SEQUENCE LISTING

<110> Regeneron Pharmaceuticals, Inc.

<120> Production Cell Line Enhancers

<130> 8150A

<150> US 61/652,549
<151> 2012-05-29

<160> 46

<170> PatentIn version 3.5

<210> 1
<211> 577
<212> PRT
<213> Mus musculus

<400> 1

Met Pro Phe Arg Leu Leu Ile Pro Leu Gly Leu Val Cys Val Leu Leu
1 5 10 15

Pro Leu His His Gly Ala Pro Gly Pro Asp Gly Thr Ala Pro Asp Pro
20 25 30

Ala His Tyr Arg Glu Arg Val Lys Ala Met Phe Tyr His Ala Tyr Asp
35 40 45

Ser Tyr Leu Glu Asn Ala Phe Pro Tyr Asp Glu Leu Arg Pro Leu Thr
50 55 60

Cys Asp Gly His Asp Thr Trp Gly Ser Phe Ser Leu Thr Leu Ile Asp
65 70 75 80

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

Val Val Glu Val Leu Gln Asp Asn Val Asp Phe Asp Ile Asp Val Asn
100 105 110

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

Ala His Leu Leu Ser Lys Lys Ala Gly Val Glu Val Glu Ala Gly Trp
130 135 140

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Pro Cys Ser Gly Pro Leu Leu Arg Met Ala Glu Glu Ala Ala Arg Lys
145                 150                 155                 160

Leu Leu Pro Ala Phe Gln Thr Pro Thr Gly Met Pro Tyr Gly Thr Val
                165                 170                 175

Asn Leu Leu His Gly Val Asn Pro Gly Glu Thr Pro Val Thr Cys Thr
            180                 185                 190

Ala Gly Ile Gly Thr Phe Ile Val Glu Phe Ala Thr Leu Ser Ser Leu
        195                 200                 205

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

Leu Trp Glu Ser Arg Ser Asp Ile Gly Leu Val Gly Asn His Ile Asp
225                 230                 235                 240

Val Leu Thr Gly Lys Trp Val Ala Gln Asp Ala Gly Ile Gly Ala Gly
                245                 250                 255

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

Asp Lys Lys Leu Met Ala Met Phe Leu Glu Tyr Asn Lys Ala Ile Arg
        275                 280                 285

Asn Tyr Thr His Phe Asp Asp Trp Tyr Leu Trp Val Gln Met Tyr Lys
    290                 295                 300

Gly Thr Val Ser Met Pro Val Phe Gln Ser Leu Glu Ala Tyr Trp Pro
305                 310                 315                 320

Gly Leu Gln Ser Leu Ile Gly Asp Ile Asp Asn Ala Met Arg Thr Phe
                325                 330                 335

Leu Asn Tyr Tyr Thr Val Trp Lys Gln Phe Gly Gly Leu Pro Glu Phe
            340                 345                 350

Tyr Asn Ile Pro Gln Gly Tyr Thr Val Glu Lys Arg Glu Gly Tyr Pro
        355                 360                 365

Leu Arg Pro Glu Leu Ile Glu Ser Ala Met Tyr Leu Tyr Arg Ala Thr
    370                 375                 380
```

```
Gly Asp Pro Thr Leu Leu Glu Leu Gly Arg Asp Ala Val Glu Ser Ile
385                 390                 395                 400

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

Arg Asp His Lys Leu Asp Asn Arg Met Glu Ser Phe Phe Leu Ala Glu
            420                 425                 430

Thr Val Lys Tyr Leu Tyr Leu Leu Phe His Pro Asn Asn Phe Ile His
        435                 440                 445

Asn Asn Gly Ser Thr Phe Asp Ser Val Met Thr Pro His Gly Glu Cys
    450                 455                 460

Ile Leu Gly Ala Gly Gly Tyr Ile Phe Asn Thr Glu Ala His Pro Ile
465                 470                 475                 480

Asp Pro Ala Ala Leu His Cys Cys Arg Arg Leu Lys Glu Glu Gln Trp
                485                 490                 495

Glu Val Glu Asp Leu Ile Lys Glu Phe Tyr Ser Leu Lys Gln Ser Arg
            500                 505                 510

Pro Lys Arg Ala Gln Arg Lys Thr Val Arg Ser Gly Pro Trp Glu Pro
        515                 520                 525

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

Lys Gln Pro Ala Gln Gln Arg Thr Pro Leu Leu Ser Cys Pro Ser Gln
545                 550                 555                 560

Pro Phe Thr Ser Lys Leu Ala Leu Leu Gly Gln Val Phe Leu Asp Ser
                565                 570                 575

Ser
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<210> 2
<211> 576
<212> PRT
<213> Rattus norvegicus

<400> 2

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Met Pro Phe Arg Leu Leu Ile Pro Leu Gly Leu Val Cys Val Leu Leu
1               5                  10                  15

Pro Leu His His Gly Ala Pro Gly Pro Glu Gly Thr Ala Pro Asp Pro
            20                  25                  30

Ala His Tyr Arg Glu Arg Val Lys Ala Met Phe Tyr His Ala Tyr Asp
        35                  40                  45

Ser Tyr Leu Glu Asn Ala Phe Pro Tyr Asp Glu Leu Arg Pro Leu Thr
    50                  55                  60

Cys Asp Gly His Asp Thr Trp Gly Ser Phe Ser Leu Thr Leu Ile Asp
65                  70                  75                  80

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

Val Val Glu Val Leu Gln Asp Asn Val Asp Phe Asp Ile Asp Val Asn
            100                 105                 110

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

Ala His Leu Leu Ser Lys Lys Ala Gly Val Glu Val Glu Ala Gly Trp
    130                 135                 140

Pro Cys Ser Gly Pro Leu Leu Arg Met Ala Glu Glu Ala Ala Arg Lys
145                 150                 155                 160

Leu Leu Pro Ala Phe Gln Thr Pro Thr Gly Met Pro Tyr Gly Thr Val
                165                 170                 175

Asn Leu Leu His Gly Val Asn Pro Gly Glu Thr Pro Val Thr Cys Thr
            180                 185                 190

Ala Gly Ile Gly Thr Phe Ile Val Glu Phe Ala Thr Leu Ser Ser Leu
        195                 200                 205

Thr Gly Asp Pro Val Phe Glu Asp Val Ala Arg Val Ala Leu Met Arg
    210                 215                 220
```

```
Leu Trp Glu Ser Arg Ser Asp Ile Gly Leu Val Gly Asn His Ile Asp
225                 230                 235                 240

Val Leu Thr Gly Lys Trp Val Ala Gln Asp Ala Gly Ile Gly Ala Gly
                245                 250                 255

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

Asp Lys Lys Leu Met Ala Met Phe Leu Glu Tyr Asn Lys Ala Ile Arg
        275                 280                 285

Asn Tyr Thr His Phe Asp Asp Trp Tyr Leu Trp Val Gln Met Tyr Lys
    290                 295                 300

Gly Thr Val Ser Met Pro Val Phe Gln Ser Leu Glu Ala Tyr Trp Pro
305                 310                 315                 320

Gly Leu Gln Ser Leu Ile Gly Asp Ile Asp Asn Ala Met Arg Thr Phe
                325                 330                 335

