ser
85 90 95

Lys Asn Leu Asp Thr Ser Asn Leu Gly Ala Asp Leu Glu Glu Glu Tyr
100 105 110

Pro Ser Lys Pro Glu Thr Thr Asn Asn Lys Glu Ser Asn Val Val Thr
115 120 125

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

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

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

Ala Ile Ile Asp Thr Gly Phe Asp Ile Asn His Asp Ile Phe Arg Leu
180 185 190

Asp Ser Pro Lys Asp Asp Lys His Ser Phe Lys Thr Lys Thr Glu Phe
195 200 205

```
Glu Glu Leu Lys Ala Lys His Asn Ile Thr Tyr Gly Lys Trp Val Asn
    210                 215                 220

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

Ala Asp Ile Ala Ala Ala Met Lys Asp Gly Tyr Gly Ser Glu Ala Lys
                245                 250                 255

Asn Ile Ser His Gly Thr His Val Ala Gly Ile Phe Val Gly Asn Ser
            260                 265                 270

Lys Arg Pro Ala Ile Asn Gly Leu Leu Leu Glu Gly Ala Ala Pro Asn
        275                 280                 285

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

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

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

Ala Leu Asn Asp Lys Val Lys Leu Ala Leu Lys Leu Ala Ser Glu Lys
            340                 345                 350

Gly Val Ala Val Val Val Ala Ala Gly Asn Glu Gly Ala Phe Gly Met
        355                 360                 365

Asp Tyr Ser Lys Pro Leu Ser Thr Asn Pro Asp Tyr Gly Thr Val Asn
    370                 375                 380

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

Leu Lys Thr Ile Ser Glu Val Val Glu Thr Thr Ile Glu Gly Lys Leu
                405                 410                 415

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

Tyr Asp Val Val Tyr Ala Asn Tyr Gly Ala Lys Lys Asp Phe Glu Gly
        435                 440                 445

Lys Asp Phe Lys Gly Lys Ile Ala Leu Ile Glu Arg Gly Gly Gly Leu
    450                 455                 460

Asp Phe Met Thr Lys Ile Thr His Ala Thr Asn Ala Gly Val Val Gly
465                 470                 475                 480
```

```
Ile Val Ile Phe Asn Asp Gln Glu Lys Arg Gly Asn Phe Leu Ile Pro
                485                 490                 495

Tyr Arg Glu Leu Pro Val Gly Ile Ile Ser Lys Val Asp Gly Glu Arg
            500                 505                 510

Ile Lys Asn Thr Ser Ser Gln Leu Thr Phe Asn Gln Ser Phe Glu Val
        515                 520                 525

Val Asp Ser Gln Gly Gly Asn Arg Met Leu Glu Gln Ser Ser Trp Gly
    530                 535                 540

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

Glu Ile Tyr Ser Ser Thr Tyr Asn Asn Gln Tyr Gln Thr Met Ser Gly
                565                 570                 575

Thr Ser Met Ala Ser Pro His Val Ala Gly Leu Met Thr Met Leu Gln
            580                 585                 590

Ser His Leu Ala Glu Lys Tyr Lys Gly Met Asn Leu Asp Ser Lys Lys
        595                 600                 605

Leu Leu Glu Leu Ser Lys Asn Ile Leu Met Ser Ser Ala Thr Ala Leu
    610                 615                 620

Tyr Ser Glu Glu Asp Lys Ala Phe Tyr Ser Pro Arg Gln Gln Gly Ala
625                 630                 635                 640

Gly Val Val Asp Ala Glu Lys Ala Ile Gln Ala Gln Tyr Tyr Ile Thr
                645                 650                 655

Gly Asn Asp Gly Lys Ala Lys Ile Asn Leu Lys Arg Met Gly Asp Lys
            660                 665                 670

Phe Asp Ile Thr Val Thr Ile His Lys Leu Val Glu Gly Val Lys Glu
        675                 680                 685

Leu Tyr Tyr Gln Ala Asn Val Ala Thr Glu Gln Val Asn Lys Gly Lys
    690                 695                 700

Phe Ala Leu Lys Pro Gln Ala Leu Leu Asp Thr Asn Trp Gln Lys Val
705                 710                 715                 720

Ile Leu Arg Asp Lys Glu Thr Gln Val Arg Phe Thr Ile Asp Ala Ser
                725                 730                 735

Gln Phe Ser Gln Lys Leu Lys Glu Gln Met Ala Asn Gly Tyr Phe Leu
            740                 745                 750
```

```
Glu Gly Phe Val Arg Phe Lys Glu Ala Lys Asp Ser Asn Gln Glu Leu
        755                 760                 765

Met Ser Ile Pro Phe Val Gly Phe Asn Gly Asp Phe Ala Asn Leu Gln
    770                 775                 780

Ala Leu Glu Thr Pro Ile Tyr Lys Thr Leu Ser Lys Gly Ser Phe Tyr
785                 790                 795                 800

Tyr Lys Pro Asn Asp Thr Thr His Lys Asp Gln Leu Glu Tyr Asn Glu
                805                 810                 815

Ser Ala Pro Phe Glu Ser Asn Asn Tyr Thr Ala Leu Leu Thr Gln Ser
            820                 825                 830

Ala Ser Trp Gly Tyr Val Asp Tyr Val Lys Asn Gly Gly Glu Leu Glu
        835                 840                 845

Leu Ala Pro Glu Ser Pro Lys Arg Ile Ile Leu Gly Thr Phe Glu Asn
    850                 855                 860

Lys Val Glu Asp Lys Thr Ile His Leu Leu Glu Arg Asp Ala Ala Asn
865                 870                 875                 880

Asn Pro Tyr Phe Ala Ile Ser Pro Asn Lys Asp Gly Asn Arg Asp Glu
                885                 890                 895

Ile Thr Pro Gln Ala Thr Phe Leu Arg Asn Val Lys Asp Ile Ser Ala
            900                 905                 910

Gln Val Leu Asp Gln Asn Gly Asn Val Ile Trp Gln Ser Lys Val Leu
        915                 920                 925

Pro Ser Tyr Arg Lys Asn Phe His Asn Asn Pro Lys Gln Ser Asp Gly
    930                 935                 940

His Tyr Arg Met Asp Ala Leu Gln Trp Ser Gly Leu Asp Lys Asp Gly
945                 950                 955                 960

Lys Val Val Ala Asp Gly Phe Tyr Thr Tyr Arg Leu Arg Tyr Thr Pro
                965                 970                 975

Val Ala Glu Gly Ala Asn Ser Gln Glu Ser Asp Phe Lys Val Gln Val
            980                 985                 990

Ser Thr Lys Ser Pro Asn Leu Pro  Ser Arg Ala Gln Phe  Asp Glu Thr
        995                 1000                1005

Asn Arg  Thr Leu Ser Leu Ala  Met Pro Lys Glu Ser  Ser Tyr Val
    1010                1015                1020
```

```
Pro Thr  Tyr Arg Leu Gln Leu  Val Leu Ser His Val  Val Lys Asp
    1025                1030                1035

Glu Glu  Tyr Gly Asp Glu Thr  Ser Tyr His Tyr Phe  His Ile Asp
    1040                1045                1050

Gln Glu  Gly Lys Val Thr Leu  Pro Lys Thr Val Lys  Ile Gly Glu
    1055                1060                1065

Ser Glu  Val Ala Val Asp Pro  Lys Ala Leu Thr Leu  Val Val Glu
    1070                1075                1080

Asp Lys  Ala Gly Asn Phe Ala  Thr Val Lys Leu Ser  Asp Leu Leu
    1085                1090                1095

Asn Lys  Ala Val Val Ser Glu  Lys Glu Asn Ala Ile  Val Ile Ser
    1100                1105                1110

Asn Ser  Phe Lys Tyr Phe Asp  Asn Leu Lys Lys Glu  Pro Met Phe
    1115                1120                1125

Ile Ser  Lys Lys Glu Lys Val  Val Asn Lys Asn Leu  Glu Glu Ile
    1130                1135                1140

Ile Leu  Val Lys Pro Gln Thr  Thr Val Thr Thr Gln  Ser Leu Ser
    1145                1150                1155

Lys Glu  Ile Thr Lys Ser Gly  Asn Glu Lys Val Leu  Thr Ser Thr
    1160                1165                1170

Asn Asn  Asn Ser Ser Arg Val  Ala Lys Ile Ile Ser  Pro Lys His
    1175                1180                1185

Asn Gly  Asp Ser Val Asn His  Thr Leu Pro Ser Thr  Ser Asp Arg
    1190                1195                1200

Ala Thr  Asn Gly Leu Phe Val  Gly Thr Leu Ala Leu  Leu Ser Ser
    1205                1210                1215

Leu Leu  Leu Tyr Leu Lys Pro  Lys Lys Thr Lys Asn  Asn Ser Lys
    1220                1225                1230
```

<210> 226
<211> 690
<212> PRT
<213> Streptococcus agalactiae

<400> 226

```
Met Lys Lys Lys Ile Ile Leu Lys Ser Ser Val Leu Gly Leu Val Ala
1               5                  10                  15
```

```
Gly Thr Ser Ile Met Phe Ser Ser Val Phe Ala Asp Gln Val Gly Val
            20                  25                  30

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

Thr Ala Asn Met Pro Asp Gly Lys Val Ala Asn Ala Gly Thr Ala Ala
    50                  55                  60

Gln Leu Asp Ala Tyr Met Asp Asp Ala Gln Lys Asp Phe Lys Gln Thr
65                  70                  75                  80

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

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

Asn Phe Asn Ala Met Asn Val Glu Tyr Gly Thr Leu Gly Asn His Glu
        115                 120                 125

Phe Asp Glu Gly Leu Ala Glu Tyr Asn Arg Ile Val Thr Gly Lys Ala
    130                 135                 140

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

Glu Ala Ala Lys Gln Glu Ile Val Val Ala Asn Val Ile Asp Lys Val
                165                 170                 175

Asn Lys Gln Ile Pro Tyr Asn Trp Lys Pro Tyr Ala Ile Lys Asn Ile
            180                 185                 190

Pro Val Asn Asn Lys Ser Val Asn Val Gly Phe Ile Gly Ile Val Thr
        195                 200                 205

Lys Asp Ile Pro Asn Leu Val Leu Arg Lys Asn Tyr Glu Gln Tyr Glu
    210                 215                 220

Phe Leu Asp Glu Ala Glu Thr Ile Val Lys Tyr Ala Lys Glu Leu Gln
225                 230                 235                 240

Ala Lys Asn Val Lys Ala Ile Val Val Leu Ala His Val Pro Ala Thr
                245                 250                 255

Ser Lys Asn Asp Ile Ala Glu Gly Glu Ala Ala Glu Met Met Lys Lys
            260                 265                 270

Val Asn Gln Leu Phe Pro Glu Asn Ser Val Asp Ile Val Phe Ala Gly
        275                 280                 285
```

```
His Asn His Gln Tyr Thr Asn Gly Leu Val Gly Lys Thr Arg Ile Val
    290                 295                 300

Gln Ala Leu Ser Gln Gly Lys Ala Tyr Ala Asp Val Arg Gly Val Leu
305                 310                 315                 320

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

Ala Val Ala Pro Gly Lys Lys Thr Gly Ser Ala Asp Ile Gln Ala Ile
            340                 345                 350

Val Asp Gln Ala Asn Thr Ile Val Lys Gln Val Thr Glu Ala Lys Ile
        355                 360                 365

Gly Thr Ala Glu Val Ser Val Met Ile Thr Arg Ser Val Asp Gln Asp
    370                 375                 380

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

Ala Arg Lys Ser Trp Pro Asp Ile Asp Phe Ala Met Thr Asn Asn Gly
                405                 410                 415

Gly Ile Arg Ala Asp Leu Leu Ile Lys Pro Asp Gly Thr Ile Thr Trp
            420                 425                 430

Gly Ala Ala Gln Ala Val Gln Pro Phe Gly Asn Ile Leu Gln Val Val
        435                 440                 445

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

Gln Lys Gln Asn Phe Phe Leu Gln Ile Ala Gly Leu Arg Tyr Thr Tyr
465                 470                 475                 480

Thr Asp Asn Lys Glu Gly Gly Glu Glu Thr Pro Phe Lys Val Val Lys
                485                 490                 495

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

Leu Val Ile Asn Asp Phe Leu Phe Gly Gly Gly Asp Gly Phe Ala Ser
        515                 520                 525

Phe Arg Asn Ala Lys Leu Leu Gly Ala Ile Asn Pro Asp Thr Glu Val
    530                 535                 540

Phe Met Ala Tyr Ile Thr Asp Leu Glu Lys Ala Gly Lys Lys Val Ser
545                 550                 555                 560
```

Val Pro Asn Asn Lys Pro Lys Ile Tyr Val Thr Met Lys Met Val Asn
565 570 575

Glu Thr Ile Thr Gln Asn Asp Gly Thr His Ser Ile Ile Lys Lys Leu
580 585 590

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

Thr Leu Asn Gln Thr Lys Ser Lys Ser Thr Lys Ile Asn Pro Val Thr
610 615 620

Thr Ile His Lys Lys Gln Leu His Gln Phe Thr Ala Ile Asn Pro Met
625 630 635 640

Arg Asn Tyr Gly Lys Pro Ser Asn Ser Thr Thr Val Lys Ser Lys Gln
645 650 655

Leu Pro Lys Thr Asn Ser Glu Tyr Gly Gln Ser Phe Leu Met Ser Val
660 665 670

Phe Gly Val Gly Leu Ile Gly Ile Ala Leu Asn Thr Lys Lys Lys His
675 680 685

Met Lys
690

<210> 227
<211> 877
<212> PRT
<213> Streptococcus agalactiae

<400> 227
Met Lys Gly Gln Lys Ile Ile Ala Leu Ala Gly Leu Val Leu Ser Cys
1 5 10 15

His Phe Ala Leu Thr Ala Cys His Thr Gln Glu His Lys Asn Ser His
20 25 30

His Ile Lys Thr Lys Gln Val Ala Lys Lys Lys Ala Asn Lys Lys Lys
35 40 45

Val Ser Val Lys Glu Ser His Lys Lys Arg Lys Gly Val Ala Gly Val
50 55 60

Asp Phe Pro Thr Asp Asp Gly Phe Leu Leu Thr Lys Asp Ser Lys Ile
65 70 75 80

Leu Ser His Thr Asp Ser Gly Ile Val Val Ala His Gly Asn His Ser
85 90 95

His Phe Ile Phe Tyr Ser Asp Leu Lys Gly Ser Lys Phe Ser Tyr Leu
100 105 110

```
Ile Pro Asn Ala Asn Thr Lys Thr Asn Lys Asn Gln Ala Val Arg Asn
        115                 120                 125

Phe Lys Ala Gly Ala Val Ala Val Asn Thr Leu Asn Asp Gly Tyr Val
    130                 135                 140

Phe Asn Pro Ala Asp Ile Val Ser Glu Asp Ala Asn Gly Tyr Val Val
145                 150                 155                 160

Arg His Gly Asp His Phe His Tyr Ile Pro Lys Ala Ser Leu Ser Gln
                165                 170                 175

Gln Lys Gln Val Gln Ala Ser Arg Ala Val Ser Arg Leu Gly Asn Gln
            180                 185                 190

Ser Asn Ser His Tyr Arg Val Asn Ser Ser Lys Ile Ala Gly Leu His
        195                 200                 205

Tyr Pro Thr Ser Asn Gly Phe Leu Phe Asn Gly Arg Gly Ile Lys Gly
    210                 215                 220

Thr Thr Pro Thr Gly Ile Leu Val Glu His His Asn His Leu His Phe
225                 230                 235                 240

Ile Ser Phe Ala Asp Leu Arg Lys Gly Gly Trp Gly Ser Ile Ala Asp
                245                 250                 255

Arg Tyr Gln Pro Gln Lys Lys Ala Asp Ser Lys Lys Gln Ser Pro Ser
            260                 265                 270

Ser Lys Lys Pro Arg Thr Glu Asn Thr Leu Pro Lys Asp Ile Lys Asp
        275                 280                 285

Lys Leu Ala Tyr Leu Ala Arg Glu Leu His Leu Asp Ile Ser Arg Ile
    290                 295                 300

Arg Val Leu Lys Thr Leu Asn Gly Glu Ile Gly Phe Glu Tyr Pro His
305                 310                 315                 320

Asp Asp His Thr His Val Ile Met Ala Lys Asp Ile Asp Leu Ser Lys
                325                 330                 335

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

His His Asp Glu Ser Asp His Lys His Glu Glu His Glu His Thr Lys
        355                 360                 365

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

```
Glu Lys Leu Gly Leu Asn Pro Asn Gln Ile Glu Val Leu Thr Ser Glu
385                 390                 395                 400

Asp Gly Ser Ile Ile Phe Lys Tyr Pro His Asp Asp His Ser His Thr
                405                 410                 415

Ile Ala Ser Lys Asp Ile Glu Ile Gly Lys Pro Ile Pro Asp Gly His
            420                 425                 430

His Asp His Ser His Ala Lys Asp Lys Val Gly Met Ala Thr Leu Lys
        435                 440                 445

Gln Ile Gly Phe Asp Asp Glu Ile Ile Gln Asp Ile Leu His Ala Asp
    450                 455                 460

Ala Pro Thr Pro Phe Pro Ser Asn Glu Thr Asn Pro Glu Lys Met Arg
465                 470                 475                 480

Gln Trp Leu Ala Thr Val Thr Lys Ile Asn Ile Gly Gln Arg Thr Asn
                485                 490                 495

Pro Phe Gln Arg Phe Gly Leu Ser Leu Met Pro Asn Ile Glu Val Leu
            500                 505                 510

Gly Ile Gly Phe Thr Pro Ile Asn Asp Met Thr Pro Val Leu Gln Phe
        515                 520                 525

Lys Lys Leu Lys Gln Leu Trp Met Thr Asn Thr Gly Ile Thr Asp Tyr
    530                 535                 540

Ser Phe Leu Asp Lys Met Pro Leu Leu Glu Gly Leu Asp Ile Ser Gln
545                 550                 555                 560

Asn Gly Ile Lys Asp Leu Ser Phe Leu Thr Lys Tyr Lys Gln Leu Ser
                565                 570                 575

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

Glu Leu Pro Asn Leu Gln Phe Leu Val Leu Ser His Asn Asn Ile Ser
        595                 600                 605

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

Asp His Asn Asn Val Lys Asn Leu Ser Ala Leu Ser Gly Lys Lys Asp
625                 630                 635                 640