Leu Asn Tyr Tyr Thr Val Trp Lys Gln Phe Gly Gly Leu Pro Glu Phe
            340                 345                 350

Tyr Asn Ile Pro Gln Gly Tyr Thr Val Glu Lys Arg Glu Gly Tyr Pro
        355                 360                 365

Leu Arg Pro Glu Leu Ile Glu Ser Ala Met Tyr Leu Tyr Arg Ala Thr
    370                 375                 380

Gly Asp Pro Thr Leu Leu Glu Leu Gly Arg Asp Ala Val Glu Ser Ile
385                 390                 395                 400

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

Arg Asp His Lys Leu Asp Asn Arg Met Glu Ser Phe Phe Leu Ala Glu
            420                 425                 430

Thr Val Lys Tyr Leu Tyr Leu Leu Phe His Pro Asn Asn Phe Ile His
        435                 440                 445

Asn Asn Gly Ser Thr Phe Asp Ser Val Met Thr Pro His Gly Glu Cys
```

```
    450                 455                 460

Ile Leu Gly Ala Gly Gly Tyr Ile Phe Asn Thr Glu Ala His Pro Ile
465                 470                 475                 480

Asp Pro Ala Ala Leu His Cys Cys Arg Arg Leu Lys Glu Glu Gln Trp
                485                 490                 495

Glu Val Glu Asp Leu Ile Lys Glu Phe Tyr Ser Leu Arg Gln Ser Arg
            500                 505                 510

Ser Arg Ala Gln Arg Lys Thr Val Ser Ser Gly Pro Trp Glu Pro Pro
        515                 520                 525

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

Gln Pro Ala Arg Gln Arg Ala Pro Leu Leu Ser Cys Pro Ser Gln Pro
545                 550                 555                 560

Phe Thr Ser Lys Leu Ala Leu Leu Gly Gln Val Phe Leu Asp Ser Ser
                565                 570                 575
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<210> 3
<211> 578
<212> PRT
<213> Cricetulus griseus

<400> 3

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1               5                   10                  15

Pro Leu His His Gly Ala Pro Gly Pro Asp Gly Thr Ala Pro Asp Pro
            20                  25                  30

Ala His Tyr Arg Glu Arg Val Lys Ala Met Phe Tyr His Ala Tyr Asp
        35                  40                  45

Ser Tyr Leu Glu Asn Ala Phe Pro Tyr Asp Glu Leu Arg Pro Leu Thr
    50                  55                  60

Cys Asp Gly His Asp Thr Trp Gly Ser Phe Ser Leu Thr Leu Ile Asp
65                  70                  75                  80
```

```
Ala Leu Asp Thr Leu Leu Ile Leu Gly Asn Thr Ser Glu Phe Gln Arg
                85                  90                  95

Val Val Glu Val Leu Gln Asp Asn Val Asp Phe Asp Ile Asp Val Asn
            100                 105                 110

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

Ala His Leu Leu Ser Lys Lys Ala Gly Val Glu Val Glu Ala Gly Trp
    130                 135                 140

Pro Cys Ser Gly Pro Leu Leu Arg Met Ala Glu Glu Ala Ala Arg Lys
145                 150                 155                 160

Leu Leu Pro Ala Phe Gln Thr Pro Thr Gly Met Pro Tyr Gly Thr Val
                165                 170                 175

Asn Leu Leu His Gly Val Asn Pro Gly Glu Thr Pro Val Thr Cys Thr
            180                 185                 190

Ala Gly Ile Gly Thr Phe Ile Val Glu Phe Ala Thr Leu Ser Ser Leu
        195                 200                 205

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

Leu Trp Glu Ser Arg Ser Asp Ile Gly Leu Val Gly Asn His Ile Asp
225                 230                 235                 240

Val Leu Thr Gly Lys Trp Val Ala Gln Asp Ala Gly Ile Gly Ala Gly
                245                 250                 255

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

Asp Lys Lys Leu Met Ala Met Phe Leu Glu Tyr Asn Arg Ala Ile Arg
        275                 280                 285

Asn Tyr Thr His Phe Asp Asp Trp Tyr Leu Trp Val Gln Met Tyr Lys
    290                 295                 300

Gly Thr Val Ser Met Pro Val Phe Gln Ser Leu Glu Ala Tyr Trp Pro
305                 310                 315                 320
```

```
Gly Leu Gln Ser Leu Ile Gly Asp Ile Asp Asn Ala Met Arg Thr Phe
                325                 330                 335

Leu Asn Tyr Tyr Thr Val Trp Lys Gln Phe Gly Gly Leu Pro Glu Phe
            340                 345                 350

Tyr Asn Ile Ala Gln Gly Tyr Thr Val Glu Lys Arg Glu Gly Tyr Pro
        355                 360                 365

Leu Arg Pro Glu Leu Ile Glu Ser Ala Met Tyr Leu Tyr Arg Ala Thr
    370                 375                 380

Gly Asp Pro Thr Leu Leu Glu Leu Gly Arg Asp Ala Val Glu Ser Ile
385                 390                 395                 400

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

Arg Asp His Lys Leu Asp Asn Arg Met Glu Ser Phe Phe Leu Ala Glu
            420                 425                 430

Thr Val Lys Tyr Leu Tyr Leu Leu Phe His Pro Asn Asn Phe Ile His
        435                 440                 445

Asn Asn Gly Ser Thr Phe Asp Ser Val Met Thr Pro His Gly Glu Cys
    450                 455                 460

Ile Leu Gly Ala Gly Gly Tyr Ile Phe Asn Thr Glu Ala His Pro Ile
465                 470                 475                 480

Asp Pro Ala Ala Leu His Cys Cys Arg Arg Leu Lys Glu Glu Gln Trp
                485                 490                 495

Glu Val Glu Asp Leu Met Arg Glu Leu His Ser Leu Lys Gln Ser Arg
            500                 505                 510

Ser Arg Ala Gln Arg Lys Thr Thr Ser Ser Gly Pro Trp Glu Pro Pro
        515                 520                 525

Ala Gly Pro Gly Ser Pro Ser Ala Pro Gly Lys Gln Asp Gln Pro Arg
    530                 535                 540
```

```
Glu Lys Gln Pro Ala Lys Gln Arg Thr Pro Leu Leu Ser Cys Pro Ser
545                 550                 555                 560

Gln Pro Phe Thr Ser Lys Leu Ala Leu Leu Gly Gln Val Phe Leu Asp
                565                 570                 575