Leu Lys Val Leu Asp Leu Ser Asn Asn Lys Ser Ala Asp Leu Ser Thr
                645                 650                 655
```

Leu Lys Thr Thr Ser Leu Glu Thr Leu Leu Leu Asn Glu Thr Asn Thr
660 665 670

Ser Asn Leu Ser Phe Leu Lys Gln Asn Pro Lys Val Ser Asn Leu Thr
675 680 685

Ile Asn Asn Ala Lys Leu Ala Ser Leu Asp Gly Ile Glu Glu Ser Asp
690 695 700

Glu Ile Val Lys Val Glu Ala Glu Gly Asn Gln Ile Lys Ser Leu Val
705 710 715 720

Leu Lys Asn Lys Gln Gly Ser Leu Lys Phe Leu Asn Val Thr Asn Asn
725 730 735

Gln Leu Thr Ser Leu Glu Gly Val Asn Asn Tyr Thr Ser Leu Glu Thr
740 745 750

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

Asn Lys Thr Val Thr Asn Leu Asp Phe Ser His Asn Asn Val Pro Thr
770 775 780

Ser Gln Leu Lys Leu Asn Glu Lys Asn Ile Pro Glu Ala Val Ala Lys
785 790 795 800

Asn Phe Pro Ala Val Val Glu Gly Ser Met Val Gly Asn Gly Ser Leu
805 810 815

Ala Glu Lys Ala Ala Met Ala Ser Lys Glu Asp Lys Gln Val Ser Asp
820 825 830

Asn Thr Asn His Gln Lys Asn Thr Glu Lys Ser Ala Gln Ala Asn Ala
835 840 845

Asp Ser Lys Lys Glu Asn Pro Lys Thr His Asp Glu His His Asp His
850 855 860

Glu Glu Thr Asp His Ala His Val Gly His His His His
865 870 875

<210> 228
<211> 28
<212> DNA
<213> Artificial Sequence

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

<400> 228
caccatggaa gaagcaaaaa ctactgac 28

<210> 229
<211> 27
<212> DNA
<213> Artificial Sequence

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

<400> 229
tcattaatca gccaagatag aaccatc 27

<210> 230
<211> 28
<212> DNA
<213> Artificial Sequence

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

<400> 230
caccatggat ggttctatct tggctgat 28

<210> 231
<211> 27
<212> DNA
<213> Artificial Sequence

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

<400> 231
tcattattca attgttgggt tgttgcc 27

<210> 232
<211> 28
<212> DNA
<213> Artificial Sequence

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

<400> 232
caccatgggc aacaacccaa caattgaa 28

<210> 233
<211> 27
<212> DNA
<213> Artificial Sequence

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

primer"

<400> 233
tcattaagct ttttctgcat ctgttgc 27

<210> 234
<211> 28
<212> DNA
<213> Artificial Sequence

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

<400> 234
caccatgttg gcaggagcta ccttcctt 28

<210> 235
<211> 27
<212> DNA
<213> Artificial Sequence

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

<400> 235
tcattaagta accttcttat tgataac 27

<210> 236
<211> 28
<212> DNA
<213> Artificial Sequence

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

<400> 236
caccatggct gagatgggaa atatcact 28

<210> 237
<211> 27
<212> DNA
<213> Artificial Sequence

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

<400> 237
tcattagtca gcaagaactt tgtcacc 27

<210> 238
<211> 28
<212> DNA
<213> Artificial Sequence

<220>

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

<400> 238
caccatgggt gacaaagttc ttgctgac 28

<210> 239
<211> 30
<212> DNA
<213> Artificial Sequence

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

<400> 239
tcattatact tttttacctg gtttgttacc 30

<210> 240
<211> 36
<212> DNA
<213> Artificial Sequence

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

<400> 240
ctgtacttcc agggcaacaa accaggtaaa aaagta 36

<210> 241
<211> 39
<212> DNA
<213> Artificial Sequence

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

<400> 241
aattaagtcg cgttattatg caccttgcaa gcgttctgt 39

<210> 242
<211> 28
<212> DNA
<213> Artificial Sequence

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

<400> 242
caccatgaca gaacgcttgc aaggtgca 28

<210> 243
<211> 27
<212> DNA
<213> Artificial Sequence

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

<400> 243
tcattaagtc actttttgt tttctat 27

<210> 244
<211> 34
<212> DNA
<213> Artificial Sequence

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

<400> 244
gtttgcgcat atggctgaga tgggaaatat cact 34

<210> 245
<211> 34
<212> DNA
<213> Artificial Sequence

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

<400> 245
gtggaatctc gagagtcact tttttgtttt ctat 34

<210> 246
<211> 42
<212> DNA
<213> Artificial Sequence

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

<400> 246
ctgtacttcc agggcgaaga agcaaaaact actgacacag tg 42

<210> 247
<211> 42
<212> DNA
<213> Artificial Sequence

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

<400> 247
aattaagtcg cgttatgtac caataccacc tgtttgtgga at 42

<210> 248
<211> 37

<212> DNA
<213> Artificial Sequence

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

<400> 248
ctgtacttcc agggcaataa tccgaccatt gaaaatg 37

<210> 249
<211> 39
<212> DNA
<213> Artificial Sequence

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

<400> 249
aattaagtcg cgttaaatcg gcgtcggatc gttactgtt 39

<210> 250
<211> 42
<212> DNA
<213> Artificial Sequence

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

<400> 250
cacgctattg tcatgcctcg aactgcattt gacggtttta ct 42

<210> 251
<211> 42
<212> DNA
<213> Artificial Sequence

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

<400> 251
catgacaata gcgtgcaagg tcactgtgtc agtagttttt gc 42

<210> 252
<211> 36
<212> DNA
<213> Artificial Sequence

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

<400> 252
gaagcggcgg aaatcgcagg tgcttacttt gctttc 36

<210> 253
<211> 39
<212> DNA
<213> Artificial Sequence

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

<400> 253
gatttccgcc gcttcgcctg agccaaagta agttttaag 39

<210> 254
<211> 28
<212> DNA
<213> Artificial Sequence

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

<400> 254
caccatggac gacgcaacaa ctgatact 28

<210> 255
<211> 30
<212> DNA
<213> Artificial Sequence

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

<400> 255
tcattatgaa tcagccaaga tagaaccgtt 30

<210> 256
<211> 31
<212> DNA
<213> Artificial Sequence

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

<400> 256
caccatgaac ggttctatct tggctgattc a 31

<210> 257
<211> 27
<212> DNA
<213> Artificial Sequence

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

<400> 257
tcattattct tccgttgggt tattacc 27

<210> 258
<211> 28
<212> DNA
<213> Artificial Sequence

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

<400> 258
caccatgggt aataacccaa cggaagaa 28

<210> 259
<211> 27
<212> DNA
<213> Artificial Sequence

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

<400> 259
tcattaagct cctgccaagc gttcagt 27

<210> 260
<211> 28
<212> DNA
<213> Artificial Sequence

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

<400> 260
caccatgact gaacgcttgg caggagct 28

<210> 261
<211> 30
<212> DNA
<213> Artificial Sequence

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

<400> 261
tcattaggtt actttttgt tttgaacttg 30

<210> 262
<211> 460
<212> DNA
<213> Mus musculus

<400> 262
atgaacttcg ggctgagatt gattttcctt gccctcattt taaaaggtgt ccagtgtgag 60

gtgcagctgg tggagtctgg gggagactca gtgaagcctg gagggtccct gaaactctcc 120

tgtgcaacct caggattcac tttcagtagc tatggcatgt cttgggtgcg ccagactcca 180

gacatgaggc tggagtggat cacaatcatt agtggtgatg gttattacac ctactatcga 240

gacagtgtga aggggcggtt caccgtctcc agagacaatg ccaggaacac cctgtatttg 300

caaatgacca gtctgaagtc tgaggacaca gccatgtatt actgtgcaag cctgttgggt 360

aactacgcta tggactattg gggtcaagga acctcagtca ccgtctcctt agccaaaaca 420

acacccccat cagtctatcc cctggcccct ggaagcttgg 460

<210> 263
<211> 153
<212> PRT
<213> Mus musculus

<400> 263
Met Asn Phe Gly Leu Arg Leu Ile Phe Leu Ala Leu Ile Leu Lys Gly
1 5 10 15

Val Gln Cys Glu Val Gln Leu Val Glu Ser Gly Gly Asp Ser Val Lys
20 25 30

Pro Gly Gly Ser Leu Lys Leu Ser Cys Ala Thr Ser Gly Phe Thr Phe
35 40 45

Ser Ser Tyr Gly Met Ser Trp Val Arg Gln Thr Pro Asp Met Arg Leu
50 55 60

Glu Trp Ile Thr Ile Ile Ser Gly Asp Gly Tyr Tyr Thr Tyr Tyr Arg
65 70 75 80

Asp Ser Val Lys Gly Arg Phe Thr Val Ser Arg Asp Asn Ala Arg Asn
85 90 95

Thr Leu Tyr Leu Gln Met Thr Ser Leu Lys Ser Glu Asp Thr Ala Met
100 105 110

Tyr Tyr Cys Ala Ser Leu Leu Gly Asn Tyr Ala Met Asp Tyr Trp Gly
115 120 125

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

Val Tyr Pro Leu Ala Pro Gly Ser Leu
145 150

<210> 264
<211> 447
<212> DNA
<213> Mus musculus

<400> 264
atgaagttgc ctgttaggct gttggtgctg atgttctgga ttcctgcttc caacagtgat 60

gttttgatga cccaaactcc actctccctg cctgtcgggc ttggagatca agtctccatc 120

tcttgcagat ctggtcagag tcttgaacat agtaatggag acacctattt acaatggtac 180

ctacagaaac ctggccagtc tccaaagctc ctgatctaca aagtttccaa ccgattttct 240

ggggtcccag acaggttcag tggcagtgga tcagggacag atttcacact caagatcagc 300

agagtggagg ctgaggatct gggagtttat tactgctttc agggttcaca tgttcctccc 360

acgttcggag gggggaccaa gctggaaata aaacgggctg atgctgcacc aactgtatcc 420

atcttcccac catccagtaa gcttggg 447

<210> 265
<211> 149
<212> PRT
<213> Mus musculus

<400> 265
Met Lys Leu Pro Val Arg Leu Leu Val Leu Met Phe Trp Ile Pro Ala
1 5 10 15

Ser Asn Ser Asp Val Leu Met Thr Gln Thr Pro Leu Ser Leu Pro Val
20 25 30

Gly Leu Gly Asp Gln Val Ser Ile Ser Cys Arg Ser Gly Gln Ser Leu
35 40 45

Glu His Ser Asn Gly Asp Thr Tyr Leu Gln Trp Tyr Leu Gln Lys Pro
50 55 60

Gly Gln Ser Pro Lys Leu Leu Ile Tyr Lys Val Ser Asn Arg Phe Ser
65 70 75 80

Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr
85 90 95

Leu Lys Ile Ser Arg Val Glu Ala Glu Asp Leu Gly Val Tyr Tyr Cys
100 105 110

Phe Gln Gly Ser His Val Pro Pro Thr Phe Gly Gly Gly Thr Lys Leu
115 120 125

Glu Ile Lys Arg Ala Asp Ala Ala Pro Thr Val Ser Ile Phe Pro Pro
130 135 140

Ser Ser Lys Leu Gly
145

<210> 266
<211> 460
<212> DNA
<213> Mus musculus

<400> 266
atgaacttcg ggctgagatt gattttcctt gtccttattt taaaaggtgt ccagtgtgaa 60

gtgcagctgg tggagtctgg gggaggctta gtgaagcctg gagggtccct gaaactctcc 120

tgtgcagcct ctggattcac tttcagtagc tatgccatgt cttgggttcg cctgtctcca 180

gagacgaggc tggagtgggt cgcagaaatt agtggtgatg gcagttacac ctactatcca 240

gaccctgtga cgggccgatt caccatctcc agagacaatg ccaggaacac cctgtacctg 300

gaaatgagca gtctgaggtc tgaagacacg gccatgtatt actgtggaag tctgattggg 360

aactatgcta tggactactg gggtcaagga acctcagtca ccgtctcctc agccaaaaca 420

acagccccat cggtctatcc cctggcccct ggaagcttgg 460

<210> 267
<211> 153
<212> PRT
<213> Mus musculus

<400> 267
Met Asn Phe Gly Leu Arg Leu Ile Phe Leu Val Leu Ile Leu Lys Gly
1 5 10 15

Val Gln Cys Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Lys
20 25 30

Pro Gly Gly Ser Leu Lys Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe
35 40 45

Ser Ser Tyr Ala Met Ser Trp Val Arg Leu Ser Pro Glu Thr Arg Leu
50 55 60

Glu Trp Val Ala Glu Ile Ser Gly Asp Gly Ser Tyr Thr Tyr Tyr Pro
65 70 75 80

Asp Pro Val Thr Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Arg Asn
85 90 95

Thr Leu Tyr Leu Glu Met Ser Ser Leu Arg Ser Glu Asp Thr Ala Met
100 105 110

Tyr Tyr Cys Gly Ser Leu Ile Gly Asn Tyr Ala Met Asp Tyr Trp Gly
115 120 125

Gln Gly Thr Ser Val Thr Val Ser Ser Ala Lys Thr Thr Ala Pro Ser
130 135 140

Val Tyr Pro Leu Ala Pro Gly Ser Leu
145 150

<210> 268
<211> 456
<212> DNA
<213> Mus musculus

<400> 268
tactagtcga catgaagttg cctgttaggc tgttggtgct gatgttctgg attcctgctt 60

ccagcagtga tgttttgatg acccaaactc cactctccct gcctgtcagt cttggagatc 120

aagcctccat ctcttgtaga tctagtcaga gcattgtaca tagtaatgga gacacctatt 180

tagaatggta cctgcagaaa ccaggccagt ctccaaagct ccttatctac aaagtttcca 240

accgattttc tggggtccca gacaggttca gtggcagtgg atcagggaca gatttcacac 300

tcaagatcag cagagtggag gctgaggatc tgggagttta ttactgcttt caaggttcac 360

atgttccccg gacgttcggt ggaggcacca agctggaaat caaacgggct gatgctgcac 420

caactgtatc catcttccca ccatccagta agcttg 456

<210> 269
<211> 151
<212> PRT
<213> Mus musculus

<400> 269
Leu Val Asp Met Lys Leu Pro Val Arg Leu Leu Val Leu Met Phe Trp
1 5 10 15

Ile Pro Ala Ser Ser Ser Asp Val Leu Met Thr Gln Thr Pro Leu Ser
20 25 30

Leu Pro Val Ser Leu Gly Asp Gln Ala Ser Ile Ser Cys Arg Ser Ser
35 40 45

Gln Ser Ile Val His Ser Asn Gly Asp Thr Tyr Leu Glu Trp Tyr Leu
50 55 60

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

Arg Phe Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr
85 90 95

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

Tyr Tyr Cys Phe Gln Gly Ser His Val Pro Arg Thr Phe Gly Gly Gly
115 120 125

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

Phe Pro Pro Ser Ser Lys Leu
145 150

<210> 270
<211> 26
<212> PRT
<213> Streptococcus agalactiae

<400> 270

Thr Tyr Arg Val Ile Glu Arg Val Ser Gly Tyr Ala Pro Glu Tyr Val
1 5 10 15

Ser Phe Val Asn Gly Val Val Thr Ile Lys
20 25

<210> 271
<211> 665
<212> PRT
<213> Streptococcuspneumoniae

<400> 271
Met Lys Ser Ile Asn Lys Phe Leu Thr Met Leu Ala Ala Leu Leu Leu
1 5 10 15

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

Thr Thr Thr Ser Val Thr Val His Lys Leu Leu Ala Thr Asp Gly Asp
35 40 45

Met Asp Lys Ile Ala Asn Glu Leu Glu Thr Gly Asn Tyr Ala Gly Asn
50 55 60

Lys Val Gly Val Leu Pro Ala Asn Ala Lys Glu Ile Ala Gly Val Met
65 70 75 80

Phe Val Trp Thr Asn Thr Asn Asn Glu Ile Ile Asp Glu Asn Gly Gln
85 90 95

Thr Leu Gly Val Asn Ile Asp Pro Gln Thr Phe Lys Leu Ser Gly Ala
100 105 110

Met Pro Ala Thr Ala Met Lys Lys Leu Thr Glu Ala Glu Gly Ala Lys
115 120 125

Phe Asn Thr Ala Asn Leu Pro Ala Ala Lys Tyr Lys Ile Tyr Glu Ile
130 135 140

His Ser Leu Ser Thr Tyr Val Gly Glu Asp Gly Ala Thr Leu Thr Gly
145 150 155 160

Ser Lys Ala Val Pro Ile Glu Ile Glu Leu Pro Leu Asn Asp Val Val
165 170 175

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

Lys Asp Phe Lys Gly Lys Ala Asn Pro Asp Thr Pro Arg Val Asp Lys
195 200 205

Asp Thr Pro Val Asn His Gln Val Gly Asp Val Val Glu Tyr Glu Ile
210 215 220

```
Val Thr Lys Ile Pro Ala Leu Ala Asn Tyr Ala Thr Ala Asn Trp Ser
225                 230                 235                 240

Asp Arg Met Thr Glu Gly Leu Ala Phe Asn Lys Gly Thr Val Lys Val
                245                 250                 255

Thr Val Asp Asp Val Ala Leu Glu Ala Gly Asp Tyr Ala Leu Thr Glu
            260                 265                 270

Val Ala Thr Gly Phe Asp Leu Lys Leu Thr Asp Ala Gly Leu Ala Lys
        275                 280                 285

Val Asn Asp Gln Asn Ala Glu Lys Thr Val Lys Ile Thr Tyr Ser Ala
    290                 295                 300

Thr Leu Asn Asp Lys Ala Ile Val Glu Val Pro Glu Ser Asn Asp Val
305                 310                 315                 320

Thr Phe Asn Tyr Gly Asn Asn Pro Asp His Gly Asn Thr Pro Lys Pro
                325                 330                 335

Asn Lys Pro Asn Glu Asn Gly Asp Leu Thr Leu Thr Lys Thr Trp Val
            340                 345                 350

Asp Ala Thr Gly Ala Pro Ile Pro Ala Gly Ala Glu Ala Thr Phe Asp
        355                 360                 365

Leu Val Asn Ala Gln Thr Gly Lys Val Val Gln Thr Val Thr Leu Thr
    370                 375                 380

Thr Asp Lys Asn Thr Val Thr Val Asn Gly Leu Asp Lys Asn Thr Glu
385                 390                 395                 400

Tyr Lys Phe Val Glu Arg Ser Ile Lys Gly Tyr Ser Ala Asp Tyr Gln
                405                 410                 415

Glu Ile Thr Thr Ala Gly Glu Ile Ala Val Lys Asn Trp Lys Asp Glu
            420                 425                 430

Asn Pro Lys Pro Leu Asp Pro Thr Glu Pro Lys Val Val Thr Tyr Gly
        435                 440                 445

Lys Lys Phe Val Lys Val Asn Asp Lys Asp Asn Arg Leu Ala Gly Ala
    450                 455                 460

Glu Phe Val Ile Ala Asn Ala Asp Asn Ala Gly Gln Tyr Leu Ala Arg
465                 470                 475                 480

Lys Ala Asp Lys Val Ser Gln Glu Glu Lys Gln Leu Val Val Thr Thr
                485                 490                 495
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Lys Asp Ala Leu Asp Arg Ala Val Ala Ala Tyr Asn Ala Leu Thr Ala
500 505 510

Gln Gln Gln Thr Gln Gln Glu Lys Glu Lys Val Asp Lys Ala Gln Ala
515 520 525

Ala Tyr Asn Ala Ala Val Ile Ala Ala Asn Asn Ala Phe Glu Trp Val
530 535 540

Ala Asp Lys Asp Asn Glu Asn Val Val Lys Leu Val Ser Asp Ala Gln
545 550 555 560

Gly Arg Phe Glu Ile Thr Gly Leu Leu Ala Gly Thr Tyr Tyr Leu Glu
565 570 575

Glu Thr Lys Gln Pro Ala Gly Tyr Ala Leu Leu Thr Ser Arg Gln Lys
580 585 590

Phe Glu Val Thr Ala Thr Ser Tyr Ser Ala Thr Gly Gln Gly Ile Glu
595 600 605

Tyr Thr Ala Gly Ser Gly Lys Asp Asp Ala Thr Lys Val Val Asn Lys
610 615 620

Lys Ile Thr Ile Pro Gln Thr Gly Gly Ile Gly Thr Ile Ile Phe Ala
625 630 635 640

Val Ala Gly Ala Ala Ile Met Gly Ile Ala Val Tyr Ala Tyr Val Lys
645 650 655

Asn Asn Lys Asp Glu Asp Gln Leu Ala
660 665

<210> 272
<211> 6
<212> PRT
<213> Artificial Sequence

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

<400> 272
Gly Ser Gly Gly Gly Gly
1 5

<210> 273
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<221> source

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

<400> 273
Gly Ser Gly Ser Gly Gly Gly Gly
1 5

<210> 274
<211> 5
<212> PRT
<213> Artificial Sequence

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

<400> 274
Ala Ala Ala Leu Glu
1 5

<210> 275
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic 6xHis tag"