Ser Ser
```

<210> 4
<211> 578
<212> PRT
<213> Homo sapiens

<400> 4

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Met Pro Phe Arg Leu Leu Ile Pro Leu Gly Leu Leu Cys Ala Leu Leu
1               5                   10                  15

Pro Gln His His Gly Ala Pro Gly Pro Asp Gly Ser Ala Pro Asp Pro
            20                  25                  30

Ala His Tyr Arg Glu Arg Val Lys Ala Met Phe Tyr His Ala Tyr Asp
        35                  40                  45

Ser Tyr Leu Glu Asn Ala Phe Pro Phe Asp Glu Leu Arg Pro Leu Thr
    50                  55                  60

Cys Asp Gly His Asp Thr Trp Gly Ser Phe Ser Leu Thr Leu Ile Asp
65                  70                  75                  80

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

Val Val Glu Val Leu Gln Asp Ser Val Asp Phe Asp Ile Asp Val Asn
            100                 105                 110

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

Ala His Leu Leu Ser Lys Lys Ala Gly Val Glu Val Glu Ala Gly Trp
    130                 135                 140

Pro Cys Ser Gly Pro Leu Leu Arg Met Ala Glu Glu Ala Ala Arg Lys
145                 150                 155                 160
```

```
Leu Leu Pro Ala Phe Gln Thr Pro Thr Gly Met Pro Tyr Gly Thr Val
                165                 170                 175

Asn Leu Leu His Gly Val Asn Pro Gly Glu Thr Pro Val Thr Cys Thr
            180                 185                 190

Ala Gly Ile Gly Thr Phe Ile Val Glu Phe Ala Thr Leu Ser Ser Leu
        195                 200                 205

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

Leu Trp Glu Ser Arg Ser Asp Ile Gly Leu Val Gly Asn His Ile Asp
225                 230                 235                 240

Val Leu Thr Gly Lys Trp Val Ala Gln Asp Ala Gly Ile Gly Ala Gly
                245                 250                 255

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

Asp Lys Lys Leu Met Ala Met Phe Leu Glu Tyr Asn Lys Ala Ile Arg
        275                 280                 285

Asn Tyr Thr Arg Phe Asp Asp Trp Tyr Leu Trp Val Gln Met Tyr Lys
    290                 295                 300

Gly Thr Val Ser Met Pro Val Phe Gln Ser Leu Glu Ala Tyr Trp Pro
305                 310                 315                 320

Gly Leu Gln Ser Leu Ile Gly Asp Ile Asp Asn Ala Met Arg Thr Phe
                325                 330                 335

Leu Asn Tyr Tyr Thr Val Trp Lys Gln Phe Gly Gly Leu Pro Glu Phe
            340                 345                 350

Tyr Asn Ile Pro Gln Gly Tyr Thr Val Glu Lys Arg Glu Gly Tyr Pro
        355                 360                 365

Leu Arg Pro Glu Leu Ile Glu Ser Ala Met Tyr Leu Tyr Arg Ala Thr
    370                 375                 380

Gly Asp Pro Thr Leu Leu Glu Leu Gly Arg Asp Ala Val Glu Ser Ile
```

385 390 395 400

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

Arg Asp His Lys Leu Asp Asn Arg Met Glu Ser Phe Phe Leu Ala Glu
420 425 430

Thr Val Lys Tyr Leu Tyr Leu Leu Phe Asp Pro Thr Asn Phe Ile His
435 440 445

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

Ile Leu Gly Ala Gly Gly Tyr Ile Phe Asn Thr Glu Ala His Pro Ile
465 470 475 480

Asp Pro Ala Ala Leu His Cys Cys Gln Arg Leu Lys Glu Glu Gln Trp
485 490 495

Glu Val Glu Asp Leu Met Arg Glu Phe Tyr Ser Leu Lys Arg Ser Arg
500 505 510

Ser Lys Phe Gln Lys Asn Thr Val Ser Ser Gly Pro Trp Glu Pro Pro
515 520 525

Ala Arg Pro Gly Thr Leu Phe Ser Pro Glu Asn His Asp Gln Ala Arg
530 535 540

Glu Arg Lys Pro Ala Lys Gln Lys Val Pro Leu Leu Ser Cys Pro Ser
545 550 555 560

Gln Pro Phe Thr Ser Lys Leu Ala Leu Leu Gly Gln Val Phe Leu Asp
565 570 575

Ser Ser

<210> 5
<211> 578
<212> PRT
<213> Pan troglodytes

<400> 5

```
Met Pro Phe Arg Leu Leu Ile Pro Leu Gly Leu Leu Cys Ala Leu Leu
1               5                  10                  15

Pro Leu His His Gly Ala Pro Gly Pro Asp Gly Ser Ala Pro Asp Pro
            20                  25                  30

Ala His Tyr Arg Glu Arg Val Lys Ala Met Phe Tyr His Ala Tyr Asp
        35                  40                  45

Ser Tyr Leu Glu Asn Ala Phe Pro Phe Asp Glu Leu Arg Pro Leu Thr
    50                  55                  60

Cys Asp Gly His Asp Thr Trp Gly Ser Phe Ser Leu Thr Leu Ile Asp
65                  70                  75                  80

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

Val Val Glu Val Leu Gln Asp Ser Val Asp Phe Asp Ile Asp Val Asn
            100                 105                 110

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

Ala His Leu Leu Ser Lys Lys Ala Gly Val Glu Val Glu Ala Gly Trp
    130                 135                 140

Pro Cys Ser Gly Pro Leu Leu Arg Met Ala Glu Glu Ala Ala Arg Lys
145                 150                 155                 160

Leu Leu Pro Ala Phe Gln Thr Pro Thr Gly Met Pro Tyr Gly Thr Val
                165                 170                 175

Asn Leu Leu His Gly Val Asn Pro Gly Glu Thr Pro Val Thr Cys Thr
            180                 185                 190

Ala Gly Ile Gly Thr Phe Ile Val Glu Phe Ala Thr Leu Ser Ser Leu
        195                 200                 205

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

Leu Trp Glu Ser Arg Ser Asp Ile Gly Leu Val Gly Asn His Ile Asp
225                 230                 235                 240
```

```
Val Leu Thr Gly Lys Trp Val Ala Gln Asp Ala Gly Ile Gly Ala Gly
                245                 250                 255

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

Asp Lys Lys Leu Met Ala Met Phe Leu Glu Tyr Asn Lys Ala Ile Arg
        275                 280                 285

Asn Tyr Thr Arg Phe Asp Asp Trp Tyr Leu Trp Val Gln Met Tyr Lys
    290                 295                 300

Gly Thr Val Ser Met Pro Val Phe Gln Ser Leu Glu Ala Tyr Trp Pro
305                 310                 315                 320

Gly Leu Gln Ser Leu Ile Gly Asp Ile Asp Asn Ala Met Arg Thr Phe
                325                 330                 335

Leu Asn Tyr Tyr Thr Val Trp Lys Gln Phe Gly Gly Leu Pro Glu Phe
            340                 345                 350

Tyr Asn Ile Pro Gln Gly Tyr Thr Val Glu Lys Arg Glu Gly Tyr Pro
        355                 360                 365

Leu Arg Pro Glu Leu Ile Glu Ser Ala Met Tyr Leu Tyr Arg Ala Thr
    370                 375                 380

Gly Asp Pro Thr Leu Leu Glu Leu Gly Arg Asp Ala Val Glu Ser Ile
385                 390                 395                 400

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

Arg Asp His Lys Leu Asp Asn Arg Met Glu Ser Phe Phe Leu Ala Glu
            420                 425                 430

Thr Val Lys Tyr Leu Tyr Leu Leu Phe Asp Pro Thr Asn Phe Ile His
        435                 440                 445

Asn Asn Gly Ser Thr Phe Asp Ala Val Ile Thr Pro Tyr Gly Glu Cys
    450                 455                 460
```

```
Ile Leu Gly Ala Gly Gly Tyr Ile Phe Asn Thr Glu Ala His Pro Ile
465                 470                 475                 480

Asp Pro Ala Ala Leu His Cys Cys Gln Arg Leu Lys Glu Glu Gln Trp
                485                 490                 495

Glu Val Glu Asp Leu Met Arg Glu Phe Tyr Ser Leu Lys Arg Ser Arg
            500                 505                 510

Ser Lys Phe Gln Lys Lys Thr Val Ser Ser Gly Pro Trp Glu Pro Pro
        515                 520                 525

Ala Arg Pro Gly Thr Leu Phe Ser Pro Glu Asn His Asp Gln Ala Arg
    530                 535                 540

Glu Arg Lys Pro Ala Lys Gln Lys Val Pro Leu Leu Ser Cys Pro Ser
545                 550                 555                 560

Gln Pro Phe Thr Ser Lys Leu Ala Leu Leu Gly Gln Val Phe Leu Asp
                565                 570                 575

Ser Ser
```

<210> 6
<211> 513
<212> PRT
<213> Pongo pygmaeus

<400> 6

```
Met Asn Thr Leu Ser Cys Ser Leu Phe Ser Leu Thr Leu Ile Asp Ala
1               5                   10                  15

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

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

Ser Val Phe Glu Thr Asn Ile Arg Val Val Gly Gly Leu Leu Ser Ala
    50                  55                  60

His Leu Leu Ser Lys Lys Ala Gly Val Glu Val Glu Ala Gly Trp Pro
65                  70                  75                  80
```

```
Cys Ser Gly Pro Leu Leu Arg Met Ala Glu Glu Ala Ala Arg Lys Leu
                85                  90                  95

Leu Pro Ala Phe Gln Thr Pro Thr Gly Met Pro Tyr Gly Thr Val Asn
            100                 105                 110

Leu Leu His Gly Val Asn Pro Gly Glu Thr Pro Val Thr Cys Thr Ala
        115                 120                 125

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

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

Trp Glu Ser Arg Ser Asp Ile Gly Leu Val Gly Asn His Ile Asp Val
                165                 170                 175

Leu Thr Gly Lys Trp Val Ala Gln Asp Ala Gly Ile Gly Ala Gly Val
            180                 185                 190

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

Lys Lys Leu Met Ala Met Phe Leu Glu Tyr Asn Lys Ala Ile Arg Asn
    210                 215                 220

Tyr Thr Arg Phe Asp Asp Trp Tyr Leu Trp Val Gln Met Tyr Lys Gly
225                 230                 235                 240

Thr Val Ser Met Pro Val Phe Gln Ser Leu Glu Ala Tyr Trp Pro Gly
                245                 250                 255

Leu Gln Ser Leu Ile Gly Asp Ile Asp Asn Ala Met Arg Thr Phe Leu
            260                 265                 270

Asn Tyr Tyr Thr Val Trp Lys Gln Phe Gly Gly Leu Pro Glu Phe Tyr
        275                 280                 285

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

Arg Pro Glu Leu Ile Glu Ser Ala Met Tyr Leu Tyr Arg Ala Thr Gly
```

```
305                 310                 315                 320

Asp Pro Thr Leu Leu Glu Leu Gly Arg Asp Ala Val Glu Ser Ile Glu
                325                 330                 335

Lys Ile Ser Lys Val Glu Cys Gly Phe Ala Thr Ile Lys Asp Leu Arg
            340                 345                 350

Asp His Lys Leu Asp Asn Arg Met Glu Ser Phe Phe Leu Ala Glu Thr
        355                 360                 365

Val Lys Tyr Leu Tyr Leu Leu Phe Asp Pro Thr Asn Phe Ile His Asn
    370                 375                 380

Asn Gly Ser Thr Phe Asp Ala Val Ile Thr Pro Tyr Gly Glu Cys Ile
385                 390                 395                 400

Leu Gly Ala Gly Gly Tyr Ile Phe Asn Thr Glu Ala His Pro Ile Asp
                405                 410                 415

Pro Ala Ala Leu His Cys Cys Gln Arg Leu Lys Glu Glu Gln Trp Glu
            420                 425                 430

Val Glu Asp Leu Met Arg Glu Phe Tyr Ser Leu Lys Arg Asn Arg Ser
        435                 440                 445

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

Arg Pro Gly Thr Leu Phe Ser Pro Glu Asn His Asp Gln Ala Arg Gly
465                 470                 475                 480

Arg Lys Pro Ala Lys Gln Lys Val Pro Leu Leu Ser Cys Pro Ser Gln
                485                 490                 495

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

Ser
```

<210> 7
<211> 572
<212> PRT

<213> Danio rerio

<400> 7

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Leu Tyr Tyr Leu Pro Leu Phe Thr Ser Arg Tyr Phe Met Leu Thr Phe
1               5                  10                  15

Leu Phe Ser Ala Ile Phe Cys Ala Ala Tyr Leu Ser Pro Ile Ile Ser
            20                  25                  30

His Val Lys Gly Arg Asp Phe Thr Glu Gln Glu Met Ser His Tyr Arg
        35                  40                  45

Asp Arg Val Lys Ser Met Phe Tyr His Ala Tyr Asn Ser Tyr Leu Asp
    50                  55                  60

Asn Ala Tyr Pro Tyr Asp Glu Leu Arg Pro Leu Thr Cys Asp Gly Gln
65                  70                  75                  80

Asp Thr Trp Gly Ser Phe Ser Leu Thr Leu Ile Asp Ala Leu Asp Thr
                85                  90                  95

Leu Leu Ile Leu Gly Asn His Thr Glu Phe Gln Arg Val Ala Thr Leu
            100                 105                 110

Leu Gln Asp Thr Val Asp Phe Asp Ile Asp Val Asn Ala Ser Val Phe
        115                 120                 125

Glu Thr Asn Ile Arg Val Val Gly Gly Leu Leu Ser Ala His Leu Leu
    130                 135                 140

Ser Lys Arg Ala Gly Met Lys Val Glu Glu Gly Trp Pro Cys Ser Gly
145                 150                 155                 160

Pro Leu Leu Arg Met Ala Glu Asp Ala Ala Arg Lys Leu Leu Pro Ala
                165                 170                 175

Phe Gln Thr Pro Thr Gly Met Pro Tyr Gly Thr Val Asn Leu Leu Arg
            180                 185                 190

Gly Val Asn Pro Gly Glu Thr Pro Val Thr Cys Thr Ala Gly Val Gly
        195                 200                 205

Thr Phe Ile Leu Glu Phe Ser Thr Leu Ser Arg Leu Thr Gly Asp Pro
    210                 215                 220
```

```
Val Phe Glu Asn Val Ala Arg Lys Ala Leu Arg Ala Leu Trp Arg Thr
225                 230                 235                 240

Arg Ser Asp Ile Gly Leu Val Gly Asn His Ile Asp Val Ile Thr Ser
                245                 250                 255

Lys Trp Val Ala Gln Asp Ala Gly Ile Gly Ala Gly Val Asp Ser Tyr
            260                 265                 270

Phe Glu Tyr Leu Val Arg Gly Ala Ile Met Leu Gln Asp Glu Glu Leu
        275                 280                 285

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

Phe Asp Asp Trp Tyr Leu Trp Val Gln Met His Lys Gly Thr Val Ser
305                 310                 315                 320

Met Pro Val Phe Gln Ser Leu Glu Ala Phe Trp Pro Gly Met Gln Ser
                325                 330                 335