<400> 275
His His His His His His
1 5

<210> 276
<211> 1179
<212> PRT
<213> Streptococcus agalactiae

<400> 276
Met Gly Asn Asn Pro Thr Ile Glu Asn Glu Pro Lys Glu Gly Ile Pro
1 5 10 15

Val Asp Lys Lys Ile Thr Val Asn Lys Thr Trp Ala Val Asp Gly Asn
20 25 30

Glu Val Asn Lys Ala Asp Glu Thr Val Asp Ala Val Phe Thr Leu Gln
35 40 45

Val Lys Asp Gly Asp Lys Trp Val Asn Val Asp Ser Ala Lys Ala Thr
50 55 60

Ala Ala Thr Ser Phe Lys His Thr Phe Glu Asn Leu Asp Asn Ala Lys
65 70 75 80

Thr Tyr Arg Val Ile Glu Arg Val Ser Gly Tyr Ala Pro Glu Tyr Val
85 90 95

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Ser Phe Val Asn Gly Val Val Thr Ile Lys Asn Asn Lys Asp Ser Asn
            100                 105                 110

Glu Pro Thr Pro Ile Gly Ser Gly Ser Gly Asn Lys Pro Gly Lys Lys
        115                 120                 125

Val Lys Glu Ile Pro Val Thr Pro Ser Asn Gly Glu Ile Thr Val Ser
    130                 135                 140

Lys Thr Trp Asp Lys Gly Ser Asp Leu Glu Asn Ala Asn Val Val Tyr
145                 150                 155                 160

Thr Leu Lys Asp Gly Gly Thr Ala Val Ala Ser Val Ser Leu Thr Lys
                165                 170                 175

Thr Thr Pro Asn Gly Glu Ile Asn Leu Gly Asn Gly Ile Lys Phe Thr
            180                 185                 190

Val Thr Gly Ala Phe Ala Gly Lys Phe Ser Gly Leu Thr Asp Ser Lys
        195                 200                 205

Thr Tyr Met Ile Ser Glu Arg Ile Ala Gly Tyr Gly Asn Thr Ile Thr
    210                 215                 220

Thr Gly Ala Gly Ser Ala Ala Ile Thr Asn Thr Pro Asp Ser Asp Asn
225                 230                 235                 240

Pro Thr Pro Leu Gly Ser Gly Ser Gly Asn Asn Pro Thr Glu Glu Ser
                245                 250                 255

Glu Pro Gln Glu Gly Thr Pro Ala Asn Gln Glu Ile Lys Val Ile Lys
            260                 265                 270

Asp Trp Ala Val Asp Gly Thr Ile Thr Asp Ala Asn Val Ala Val Lys
        275                 280                 285

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

Val Ala Ser His Glu Ala Thr Lys Pro Ser Arg Phe Glu His Thr Phe
305                 310                 315                 320

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

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

Lys Asn Asn Lys Asn Ser Asn Asp Pro Thr Pro Ile Gly Ser Gly Ser
        355                 360                 365
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Gly Asn Lys Pro Gly Lys Asp Leu Thr Glu Leu Pro Val Thr Pro Ser
    370                 375                 380

Lys Gly Glu Val Thr Val Ala Lys Thr Trp Ser Asp Gly Ile Ala Pro
385                 390                 395                 400

Asp Gly Val Asn Val Val Tyr Thr Leu Lys Asp Lys Asp Lys Thr Val
                405                 410                 415

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

Asn Gly Ile Lys Phe Glu Val Ser Gly Asn Phe Ser Gly Lys Phe Thr
        435                 440                 445

Gly Leu Glu Asn Lys Ser Tyr Met Ile Ser Glu Arg Val Ser Gly Tyr
    450                 455                 460

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

Lys Asp Ser Asp Asn Pro Thr Pro Leu Gly Ser Gly Ser Gly Asn Lys
                485                 490                 495

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

Val Lys Val Thr Lys Thr Trp Ala Ala Gly Ala Asn Lys Ala Asp Ala
        515                 520                 525

Lys Val Val Tyr Thr Leu Lys Asn Ala Thr Lys Gln Val Val Ala Ser
    530                 535                 540

Val Ala Leu Thr Ala Ala Asp Thr Lys Gly Thr Ile Asn Leu Gly Lys
545                 550                 555                 560

Gly Met Thr Phe Glu Ile Thr Gly Ala Phe Ser Gly Thr Phe Lys Gly
                565                 570                 575

Leu Gln Asn Lys Ala Tyr Thr Val Ser Glu Arg Val Ala Gly Tyr Thr
            580                 585                 590

Asn Ala Ile Asn Val Thr Gly Asn Ala Val Ala Ile Thr Asn Thr Pro
        595                 600                 605

Asp Ser Asp Asn Pro Thr Pro Leu Gly Ser Gly Ser Gly Asn Asn Pro
    610                 615                 620

Thr Thr Glu Asn Glu Pro Gln Thr Gly Asn Pro Val Asn Lys Glu Ile
625                 630                 635                 640
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Thr Val Arg Lys Thr Trp Ala Val Asp Gly Asn Glu Val Asn Lys Gly
                645                 650                 655

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

Lys Trp Val Asn Val Asp Ser Ala Thr Ala Thr Ala Ala Thr Asp Phe
        675                 680                 685

Lys Tyr Thr Phe Lys Asn Leu Asp Asn Ala Lys Thr Tyr Arg Val Val
    690                 695                 700

Glu Arg Val Ser Gly Tyr Ala Pro Ala Tyr Val Ser Phe Val Gly Gly
705                 710                 715                 720

Val Val Thr Ile Lys Asn Asn Lys Asn Ser Asn Asp Pro Thr Pro Ile
                725                 730                 735

Gly Ser Gly Gly Gly Gly Glu Thr Gly Thr Ile Thr Val Gln Asp Thr
            740                 745                 750

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

Asp Asn Ala Asn Val Ser Asp Ser Asn Lys Asp Gly Ala Ser Tyr Leu
    770                 775                 780

Ile Pro Gln Gly Lys Glu Ala Glu Tyr Lys Ala Ser Thr Asp Phe Asn
785                 790                 795                 800

Ser Leu Phe Thr Thr Thr Thr Asn Gly Gly Arg Thr Tyr Val Thr Lys
                805                 810                 815

Lys Asp Thr Ala Ser Ala Asn Glu Ile Ala Thr Trp Ala Lys Ser Ile
            820                 825                 830

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

Gly Thr Glu Val Ile Asn Val Ser Gln Tyr Gly Tyr Tyr Tyr Val Ser
    850                 855                 860

Ser Thr Val Asn Asn Gly Ala Val Ile Met Val Thr Ser Val Thr Pro
865                 870                 875                 880

Asn Ala Thr Ile His Glu Lys Asn Thr Asp Ala Thr Trp Gly Asp Gly
                885                 890                 895

Gly Gly Lys Thr Val Asp Gln Lys Thr Tyr Ser Val Gly Asp Thr Val
            900                 905                 910
```

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Lys Tyr Thr Ile Thr Tyr Lys Asn Ala Val Asn Tyr His Gly Thr Glu
        915                 920                 925

Lys Val Tyr Gln Tyr Val Ile Lys Asp Thr Met Pro Ser Ala Ser Val
    930                 935                 940

Val Asp Leu Asn Glu Gly Ser Tyr Glu Val Thr Ile Thr Asp Gly Ser
945                 950                 955                 960

Gly Asn Ile Thr Thr Leu Thr Gln Gly Ser Glu Lys Ala Thr Gly Lys
                965                 970                 975

Tyr Asn Leu Leu Glu Glu Asn Asn Asn Phe Thr Ile Thr Ile Pro Trp
            980                 985                 990

Ala Ala Thr Asn Thr Pro Thr Gly  Asn Thr Gln Asn Gly  Ala Asn Asp
        995                 1000                1005

Asp Phe  Phe Tyr Lys Gly Ile  Asn Thr Ile Thr Val  Thr Tyr Thr
    1010                1015                1020

Gly Val  Leu Lys Ser Gly Ala  Lys Pro Gly Ser Ala  Asp Leu Pro
    1025                1030                1035

Glu Asn  Thr Asn Ile Ala Thr  Ile Asn Pro Asn Thr  Ser Asn Asp
    1040                1045                1050

Asp Pro  Gly Gln Lys Val Thr  Val Arg Asp Gly Gln  Ile Thr Ile
    1055                1060                1065

Lys Lys  Ile Asp Gly Ser Thr  Lys Ala Ser Leu Gln  Gly Ala Ile
    1070                1075                1080

Phe Val  Leu Lys Asn Ala Thr  Gly Gln Phe Leu Asn  Phe Asn Asp
    1085                1090                1095

Thr Asn  Asn Val Glu Trp Gly  Thr Glu Ala Asn Ala  Thr Glu Tyr
    1100                1105                1110

Thr Thr  Gly Ala Asp Gly Ile  Ile Thr Ile Thr Gly  Leu Lys Glu
    1115                1120                1125

Gly Thr  Tyr Tyr Leu Val Glu  Lys Lys Ala Pro Leu  Gly Tyr Asn
    1130                1135                1140

Leu Leu  Asp Asn Ser Gln Lys  Val Ile Leu Gly Asp  Gly Ala Thr
    1145                1150                1155

Asp Thr  Thr Asn Ser Asp Asn  Leu Leu Val Asn Pro  Thr Val Glu
    1160                1165                1170
```