Leu Ile Gly Asp Ile Ser Ser Ala Thr Lys Ser Phe His Asn Tyr Tyr
            340                 345                 350

Ser Val Trp Arg Gln Phe Gly Gly Leu Pro Glu Phe Tyr Ser Ile Pro
        355                 360                 365

Gln Gly Tyr Thr Val Asp Lys Arg Glu Gly Tyr Pro Leu Arg Pro Glu
    370                 375                 380

Leu Ile Glu Ser Ala Met Tyr Leu Tyr Lys Ala Thr Gly Asp Pro Ser
385                 390                 395                 400

Phe Ile Gln Leu Gly Arg Asp Ala Val Glu Ser Ile Asp Arg Ile Ser
                405                 410                 415

Arg Val Asn Cys Gly Phe Ala Thr Val Lys Asp Val Arg Asp His Lys
            420                 425                 430

Leu Asp Asn Arg Met Glu Ser Phe Phe Leu Ala Glu Thr Ile Lys Tyr
        435                 440                 445
```

```
Leu Tyr Leu Leu Phe Asp Pro Asp Asn Phe Leu His Asn Thr Gly Thr
    450                 455                 460

Glu Phe Glu Leu Gly Gly Leu Arg Gly Asp Cys Ile Leu Ser Ala Gly
465                 470                 475                 480

Gly Tyr Val Phe Asn Thr Glu Ala His Pro Leu Asp Pro Ala Ala Leu
                485                 490                 495

His Cys Cys Ser Arg Glu Gln Gln Asp Arg Arg Glu Ile Gln Asp Ile
            500                 505                 510

Leu Leu Ser Phe Ser Gln Pro His Thr Glu Glu Pro Ser Arg Asp Gln
        515                 520                 525

Ser Ala Gly Gly Ser Pro Glu Ser Ile Ala Leu Lys Pro Gly Glu Gln
    530                 535                 540

Arg Lys Ala Pro Val Leu Ser Cys Pro Thr Gln Pro Phe Ser Ala Lys
545                 550                 555                 560

Leu Ala Val Met Gly Gln Val Phe Ser Asp Asn Ser
                565                 570
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<210> 8
<211> 577
<212> PRT
<213> Artificial

<220>
<223> Consensus sequence

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<221> MISC_FEATURE
<222> (12)..(12)
<223> V or L

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Pro Leu His His Gly Ala Pro Gly Pro Xaa Gly Xaa Ala Pro Asp Pro
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Ala His Tyr Arg Glu Arg Val Lys Ala Met Phe Tyr His Ala Tyr Asp
        35                  40                  45


Ser Tyr Leu Glu Asn Ala Phe Pro Xaa Asp Glu Leu Arg Pro Leu Thr
    50                  55                  60


Cys Asp Gly His Asp Thr Trp Gly Ser Phe Ser Leu Thr Leu Ile Asp
65                  70                  75                  80


Ala Leu Asp Thr Leu Leu Ile Leu Gly Asn Xaa Ser Glu Phe Gln Arg
                85                  90                  95


Val Val Glu Val Leu Gln Asp Xaa Val Asp Phe Asp Ile Asp Val Asn
            100                 105                 110
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```
Ala Ser Val Phe Glu Thr Asn Ile Arg Val Val Gly Gly Leu Leu Ser
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Ala His Leu Leu Ser Lys Lys Ala Gly Val Glu Val Glu Ala Gly Trp
    130                 135                 140

Pro Cys Ser Gly Pro Leu Leu Arg Met Ala Glu Glu Ala Ala Arg Lys
145                 150                 155                 160

Leu Leu Pro Ala Phe Gln Thr Pro Thr Gly Met Pro Tyr Gly Thr Val
                165                 170                 175

Asn Leu Leu His Gly Val Asn Pro Gly Glu Thr Pro Val Thr Cys Thr
            180                 185                 190

Ala Gly Ile Gly Thr Phe Ile Val Glu Phe Ala Thr Leu Ser Ser Leu
        195                 200                 205

Thr Gly Asp Pro Val Phe Glu Asp Val Ala Arg Xaa Ala Leu Met Arg
    210                 215                 220

Leu Trp Glu Ser Arg Ser Asp Ile Gly Leu Val Gly Asn His Ile Asp
225                 230                 235                 240

Val Leu Thr Gly Lys Trp Val Ala Gln Asp Ala Gly Ile Gly Ala Gly
                245                 250                 255

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

Asp Lys Lys Leu Met Ala Met Phe Leu Glu Tyr Asn Xaa Ala Ile Arg
        275                 280                 285

Asn Tyr Thr Xaa Phe Asp Asp Trp Tyr Leu Trp Val Gln Met Tyr Lys
    290                 295                 300

Gly Thr Val Ser Met Pro Val Phe Gln Ser Leu Glu Ala Tyr Trp Pro
305                 310                 315                 320

Gly Leu Gln Ser Leu Ile Gly Asp Ile Asp Asn Ala Met Arg Thr Phe
                325                 330                 335

Leu Asn Tyr Tyr Thr Val Trp Lys Gln Phe Gly Gly Leu Pro Glu Phe
```

340 345 350

Tyr Asn Ile Xaa Gln Gly Tyr Thr Val Glu Lys Arg Glu Gly Tyr Pro
355 360 365

Leu Arg Pro Glu Leu Ile Glu Ser Ala Met Tyr Leu Tyr Arg Ala Thr
370 375 380

Gly Asp Pro Thr Leu Leu Glu Leu Gly Arg Asp Ala Val Glu Ser Ile
385 390 395 400

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

Arg Asp His Lys Leu Asp Asn Arg Met Glu Ser Phe Phe Leu Ala Glu
420 425 430

Thr Val Lys Tyr Leu Tyr Leu Leu Phe Xaa Pro Xaa Asn Phe Ile His
435 440 445

Asn Asn Gly Ser Thr Phe Asp Xaa Val Xaa Thr Pro Xaa Gly Glu Cys
450 455 460

Ile Leu Gly Ala Gly Gly Tyr Ile Phe Asn Thr Glu Ala His Pro Ile
465 470 475 480

Asp Pro Ala Ala Leu His Cys Cys Xaa Arg Leu Lys Glu Glu Gln Trp
485 490 495

Glu Val Glu Asp Leu Xaa Xaa Glu Xaa Xaa Ser Leu Xaa Xaa Ser Arg
500 505 510

Xaa Xaa Xaa Xaa Gln Xaa Xaa Thr Val Xaa Ser Gly Pro Trp Glu Pro
515 520 525

Xaa Xaa Xaa Pro Xaa Xaa Xaa Xaa Xaa Pro Xaa Xaa Gln Xaa Arg Glu
530 535 540

Xaa Xaa Pro Ala Xaa Gln Xaa Xaa Pro Leu Leu Ser Cys Pro Ser Gln
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Pro Phe Thr Ser Lys Leu Ala Leu Leu Gly Gln Val Phe Leu Asp Ser
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Ser

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<212> PRT
<213> Mus musculus

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Val Leu Leu Leu Ser Gly Gln Pro Ala Ser Gly Gly Arg Ala Leu Pro
            20                  25                  30

Leu Met Val Pro Gly Pro Arg Ala Ala Gly Ser Glu Ala Ser Gly Thr
        35                  40                  45

Pro Gln Ala Arg Lys Arg Gln Arg Leu Thr His Leu Ser Pro Glu Glu
    50                  55                  60

Lys Ala Leu Arg Arg Lys Leu Lys Asn Arg Val Ala Ala Gln Thr Ala
65                  70                  75                  80

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

Asp Leu Glu Glu Glu Asn His Lys Leu Gln Leu Glu Asn Gln Leu Leu
            100                 105                 110

Arg Glu Lys Thr His Gly Leu Val Val Glu Asn Gln Glu Leu Arg Thr
        115                 120                 125

Arg Leu Gly Met Asp Thr Leu Asp Pro Asp Glu Val Pro Glu Val Glu
    130                 135                 140

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

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

Ser Asp Thr Val Ala Ser Ser Asp Ser Glu Ser Asp Ile Leu Leu Gly
            180                 185                 190
```

```
Ile Leu Asp Lys Leu Asp Pro Val Met Phe Phe Lys Cys Pro Ser Pro
        195                 200                 205

Glu Ser Ala Ser Leu Glu Glu Leu Pro Glu Val Tyr Pro Glu Gly Pro
    210                 215                 220

Ser Ser Leu Pro Ala Ser Leu Ser Leu Ser Val Gly Thr Ser Ser Ala
225                 230                 235                 240

Lys Leu Glu Ala Ile Asn Glu Leu Ile Arg Phe Asp His Val Tyr Thr
                245                 250                 255

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

Val Val Val Lys Ile Glu Glu Ala Pro Leu Ser Ser Ser Glu Glu Asp
        275                 280                 285

His Pro Glu Phe Ile Val Ser Val Lys Lys Glu Pro Leu Glu Asp Asp
    290                 295                 300

Phe Ile Pro Glu Leu Gly Ile Ser Asn Leu Leu Ser Ser Ser His Cys
305                 310                 315                 320

Leu Arg Pro Pro Ser Cys Leu Leu Asp Ala His Ser Asp Cys Gly Tyr
                325                 330                 335

Glu Gly Ser Pro Ser Pro Phe Ser Asp Met Ser Ser Pro Leu Gly Thr
            340                 345                 350

Asp His Ser Trp Glu Asp Thr Phe Ala Asn Glu Leu Phe Pro Gln Leu
        355                 360                 365

Ile Ser Val
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<212> PRT
<213> Cricetulus griseus

<400> 10

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Val Leu Leu Leu Ser Gly Gln Pro Ala Ala Asp Gly Arg Ala Leu Pro
            20                  25                  30

Leu Met Val Pro Gly Ser Arg Ala Ala Gly Ser Glu Ala Asn Gly Ala
        35                  40                  45

Pro Gln Ala Arg Lys Arg Gln Arg Leu Thr His Leu Ser Pro Glu Glu
    50                  55                  60

Lys Ala Leu Arg Arg Lys Leu Lys Asn Arg Val Ala Ala Gln Thr Ala
65                  70                  75                  80

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

Asp Leu Glu Glu Glu Asn Gln Lys Leu Leu Leu Glu Asn Gln Leu Leu
            100                 105                 110

Arg Glu Lys Thr His Gly Leu Val Ile Glu Asn Gln Glu Leu Arg Thr
        115                 120                 125

Arg Leu Gly Met Asp Val Leu Thr Thr Glu Glu Ala Pro Glu Thr Glu
    130                 135                 140

Ser Lys Gly Asn Gly Val Arg Pro Val Ala Gly Ser Ala Glu Ser Ala
145                 150                 155                 160

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

Ser Asp Thr Val Asp Ser Ser Asp Ser Glu Ser Asp Ile Leu Leu Gly
            180                 185                 190

Ile Leu Asp Lys Leu Asp Pro Val Met Phe Phe Lys Cys Pro Ser Pro
        195                 200                 205

Glu Ser Ala Asn Leu Glu Glu Leu Pro Glu Val Tyr Pro Gly Pro Ser
    210                 215                 220

Ser Leu Pro Ala Ser Leu Ser Leu Ser Val Gly Thr Ser Ser Ala Lys
225                 230                 235                 240
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Leu Glu Ala Ile Asn Glu Leu Ile Arg Phe Asp His Val Tyr Thr Lys
                245                 250                 255

Pro Leu Val Leu Glu Ile Pro Ser Glu Thr Glu Ser Gln Thr Asn Val
            260                 265                 270

Val Val Lys Ile Glu Glu Ala Pro Leu Ser Ser Ser Glu Glu Asp His
        275                 280                 285

Pro Glu Phe Ile Val Ser Val Lys Lys Glu Pro Glu Glu Asp Phe Ile
    290                 295                 300

Pro Glu Pro Gly Ile Ser Asn Leu Leu Ser Ser Ser His Cys Leu Lys
305                 310                 315                 320

Pro Ser Ser Cys Leu Leu Asp Ala Tyr Ser Asp Cys Gly Tyr Glu Gly
                325                 330                 335