Asn Asn Lys Gly Thr Glu
    1175

<210> 277
<211> 4
<212> PRT
<213> Artificial Sequence

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

<400> 277
Gly Ser Gly Ser
1

<210> 278
<211> 37
<212> DNA
<213> Artificial Sequence

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

<400> 278
ctgtacttcc agggcaataa tccgaccatt gaaaatg 37

<210> 279
<211> 39
<212> DNA
<213> Artificial Sequence

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

<400> 279
aattaagtcg cgttactcag tacctttgtt attttcaac 39

<210> 280
<211> 42
<212> DNA
<213> Artificial Sequence

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

<400> 280
ggtagcggtg gtggtggtgc tgagacaggg acaattacag tt 42

<210> 281
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<221> source

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

<400> 281
accaccacca ccgctaccaa tcggcgtcgg atcgttactg tt 42

<210> 282
<211> 18
<212> DNA
<213> Artificial Sequence

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

<400> 282
ggtagcggtg gtggtggt 18

<210> 283
<211> 34
<212> DNA
<213> Artificial Sequence

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

<400> 283
ctagctagcg gcaataatcc gaccattgaa aatg 34

<210> 284
<211> 36
<212> DNA
<213> Artificial Sequence

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

<400> 284
ccgctcgagt tactcagtac ctttgttatt ttcaac 36

<210> 285
<211> 282
<212> PRT
<213> Artificial Sequence

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

<220>
<221> source
<223> /note="D2 and D3 domains of GBS1523"

<400> 285
Gly Lys Thr Val Asp Gln Lys Thr Tyr Ser Val Gly Asp Thr Val Lys
1 5 10 15

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Tyr Thr Ile Thr Tyr Lys Asn Ala Val Asn Tyr His Gly Thr Glu Lys
            20                  25                  30

Val Tyr Gln Tyr Val Ile Lys Asp Thr Met Pro Ser Ala Ser Val Val
        35                  40                  45

Asp Leu Asn Glu Gly Ser Tyr Glu Val Thr Ile Thr Asp Gly Ser Gly
    50                  55                  60

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

Asn Leu Leu Glu Glu Asn Asn Asn Phe Thr Ile Thr Ile Pro Trp Ala
                85                  90                  95

Ala Thr Asn Thr Pro Thr Gly Asn Thr Gln Asn Gly Ala Asn Asp Asp
            100                 105                 110

Phe Phe Tyr Lys Gly Ile Asn Thr Ile Thr Val Thr Tyr Thr Gly Val
        115                 120                 125

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

Asn Ile Ala Thr Ile Asn Pro Asn Thr Ser Asn Asp Asp Pro Gly Gln
145                 150                 155                 160

Lys Val Thr Val Arg Asp Gly Gln Ile Thr Ile Lys Lys Ile Asp Gly
                165                 170                 175

Ser Thr Lys Ala Ser Leu Gln Gly Ala Ile Phe Val Leu Lys Asn Ala
            180                 185                 190

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

Thr Glu Ala Asn Ala Thr Glu Tyr Thr Thr Gly Ala Asp Gly Ile Ile
    210                 215                 220

Thr Ile Thr Gly Leu Lys Glu Gly Thr Tyr Tyr Leu Val Glu Lys Lys
225                 230                 235                 240

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

Gly Asp Gly Ala Thr Asp Thr Thr Asn Ser Asp Asn Leu Leu Val Asn
            260                 265                 270

Pro Thr Val Glu Asn Asn Lys Gly Thr Glu
        275                 280
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<210> 286
<211> 293
<212> PRT
<213> Artificial Sequence

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

<220>
<221> source
<223> /note="D2 and D3 domains of GBS1523 with N terminal sequence"

<400> 286
Thr Asp Ala Thr Trp Gly Asp Gly Gly Gly Lys Thr Val Asp Gln Lys
1 5 10 15

Thr Tyr Ser Val Gly Asp Thr Val Lys Tyr Thr Ile Thr Tyr Lys Asn
20 25 30

Ala Val Asn Tyr His Gly Thr Glu Lys Val Tyr Gln Tyr Val Ile Lys
35 40 45

Asp Thr Met Pro Ser Ala Ser Val Val Asp Leu Asn Glu Gly Ser Tyr
50 55 60

Glu Val Thr Ile Thr Asp Gly Ser Gly Asn Ile Thr Thr Leu Thr Gln
65 70 75 80

Gly Ser Glu Lys Ala Thr Gly Lys Tyr Asn Leu Leu Glu Glu Asn Asn
85 90 95

Asn Phe Thr Ile Thr Ile Pro Trp Ala Ala Thr Asn Thr Pro Thr Gly
100 105 110

Asn Thr Gln Asn Gly Ala Asn Asp Asp Phe Phe Tyr Lys Gly Ile Asn
115 120 125

Thr Ile Thr Val Thr Tyr Thr Gly Val Leu Lys Ser Gly Ala Lys Pro
130 135 140

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

Asn Thr Ser Asn Asp Asp Pro Gly Gln Lys Val Thr Val Arg Asp Gly
165 170 175

Gln Ile Thr Ile Lys Lys Ile Asp Gly Ser Thr Lys Ala Ser Leu Gln
180 185 190

Gly Ala Ile Phe Val Leu Lys Asn Ala Thr Gly Gln Phe Leu Asn Phe
195 200 205

Asn Asp Thr Asn Asn Val Glu Trp Gly Thr Glu Ala Asn Ala Thr Glu

210 215 220

Tyr Thr Thr Gly Ala Asp Gly Ile Ile Thr Ile Thr Gly Leu Lys Glu
225 230 235 240

Gly Thr Tyr Tyr Leu Val Glu Lys Lys Ala Pro Leu Gly Tyr Asn Leu
245 250 255

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

Thr Asn Ser Asp Asn Leu Leu Val Asn Pro Thr Val Glu Asn Asn Lys
275 280 285

Gly Thr Glu Leu Glu
290

<210> 287
<211> 160
<212> PRT
<213> Artificial Sequence

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

<220>
<221> source
<223> /note="Domain 1 of GBS1523"

<400> 287
Met Ala Ser Ala Glu Thr Gly Thr Ile Thr Val Gln Asp Thr Gln Lys
1 5 10 15

Gly Ala Thr Tyr Lys Ala Tyr Lys Val Phe Asp Ala Glu Ile Asp Asn
20 25 30

Ala Asn Val Ser Asp Ser Asn Lys Asp Gly Ala Ser Tyr Leu Ile Pro
35 40 45

Gln Gly Lys Glu Ala Glu Tyr Lys Ala Ser Thr Asp Phe Asn Ser Leu
50 55 60

Phe Thr Thr Thr Thr Asn Gly Gly Arg Thr Tyr Val Thr Lys Lys Asp
65 70 75 80

Thr Ala Ser Ala Asn Glu Ile Ala Thr Trp Ala Lys Ser Ile Ser Ala
85 90 95

Asn Thr Thr Pro Val Ser Thr Val Thr Glu Ser Asn Asn Asp Gly Thr
100 105 110

Glu Val Ile Asn Val Ser Gln Tyr Gly Tyr Tyr Tyr Val Ser Ser Thr
115 120 125

Val Asn Asn Gly Ala Val Ile Met Val Thr Ser Val Thr Pro Asn Ala
    130   135   140

Thr Ile His Glu Lys Asn Thr Asp Ala Thr Trp Gly Asp Gly Gly Gly
145   150   155   160

<210> 288
<211> 176
<212> PRT
<213> Artificial Sequence

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

<220>
<221> source
<223> /note="Domain 1 of GBS1523 Variant sequence"

<400> 288
Met Lys Lys Lys Met Ile Gln Ser Leu Leu Val Ala Ser Leu Ala Phe
1   5   10   15

Gly Met Ala Val Ser Pro Val Thr Pro Ile Ala Phe Ala Ala Glu Thr
            20   25   30

Gly Thr Ile Thr Val Gln Asp Thr Gln Lys Gly Ala Thr Tyr Lys Ala
        35   40   45

Tyr Lys Val Phe Asp Ala Glu Ile Asp Asn Ala Asn Val Ser Asp Ser
    50   55   60

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

Tyr Lys Ala Ser Thr Asp Phe Asn Ser Leu Phe Thr Thr Thr Thr Asn
                85   90   95

Gly Gly Arg Thr Tyr Val Thr Lys Lys Asp Thr Ala Ser Ala Asn Glu
            100   105   110

Ile Ala Thr Trp Ala Lys Ser Ile Ser Ala Asn Thr Thr Pro Val Ser
        115   120   125

Thr Val Thr Glu Ser Asn Asn Asp Gly Thr Glu Val Ile Asn Val Ser
    130   135   140

Gln Tyr Gly Tyr Tyr Tyr Val Ser Ser Thr Val Asn Asn Gly Ala Val
145   150   155   160

Ile Met Val Thr Ser Val Thr Pro Asn Ala Thr Ile His Glu Lys Asn
                165   170   175

<210> 289
<211> 171
<212> PRT
<213> Artificial Sequence

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

<220>
<221> source
<223> /note="Domain 2 of GBS1523"

<400> 289
Lys Thr Val Asp Gln Lys Thr Tyr Ser Val Gly Asp Thr Val Lys Tyr
1 5 10 15

Thr Ile Thr Tyr Lys Asn Ala Val Asn Tyr His Gly Thr Glu Lys Val
20 25 30

Tyr Gln Tyr Val Ile Lys Asp Thr Met Pro Ser Ala Ser Val Val Asp
35 40 45

Leu Asn Glu Gly Ser Tyr Glu Val Thr Ile Thr Asp Gly Ser Gly Asn
50 55 60

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

Leu Leu Glu Glu Asn Asn Asn Phe Thr Ile Thr Ile Pro Trp Ala Ala
85 90 95

Thr Asn Thr Pro Thr Gly Asn Thr Gln Asn Gly Ala Asn Asp Asp Phe
100 105 110

Phe Tyr Lys Gly Ile Asn Thr Ile Thr Val Thr Tyr Thr Gly Val Leu
115 120 125

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

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

Val Thr Val Arg Asp Gly Gln Ile Thr Ile Lys
165 170

<210> 290
<211> 175
<212> PRT
<213> Artificial Sequence

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

polypeptide"

<220>
<221> source
<223> /note="Domain 2 of GBS1523 Variant"

<400> 290
Thr Asp Ala Thr Trp Gly Asp Gly Gly Gly Lys Thr Val Asp Gln Lys
1 5 10 15