Ser Pro Ser Pro Phe Ser Asp Met Ser Ser Pro Leu Gly Ile Asp His
            340                 345                 350

Ser Trp Glu Asp Thr Phe Ala Asn Glu Leu Phe Pro Gln Leu Ile Ser
        355                 360                 365

Val
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<213> Homo sapiens

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            20                  25                  30

Gly Gln Ala Leu Pro Leu Met Val Pro Ala Gln Arg Gly Ala Ser Pro
        35                  40                  45

Glu Ala Ala Ser Gly Gly Leu Pro Gln Ala Arg Lys Arg Gln Arg Leu
    50                  55                  60
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Thr His Leu Ser Pro Glu Glu Lys Ala Leu Arg Arg Lys Leu Lys Asn
65                  70                  75                  80

Arg Val Ala Ala Gln Thr Ala Arg Asp Arg Lys Lys Ala Arg Met Ser
                85                  90                  95

Glu Leu Glu Gln Gln Val Val Asp Leu Glu Glu Glu Asn Gln Lys Leu
            100                 105                 110

Leu Leu Glu Asn Gln Leu Leu Arg Glu Lys Thr His Gly Leu Val Val
        115                 120                 125

Glu Asn Gln Glu Leu Arg Gln Arg Leu Gly Met Asp Ala Leu Val Ala
    130                 135                 140

Glu Glu Glu Ala Glu Ala Lys Gly Asn Glu Val Arg Pro Val Ala Gly
145                 150                 155                 160

Ser Ala Glu Ser Ala Ala Gly Ala Gly Pro Val Val Thr Pro Pro Glu
                165                 170                 175

His Leu Pro Met Asp Ser Gly Gly Ile Asp Ser Ser Asp Ser Glu Ser
            180                 185                 190

Asp Ile Leu Leu Gly Ile Leu Asp Asn Leu Asp Pro Val Met Phe Phe
        195                 200                 205

Lys Cys Pro Ser Pro Glu Pro Ala Ser Leu Glu Glu Leu Pro Glu Val
    210                 215                 220

Tyr Pro Glu Gly Pro Ser Ser Leu Pro Ala Ser Leu Ser Leu Ser Val
225                 230                 235                 240

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

Asp His Ile Tyr Thr Lys Pro Leu Val Leu Glu Ile Pro Ser Glu Thr
            260                 265                 270

Glu Ser Gln Ala Asn Val Val Val Lys Ile Glu Glu Ala Pro Leu Ser
        275                 280                 285
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```
Pro Ser Glu Asn Asp His Pro Glu Phe Ile Val Ser Val Lys Glu Glu
    290                 295                 300

Pro Val Glu Asp Asp Leu Val Pro Glu Leu Gly Ile Ser Asn Leu Leu
305                 310                 315                 320

Ser Ser Ser His Cys Pro Lys Pro Ser Ser Cys Leu Leu Asp Ala Tyr
                325                 330                 335

Ser Asp Cys Gly Tyr Gly Gly Ser Leu Ser Pro Phe Ser Asp Met Ser
            340                 345                 350

Ser Leu Leu Gly Val Asn His Ser Trp Glu Asp Thr Phe Ala Asn Glu
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Leu Phe Pro Gln Leu Ile Ser Val
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Ser Arg Ser Ile Ser Val Met Ile Pro Asn Gln Ala Ser Ser Asp Ser
        35                  40                  45

Asp Ser Thr Thr Ser Gly Pro Pro Leu Arg Lys Arg Gln Arg Leu Thr
    50                  55                  60

His Leu Ser Pro Glu Glu Lys Ala Leu Arg Arg Lys Leu Lys Asn Arg
65                  70                  75                  80

Val Ala Ala Gln Thr Ala Arg Asp Arg Lys Lys Ala Lys Met Gly Glu
                85                  90                  95

Leu Glu Gln Gln Val Leu Glu Leu Glu Leu Glu Asn Gln Lys Leu His
            100                 105                 110
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Val Glu Asn Arg Leu Leu Arg Asp Lys Thr Ser Asp Leu Leu Ser Glu
        115                 120                 125

Asn Glu Glu Leu Arg Gln Arg Leu Gly Leu Asp Thr Leu Glu Thr Lys
    130                 135                 140

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

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

Ser Glu Asp Phe Thr Met Asp Thr His Ser Pro Gly Pro Ala Asp Ser
            180                 185                 190

Glu Ser Asp Leu Leu Leu Gly Ile Leu Asp Ile Leu Asp Pro Glu Leu
        195                 200                 205

Phe Leu Lys Thr Asp Leu Pro Glu Ala Gln Glu Pro Gln Gln Glu Leu
    210                 215                 220

Val Leu Val Gly Gly Ala Gly Glu Gln Val Pro Ser Ser Ala Pro Ala
225                 230                 235                 240

Ala Leu Gly Pro Ala Pro Val Lys Leu Glu Ala Leu Asn Glu Leu Ile
                245                 250                 255

His Phe Asp His Ile Tyr Thr Lys Pro Ala Glu Val Leu Val Ser Glu
            260                 265                 270

Glu Ser Ile Cys Glu Val Lys Ala Glu Asp Ser Val Ala Phe Ser Glu
        275                 280                 285

Thr Glu Glu Glu Ile Gln Val Glu Asp Gln Thr Val Ser Val Lys Asp
    290                 295                 300

Glu Pro Glu Glu Val Val Ile Pro Ala Glu Asn Gln Asn Pro Asp Ala
305                 310                 315                 320

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

Ser Tyr Leu Thr Asp Ala Tyr Ser Asp Ser Gly Tyr Glu Arg Ser Pro
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```
            340                 345                 350

Ser Pro Phe Ser Asn Ile Ser Ser Pro Leu Cys Ser Glu Gly Ser Trp
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Asp Asp Met Phe Ala Ser Glu Leu Phe Pro Gln Leu Ile Ser Val
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20 25 30

Leu Met Val Pro Xaa Xaa Arg Xaa Ala Gly Ser Glu Ala Xaa Gly Xaa
35 40 45

Pro Gln Ala Arg Lys Arg Gln Arg Leu Thr His Leu Ser Pro Glu Glu
50 55 60

Lys Ala Leu Arg Arg Lys Leu Lys Asn Arg Val Ala Ala Gln Thr Ala
65 70 75 80

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

Asp Leu Glu Glu Glu Asn Xaa Lys Leu Xaa Leu Glu Asn Gln Leu Leu
100 105 110

Arg Glu Lys Thr His Gly Leu Val Xaa Glu Asn Gln Glu Leu Arg Xaa
115 120 125

Arg Leu Gly Met Asp Xaa Leu Asp Xaa Xaa Glu Xaa Xaa Glu Xaa Glu
130 135 140

Xaa Lys Gly Xaa Xaa Val Arg Xaa Val Ala Gly Ser Ala Glu Ser Ala
145 150 155 160

Ala Gly Ala Gly Pro Val Val Thr Xaa Pro Glu His Leu Pro Met Asp

```
                165                 170                 175

Ser Xaa Xaa Xaa Xaa Ser Ser Asp Ser Glu Ser Asp Ile Leu Leu Gly
            180                 185                 190

Ile Leu Asp Xaa Leu Asp Pro Val Met Phe Phe Lys Cys Pro Ser Pro
        195                 200                 205

Glu Xaa Ala Xaa Leu Glu Glu Leu Pro Glu Val Tyr Pro Xaa Gly Pro
    210                 215                 220

Ser Ser Leu Pro Ala Ser Leu Ser Leu Ser Val Gly Thr Ser Ser Ala
225                 230                 235                 240

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35 40 45

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

Ala Lys Asp Gly Ala Trp Lys Met Ser Gly Leu Asp Val Trp Gly Gln
100 105 110

```
Gly Thr Thr Val Ile Val Ser Ser Ala Ser Thr Lys Gly Pro Ser Val
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Phe Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala
    130                 135                 140

Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser
145                 150                 155                 160

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

Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro
            180                 185                 190

Ser Ser Ser Leu Gly Thr Lys Thr Tyr Thr Cys Asn Val Asp His Lys
        195                 200                 205

Pro Ser Asn Thr Lys Val Asp Lys Arg Val Glu Ser Lys Tyr Gly Pro
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Pro Cys Pro Pro Cys Pro Ala Pro Glu Phe Leu Gly Gly Pro Ser Val
225                 230                 235                 240

Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr
                245                 250                 255

Pro Glu Val Thr Cys Val Val Val Asp Val Ser Gln Glu Asp Pro Glu
            260                 265                 270

Val Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys
        275                 280                 285

Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Tyr Arg Val Val Ser
    290                 295                 300

Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys
305                 310                 315                 320

Cys Lys Val Ser Asn Lys Gly Leu Pro Ser Ser Ile Glu Lys Thr Ile
                325                 330                 335

Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro
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Pro Ser Gln Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu
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Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn
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Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser
385                 390                 395                 400

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

Trp Gln Glu Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu
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His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Leu Gly Lys
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Cys Ala Ala Ser Gly Phe Thr Phe Ser Ala Tyr Ala Met Thr Trp Val
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Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val Ser Ala Ile Ser Gly
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Ser Gly Gly Ser Ala Tyr Tyr Ala Asp Ser Val Lys Gly Arg Phe Thr
    50                  55                  60

Ile Ser Arg Asp Asn Ser Lys Asn Thr Val Tyr Leu Gln Met Asn Ser
65                  70                  75                  80

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

Tyr Thr Thr Ser Thr Leu Gln Ser Gly Val Pro Ser Arg Phe Arg Gly
    50                  55                  60

Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
65                  70                  75                  80

Glu Asp Val Ala Thr Tyr Tyr Cys Gln Lys Tyr Asp Ser Ala Pro Leu
                85                  90                  95

Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys Arg Thr Val Ala Ala
            100                 105                 110

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

Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala
    130                 135                 140

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

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

Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys His Lys Val Tyr
            180                 185                 190
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Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser Pro Val Thr Lys Ser
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Phe Asn Arg Gly Glu Cys
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Gln Lys Pro Gly Lys Ile Pro Arg Leu Leu Ile Tyr Thr Thr Ser Thr
        35                  40                  45


Leu Gln Ser Gly Val Pro Ser Arg Phe Arg Gly Ser Gly Ser Gly Thr
    50                  55                  60


Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro Glu Asp Val Ala Thr
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Tyr Tyr Cys Gln Lys Tyr Asp Ser Ala Pro Leu Thr Phe Gly Gly Gly
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Ser Ala Ile Gly Pro Ala Gly Asp Thr Tyr Tyr Pro Gly Ser Val Lys
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Gly Arg Phe Thr Ile Ser Arg Glu Asn Ala Lys Asn Ser Leu Tyr Leu
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His Lys Pro Ser Asn Thr Lys Val Asp Lys Lys Val Glu Pro Lys Ser
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Cys Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu
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Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu
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Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser
            260                 265                 270

His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu
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Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr
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Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn
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Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro
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Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln
            340                 345                 350

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

Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val
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Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro
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Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr
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Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val
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Arg Gln Ala Thr Gly Lys Gly Leu Glu Trp Val Ser Ala Ile Gly Pro
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Ala Gly Asp Thr Tyr Tyr Pro Gly Ser Val Lys Gly Arg Phe Thr Ile
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Ser Arg Glu Asn Ala Lys Asn Ser Leu Tyr Leu Gln Met Asn Ser Leu
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Arg Ala Gly Asp Thr Ala Val Tyr Tyr Cys Ala Arg Gly Leu Ile Thr
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Ile Tyr Gly Ala Ser Ser Arg Ala Thr Gly Ile Pro Asp Arg Phe Ser
    50                  55                  60

Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Arg Leu Glu
65                  70                  75                  80

Pro Glu Asp Phe Ala Val Tyr Tyr Cys Gln His Tyr Asp Asn Ser Gln
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Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg Thr Val Ala Ala
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Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly
        115                 120                 125

Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala
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Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln
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Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser
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Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys His Lys Val Tyr
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His Trp Thr Trp Ile Arg His Pro Pro Gly Lys Gly Leu Glu Trp Ile
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Gly Glu Ile Asn His Arg Gly Ser Thr Asn Tyr Asn Pro Ser Leu Lys
    50                  55                  60

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

Lys Leu Ser Ala Val Thr Ala Ala Asp Thr Ala Val Tyr Tyr Cys Ala
                85                  90                  95

Arg Gly Leu Arg Phe Leu Asp Trp Leu Ser Ser Tyr Phe Asp Tyr Trp
            100                 105                 110

Gly Gln Gly Thr Leu Val Thr Val Ser Ser Ala Ser Thr Lys Gly Pro
        115                 120                 125

Ser Val Phe Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu Ser Thr
    130                 135                 140

Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr
145                 150                 155                 160

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

Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr
            180                 185                 190

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

Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser
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Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser Gln Glu Asp
            260                 265                 270

Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn
        275                 280                 285

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

Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu
305                 310                 315                 320

Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ser Ser Ile Glu Lys
                325                 330                 335

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

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

Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu
    370                 375                 380

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

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

Ser Arg Trp Gln Glu Gly Asn Val Phe Ser Cys Ser Val Met His Glu
            420                 425                 430
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Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Leu Gly
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Lys

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<212> PRT
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<400> 36

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Cys Thr Val Tyr Gly Gly Ser Phe Ser Ile His His Trp Thr Trp Ile
20 25 30

Arg His Pro Pro Gly Lys Gly Leu Glu Trp Ile Gly Glu Ile Asn His
35 40 45

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

Ser Ile Asp Thr Ser Lys Asn Gln Phe Ser Leu Lys Leu Ser Ala Val
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Thr Ala Ala Asp Thr Ala Val Tyr Tyr Cys Ala Arg Gly Leu Arg Phe
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Leu Asp Trp Leu Ser Ser Tyr
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<211> 214
<212> PRT
<213> Homo sapiens

<400> 37

Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
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Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Gly Ile Ser Asp Tyr
20 25 30

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Leu Ala Trp Tyr Gln Gln Lys Pro Gly Lys Val Pro Asn Leu Leu Ile
        35                  40                  45

Tyr Ala Ala Ser Ala Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly
    50                  55                  60

Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
65                  70                  75                  80

Glu Asp Val Ala Thr Tyr Tyr Cys Gln Asn Tyr Asn Thr Ala Pro Leu
                85                  90                  95

Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys Arg Thr Val Ala Ala
            100                 105                 110

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

Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala
    130                 135                 140

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

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

Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys His Lys Val Tyr
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Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser Pro Val Thr Lys Ser
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Phe Asn Arg Gly Glu Cys
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<212> PRT
<213> Homo sapiens

<400> 38

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

Ala Ala Ser Ala Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly Ser
    50                  55                  60

Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro Glu
65                  70                  75                  80

Asp Val Ala Thr Tyr Tyr Cys Gln Asn Tyr Asn Thr Ala Pro Leu Thr
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Phe Gly Gly Gly Thr Lys Val Glu Ile Lys Arg
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gatatacact gtttgagatg aggataaaat actctgagtc caaaccgggc ccctctgcta 6240

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Ser Xaa Xaa Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro
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Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val
    50                  55                  60

His Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser
65                  70                  75                  80

Ser Val Val Thr Val Pro Ser Ser Ser Leu Gly Thr Xaa Thr Tyr Xaa
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Cys Asn Val Xaa His Lys Pro Ser Asn Thr Lys Val Asp Lys Xaa Val
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Glu Xaa Lys
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20 25 30

Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser Xaa Glu
35 40 45

Asp Pro Glu Val Xaa Phe Asn Trp Tyr Val Asp Gly Val Glu Val His
50 55 60

Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Xaa Asn Ser Thr Tyr Arg
65 70 75 80

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Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys
                85                  90                  95

Glu Tyr Lys Cys Lys Val Ser Asn Lys Xaa Leu Pro Xaa Xaa Ile Glu
            100                 105                 110

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

Thr Leu Pro Pro Ser Xaa Xaa Glu Xaa Thr Lys Asn Gln Val Ser Leu
    130                 135                 140

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

Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val
                165                 170                 175

Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Xaa Leu Thr Val Asp
            180                 185                 190

Lys Ser Arg Trp Gln Xaa Gly Asn Val Phe Ser Cys Ser Val Met His
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Gly
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Leu Leu Ile Tyr Xaa Xaa Ser Xaa Xaa Xaa Xaa Gly Val Pro Xaa Arg
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Phe Xaa Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Xaa
35 40 45

Leu Xaa Pro Glu Asp Xaa Ala Xaa Tyr Tyr Cys Gln
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Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala
        35                  40                  45

Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln
    50                  55                  60

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

Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys His Lys Val Tyr
                85                  90                  95

Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser Pro Val Thr Lys Ser
            100                 105                 110

Phe Asn Arg Gly Glu Cys
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