Thr Tyr Ser Val Gly Asp Thr Val Lys Tyr Thr Ile Thr Tyr Lys Asn
20 25 30

Ala Val Asn Tyr His Gly Thr Glu Lys Val Tyr Gln Tyr Val Ile Lys
35 40 45

Asp Thr Met Pro Ser Ala Ser Val Val Asp Leu Asn Glu Gly Ser Tyr
50 55 60

Glu Val Thr Ile Thr Asp Gly Ser Gly Asn Ile Thr Thr Leu Thr Gln
65 70 75 80

Gly Ser Glu Lys Ala Thr Gly Lys Tyr Asn Leu Leu Glu Glu Asn Asn
85 90 95

Asn Phe Thr Ile Thr Ile Pro Trp Ala Ala Thr Asn Thr Pro Thr Gly
100 105 110

Asn Thr Gln Asn Gly Ala Asn Asp Asp Phe Phe Tyr Lys Gly Ile Asn
115 120 125

Thr Ile Thr Val Thr Tyr Thr Gly Val Leu Lys Ser Gly Ala Lys Pro
130 135 140

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

Asn Thr Ser Asn Asp Asp Pro Gly Gln Lys Val Thr Val Arg Asp
165 170 175

<210> 291
<211> 110
<212> PRT
<213> Artificial Sequence

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

<220>
<221> source
<223> /note="Domain 3 of GBS1523"

<400> 291
Lys Ile Asp Gly Ser Thr Lys Ala Ser Leu Gln Gly Ala Ile Phe Val
1 5 10 15

Leu Lys Asn Ala Thr Gly Gln Phe Leu Asn Phe Asn Asp Thr Asn Asn
            20   25   30

Val Glu Trp Gly Thr Glu Ala Asn Ala Thr Glu Tyr Thr Thr Gly Ala
        35   40   45

Asp Gly Ile Ile Thr Ile Thr Gly Leu Lys Glu Gly Thr Tyr Tyr Leu
    50   55   60

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

Lys Val Ile Leu Gly Asp Gly Ala Thr Asp Thr Thr Asn Ser Asp Asn
                85   90   95

Leu Leu Val Asn Pro Thr Val Glu Asn Asn Lys Gly Thr Glu
            100   105   110

<210> 292
<211> 151
<212> PRT
<213> Artificial Sequence

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

<220>
<221> source
<223> /note="Domain 3 of GBS1523 Variant sequence"

<400> 292
Gly Gln Ile Thr Ile Lys Lys Ile Asp Gly Ser Thr Lys Ala Ser Leu
1   5   10   15

Gln Gly Ala Ile Phe Val Leu Lys Asn Ala Thr Gly Gln Phe Leu Asn
            20   25   30

Phe Asn Asp Thr Asn Asn Val Glu Trp Gly Thr Glu Ala Asn Ala Thr
        35   40   45

Glu Tyr Thr Thr Gly Ala Asp Gly Ile Ile Thr Ile Thr Gly Leu Lys
    50   55   60

Glu Gly Thr Tyr Tyr Leu Val Glu Lys Lys Ala Pro Leu Gly Tyr Asn
65   70   75   80

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

Thr Thr Asn Ser Asp Asn Leu Leu Val Asn Pro Thr Val Glu Asn Asn
            100   105   110

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

Tyr Ile Ile Gly Ala Ile Leu Val Ile Gly Ala Gly Ile Val Leu Val
    130   135   140

Ala Arg Arg Arg Leu Arg Ser
145   150

<210> 293
<211> 1023
<212> PRT
<213> Artificial Sequence

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

<220>
<221> source
<223> /note="GBS59(6xD3)-GBS1523D2+D3 Fusion Protein"

<400> 293
Met Gly Asn Asn Pro Thr Ile Glu Asn Glu Pro Lys Glu Gly Ile Pro
1   5   10   15

Val Asp Lys Lys Ile Thr Val Asn Lys Thr Trp Ala Val Asp Gly Asn
            20   25   30

Glu Val Asn Lys Ala Asp Glu Thr Val Asp Ala Val Phe Thr Leu Gln
        35   40   45

Val Lys Asp Gly Asp Lys Trp Val Asn Val Asp Ser Ala Lys Ala Thr
    50   55   60

Ala Ala Thr Ser Phe Lys His Thr Phe Glu Asn Leu Asp Asn Ala Lys
65   70   75   80

Thr Tyr Arg Val Ile Glu Arg Val Ser Gly Tyr Ala Pro Glu Tyr Val
                85   90   95

Ser Phe Val Asn Gly Val Val Thr Ile Lys Asn Asn Lys Asp Ser Asn
            100   105   110

Glu Pro Thr Pro Ile Gly Ser Gly Ser Gly Asn Lys Pro Gly Lys Lys
        115   120   125

Val Lys Glu Ile Pro Val Thr Pro Ser Asn Gly Glu Ile Thr Val Ser
    130   135   140

Lys Thr Trp Asp Lys Gly Ser Asp Leu Glu Asn Ala Asn Val Val Tyr
145   150   155   160

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Thr Leu Lys Asp Gly Gly Thr Ala Val Ala Ser Val Ser Leu Thr Lys
                165                 170                 175

Thr Thr Pro Asn Gly Glu Ile Asn Leu Gly Asn Gly Ile Lys Phe Thr
            180                 185                 190

Val Thr Gly Ala Phe Ala Gly Lys Phe Ser Gly Leu Thr Asp Ser Lys
        195                 200                 205

Thr Tyr Met Ile Ser Glu Arg Ile Ala Gly Tyr Gly Asn Thr Ile Thr
    210                 215                 220

Thr Gly Ala Gly Ser Ala Ala Ile Thr Asn Thr Pro Asp Ser Asp Asn
225                 230                 235                 240

Pro Thr Pro Leu Gly Ser Gly Ser Gly Asn Asn Pro Thr Glu Glu Ser
                245                 250                 255

Glu Pro Gln Glu Gly Thr Pro Ala Asn Gln Glu Ile Lys Val Ile Lys
            260                 265                 270

Asp Trp Ala Val Asp Gly Thr Ile Thr Asp Ala Asn Val Ala Val Lys
        275                 280                 285

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

Val Ala Ser His Glu Ala Thr Lys Pro Ser Arg Phe Glu His Thr Phe
305                 310                 315                 320

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

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

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

Gly Asn Lys Pro Gly Lys Asp Leu Thr Glu Leu Pro Val Thr Pro Ser
    370                 375                 380

Lys Gly Glu Val Thr Val Ala Lys Thr Trp Ser Asp Gly Ile Ala Pro
385                 390                 395                 400

Asp Gly Val Asn Val Val Tyr Thr Leu Lys Asp Lys Asp Lys Thr Val
                405                 410                 415

Ala Ser Val Ser Leu Thr Lys Thr Ser Lys Gly Thr Ile Asp Leu Gly
            420                 425                 430
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Asn Gly Ile Lys Phe Glu Val Ser Gly Asn Phe Ser Gly Lys Phe Thr
        435                 440                 445

Gly Leu Glu Asn Lys Ser Tyr Met Ile Ser Glu Arg Val Ser Gly Tyr
    450                 455                 460

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

Lys Asp Ser Asp Asn Pro Thr Pro Leu Gly Ser Gly Ser Gly Asn Lys
                485                 490                 495

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

Val Lys Val Thr Lys Thr Trp Ala Ala Gly Ala Asn Lys Ala Asp Ala
        515                 520                 525

Lys Val Val Tyr Thr Leu Lys Asn Ala Thr Lys Gln Val Val Ala Ser
    530                 535                 540

Val Ala Leu Thr Ala Ala Asp Thr Lys Gly Thr Ile Asn Leu Gly Lys
545                 550                 555                 560

Gly Met Thr Phe Glu Ile Thr Gly Ala Phe Ser Gly Thr Phe Lys Gly
                565                 570                 575

Leu Gln Asn Lys Ala Tyr Thr Val Ser Glu Arg Val Ala Gly Tyr Thr
            580                 585                 590

Asn Ala Ile Asn Val Thr Gly Asn Ala Val Ala Ile Thr Asn Thr Pro
        595                 600                 605

Asp Ser Asp Asn Pro Thr Pro Leu Gly Ser Gly Ser Gly Asn Asn Pro
    610                 615                 620

Thr Thr Glu Asn Glu Pro Gln Thr Gly Asn Pro Val Asn Lys Glu Ile
625                 630                 635                 640

Thr Val Arg Lys Thr Trp Ala Val Asp Gly Asn Glu Val Asn Lys Gly
                645                 650                 655

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

Lys Trp Val Asn Val Asp Ser Ala Thr Ala Thr Ala Ala Thr Asp Phe
        675                 680                 685

Lys Tyr Thr Phe Lys Asn Leu Asp Asn Ala Lys Thr Tyr Arg Val Val
    690                 695                 700
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Glu Arg Val Ser Gly Tyr Ala Pro Ala Tyr Val Ser Phe Val Gly Gly
705                 710                 715                 720

Val Val Thr Ile Lys Asn Asn Lys Asn Ser Asn Asp Pro Thr Pro Ile
                725                 730                 735

Gly Ser Gly Gly Gly Gly Lys Thr Val Asp Gln Lys Thr Tyr Ser Val
            740                 745                 750

Gly Asp Thr Val Lys Tyr Thr Ile Thr Tyr Lys Asn Ala Val Asn Tyr
        755                 760                 765

His Gly Thr Glu Lys Val Tyr Gln Tyr Val Ile Lys Asp Thr Met Pro
    770                 775                 780

Ser Ala Ser Val Val Asp Leu Asn Glu Gly Ser Tyr Glu Val Thr Ile
785                 790                 795                 800

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

Ala Thr Gly Lys Tyr Asn Leu Leu Glu Glu Asn Asn Asn Phe Thr Ile
            820                 825                 830

Thr Ile Pro Trp Ala Ala Thr Asn Thr Pro Thr Gly Asn Thr Gln Asn
        835                 840                 845

Gly Ala Asn Asp Asp Phe Phe Tyr Lys Gly Ile Asn Thr Ile Thr Val
    850                 855                 860

Thr Tyr Thr Gly Val Leu Lys Ser Gly Ala Lys Pro Gly Ser Ala Asp
865                 870                 875                 880

Leu Pro Glu Asn Thr Asn Ile Ala Thr Ile Asn Pro Asn Thr Ser Asn
                885                 890                 895

Asp Asp Pro Gly Gln Lys Val Thr Val Arg Asp Gly Gln Ile Thr Ile
            900                 905                 910

Lys Lys Ile Asp Gly Ser Thr Lys Ala Ser Leu Gln Gly Ala Ile Phe
        915                 920                 925

Val Leu Lys Asn Ala Thr Gly Gln Phe Leu Asn Phe Asn Asp Thr Asn
    930                 935                 940

Asn Val Glu Trp Gly Thr Glu Ala Asn Ala Thr Glu Tyr Thr Thr Gly
945                 950                 955                 960

Ala Asp Gly Ile Ile Thr Ile Thr Gly Leu Lys Glu Gly Thr Tyr Tyr
                965                 970                 975
```

Leu Val Glu Lys Lys Ala Pro Leu Gly Tyr Asn Leu Leu Asp Asn Ser
980 985 990

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

Asn Leu Leu Val Asn Pro Thr Val Glu Asn Asn Lys Gly Thr Glu
1010 1015 1020

<210> 294
<211> 1146
<212> PRT
<213> Artificial Sequence

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

<220>
<221> source
<223> /note="GBS59(7xD3SUB)-GBS1523D2+D3 Fusion Protein"

<400> 294
Gly Asn Lys Pro Gly Lys Asp Leu Thr Glu Leu Pro Val Thr Pro Ser
1 5 10 15

Lys Gly Glu Val Thr Val Ala Lys Thr Trp Ser Asp Gly Ile Ala Pro
20 25 30

Asp Gly Val Asn Val Val Tyr Thr Leu Lys Asp Lys Asp Lys Thr Val
35 40 45

Ala Ser Val Ser Leu Thr Lys Thr Ser Lys Gly Thr Ile Asp Leu Gly
50 55 60

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

Gly Leu Glu Asn Lys Ser Tyr Met Ile Ser Glu Arg Val Ser Gly Tyr
85 90 95

Gly Ser Ala Ile Asn Leu Glu Asn Gly Lys Val Thr Ile Thr Asn Thr
100 105 110

Lys Asp Ser Asp Asn Pro Thr Pro Leu Gly Ser Gly Ser Gly Gly Asn
115 120 125

Asn Pro Thr Ile Glu Asn Glu Pro Lys Glu Gly Ile Pro Val Asp Lys
130 135 140

Lys Ile Thr Val Asn Lys Thr Trp Ala Val Asp Gly Asn Glu Val Asn
145 150 155 160

Lys Ala Asp Glu Thr Val Asp Ala Val Phe Thr Leu Gln Val Lys Asp

```
                165                 170                 175

Gly Asp Lys Trp Val Asn Val Asp Ser Ala Lys Ala Thr Ala Ala Thr
            180                 185                 190

Ser Phe Lys His Thr Phe Glu Asn Leu Asp Asn Ala Lys Thr Tyr Arg
        195                 200                 205

Val Ile Glu Arg Val Ser Gly Tyr Ala Pro Glu Tyr Val Ser Phe Val
    210                 215                 220

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

Pro Ile Gly Ser Gly Ser Gly Gly Asn Asn Pro Thr Glu Glu Ser Glu
                245                 250                 255

Pro Gln Glu Gly Thr Pro Ala Asn Gln Glu Ile Lys Val Ile Lys Asp
            260                 265                 270

Trp Ala Val Asp Gly Thr Ile Thr Asp Ala Asn Val Ala Val Lys Ala
        275                 280                 285

Ile Phe Thr Leu Gln Glu Lys Gln Thr Asp Gly Thr Trp Val Asn Val
    290                 295                 300

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

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

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

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

Gly Asn Lys Pro Gly Lys Lys Val Lys Glu Ile Pro Val Thr Pro Ser
    370                 375                 380

Asn Gly Glu Ile Thr Val Ser Lys Thr Trp Asp Lys Gly Ser Asp Leu
385                 390                 395                 400

Glu Asn Ala Asn Val Val Tyr Thr Leu Lys Asp Gly Gly Thr Ala Val
                405                 410                 415

Ala Ser Val Ser Leu Thr Lys Thr Thr Pro Asn Gly Glu Ile Asn Leu
            420                 425                 430

Gly Asn Gly Ile Lys Phe Thr Val Thr Gly Ala Phe Ala Gly Lys Phe
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        435                 440                 445

Ser Gly Leu Thr Asp Ser Lys Thr Tyr Met Ile Ser Glu Arg Ile Ala
    450                 455                 460

Gly Tyr Gly Asn Thr Ile Thr Thr Gly Ala Gly Ser Ala Ala Ile Thr
465                 470                 475                 480

Asn Thr Pro Asp Ser Asp Asn Pro Thr Pro Leu Gly Ser Gly Ser Gly
                485                 490                 495

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

Asp Gly Glu Val Lys Val Thr Lys Thr Trp Ala Ala Gly Ala Asn Lys
        515                 520                 525

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

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

Leu Gly Lys Gly Met Thr Phe Glu Ile Thr Gly Ala Phe Ser Gly Thr
                565                 570                 575

Phe Lys Gly Leu Gln Asn Lys Ala Tyr Thr Val Ser Glu Arg Val Ala
            580                 585                 590

Gly Tyr Thr Asn Ala Ile Asn Val Thr Gly Asn Ala Val Ala Ile Thr
        595                 600                 605

Asn Thr Pro Asp Ser Asp Asn Pro Thr Pro Leu Gly Ser Gly Ser Gly
    610                 615                 620

Gly Asn Asn Pro Thr Thr Glu Asn Glu Pro Gln Thr Gly Asn Pro Val
625                 630                 635                 640

Asn Lys Glu Ile Thr Val Arg Lys Thr Trp Ala Val Asp Gly Asn Glu
                645                 650                 655

Val Asn Lys Gly Asp Glu Lys Val Asp Ala Val Phe Thr Leu Gln Val
            660                 665                 670

Lys Asp Ser Asp Lys Trp Val Asn Val Asp Ser Ala Thr Ala Thr Ala
        675                 680                 685

Ala Thr Asp Phe Lys Tyr Thr Phe Lys Asn Leu Asp Asn Ala Lys Thr
    690                 695                 700

Tyr Arg Val Val Glu Arg Val Ser Gly Tyr Ala Pro Ala Tyr Val Ser
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705 710 715 720

Phe Val Gly Gly Val Val Thr Ile Lys Asn Asn Lys Asn Ser Asn Asp
725 730 735

Pro Thr Pro Ile Gly Ser Gly Ser Gly Gly Asn Asn Pro Thr Glu Glu
740 745 750

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

Lys Asp Trp Ala Val Asp Gly Thr Ile Thr Asp Val Asn Val Ala Val
770 775 780

Lys Ala Ile Phe Thr Leu Gln Glu Lys Gln Thr Asp Gly Thr Trp Val
785 790 795 800

Asn Val Ala Ser His Glu Ala Thr Lys Pro Ser Arg Phe Glu His Thr
805 810 815

Phe Thr Gly Leu Asp Asn Thr Lys Thr Tyr Arg Val Val Glu Arg Val
820 825 830

Ser Gly Tyr Thr Pro Glu Tyr Val Ser Phe Lys Asn Gly Val Val Thr
835 840 845

Ile Lys Asn Asn Lys Asn Ser Asn Asp Pro Thr Pro Ile Gly Gly Gly
850 855 860

Gly Lys Thr Val Asp Gln Lys Thr Tyr Ser Val Gly Asp Thr Val Lys
865 870 875 880

Tyr Thr Ile Thr Tyr Lys Asn Ala Val Asn Tyr His Gly Thr Glu Lys
885 890 895

Val Tyr Gln Tyr Val Ile Lys Asp Thr Met Pro Ser Ala Ser Val Val
900 905 910

Asp Leu Asn Glu Gly Ser Tyr Glu Val Thr Ile Thr Asp Gly Ser Gly
915 920 925

Asn Ile Thr Thr Leu Thr Gln Gly Ser Glu Lys Ala Thr Gly Lys Tyr
930 935 940

Asn Leu Leu Glu Glu Asn Asn Asn Phe Thr Ile Thr Ile Pro Trp Ala
945 950 955 960

Ala Thr Asn Thr Pro Thr Gly Asn Thr Gln Asn Gly Ala Asn Asp Asp
965 970 975

Phe Phe Tyr Lys Gly Ile Asn Thr Ile Thr Val Thr Tyr Thr Gly Val

980 985 990

Leu Lys Ser Gly Ala Lys Pro Gly Ser Ala Asp Leu Pro Glu Asn Thr
995 1000 1005

Asn Ile Ala Thr Ile Asn Pro Asn Thr Ser Asn Asp Asp Pro Gly
1010 1015 1020

Gln Lys Val Thr Val Arg Asp Gly Gln Ile Thr Ile Lys Lys Ile
1025 1030 1035

Asp Gly Ser Thr Lys Ala Ser Leu Gln Gly Ala Ile Phe Val Leu
1040 1045 1050

Lys Asn Ala Thr Gly Gln Phe Leu Asn Phe Asn Asp Thr Asn Asn
1055 1060 1065

Val Glu Trp Gly Thr Glu Ala Asn Ala Thr Glu Tyr Thr Thr Gly
1070 1075 1080

Ala Asp Gly Ile Ile Thr Ile Thr Gly Leu Lys Glu Gly Thr Tyr
1085 1090 1095

Tyr Leu Val Glu Lys Lys Ala Pro Leu Gly Tyr Asn Leu Leu Asp
1100 1105 1110

Asn Ser Gln Lys Val Ile Leu Gly Asp Gly Ala Thr Asp Thr Thr
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Asn Ser Asp Asn Leu Leu Val Asn Pro Thr Val Glu Asn Asn Lys
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Gly Thr Glu
1145

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